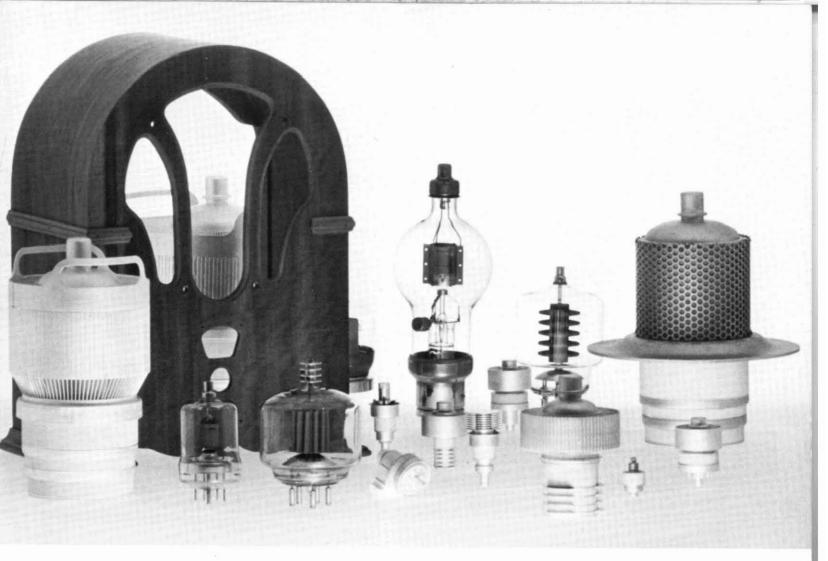


# POWER GRID TUBES QUICK REFERENCE CATALOG EIMAC division of varian

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# EIMAC division of Varian POWER GRID TUBES

EIMAC Division of Varian manufactures a complete line of vacuum tubes and accessories, including rectifiers, triodes, tetrodes, pentodes, pulse modulators, and associated equipment.

When Eitel-McCullough, Inc., merged with Varian Associates in 1965, the brand significance of the widely-known EIMAC symbol was retained, and EIMAC now operates as a division of Varian's Electron Tube and Device Group. EIMAC employs over 800 persons at the division's main plant in San Carlos, California, and another 350 at a recently-expanded factory in Salt Lake City, Utah.

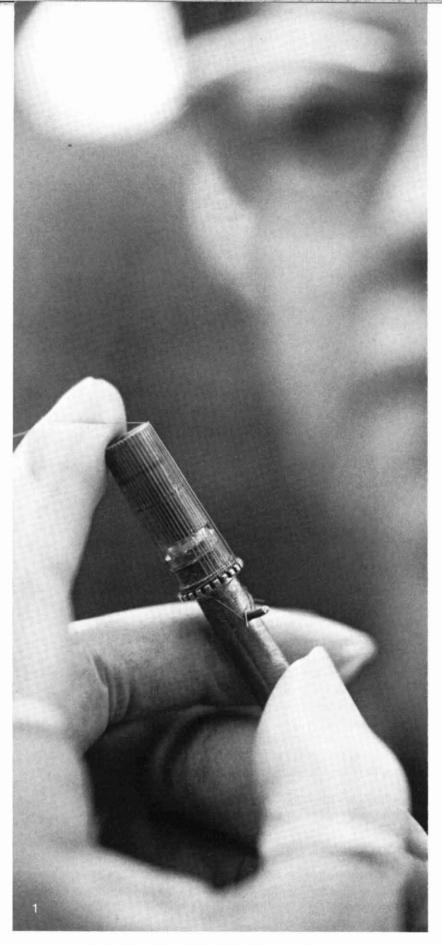
Major production activity at the San Carlos plant covers the manufacture of ceramic / metal triodes, tetrodes and pentodes; glass and ceramic envelope tubes and a wide line of planar triodes are major production items at the Salt Lake City plant.

These two factories, among the most modern electronic tube production facilities in the country, have all manufacturing areas designed on a "flow" system for maximum efficiency. Clean rooms for critical assembly work are ventilated with filtered and pressurized air, for maximum tube yield and reliability. Giant EIMAC-developed rotary vacuum pumps are in operation to produce high vacuums in thousands of tubes per day. Facilities for fabricating and processing ceramic materials include some of the most modern equipment available. Extensive environmental test equipment is also available for checking tube performance under unusual conditions of shock, vibration, humidity, and high altitude.

Quality assurance procedures are very rigid, and include both operator surveillance, batch sampling, and statistical controls.

The division's tube development and circuit techniques laboratories are especially designed for production of experimental tube types and for modification of existing designs to meet special customer requirements.

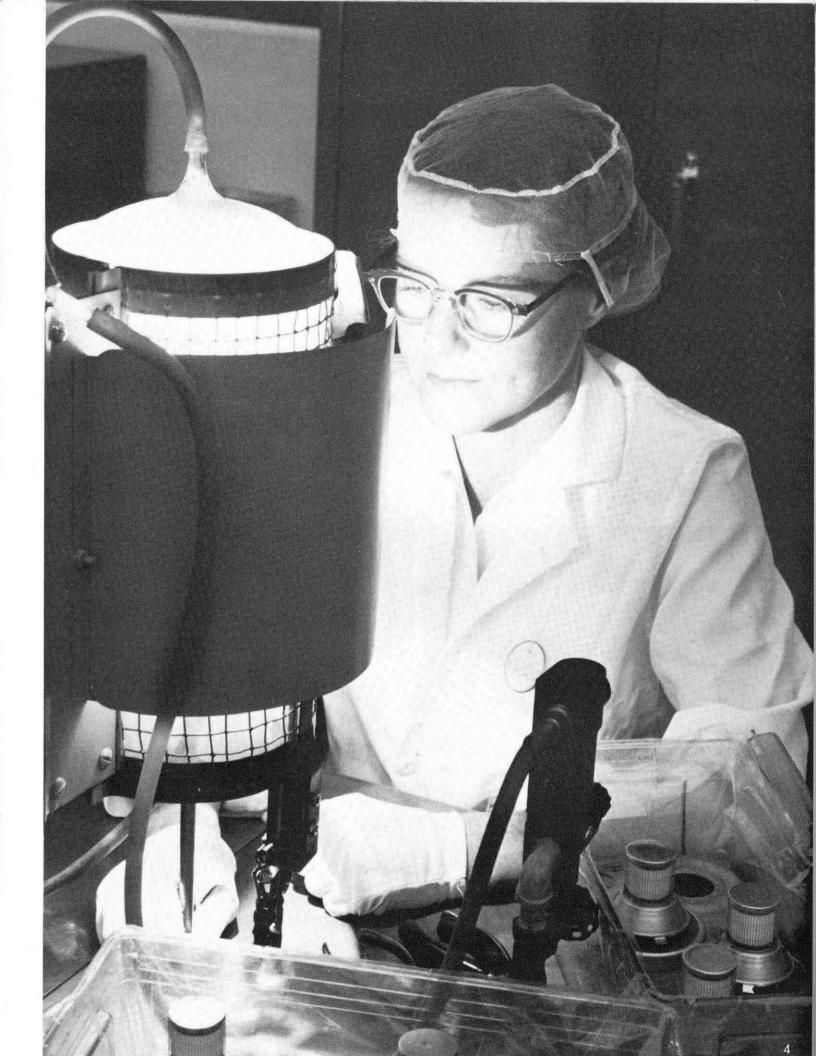
Applications and marketing services are available from division headquarters in San Carlos, or from any of the 16 Varian Electron Tube and Device Group field offices throughout the country.

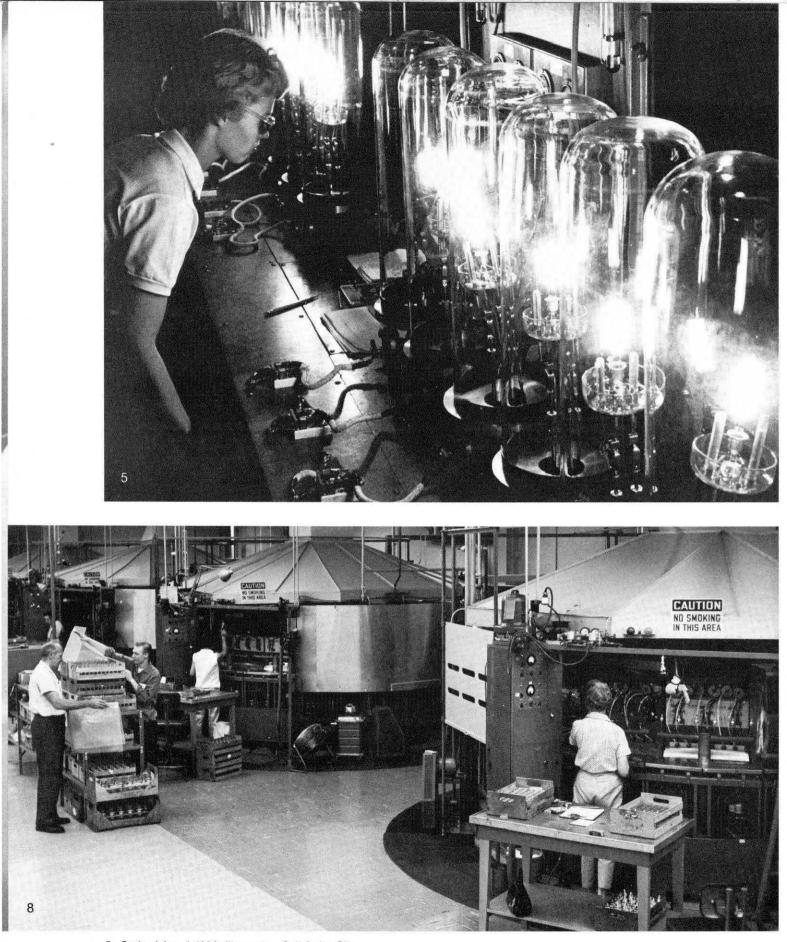


- 1. Hand-winding grid for 4CX250B-San Carlos
- 2. Sealing tube structure on glass lathe-Salt Lake City
- 3. Metallizing ceramic blanks in hydrogen furnace—San Carlos
- 4. Nitrogen atmosphere welder-San Carlos



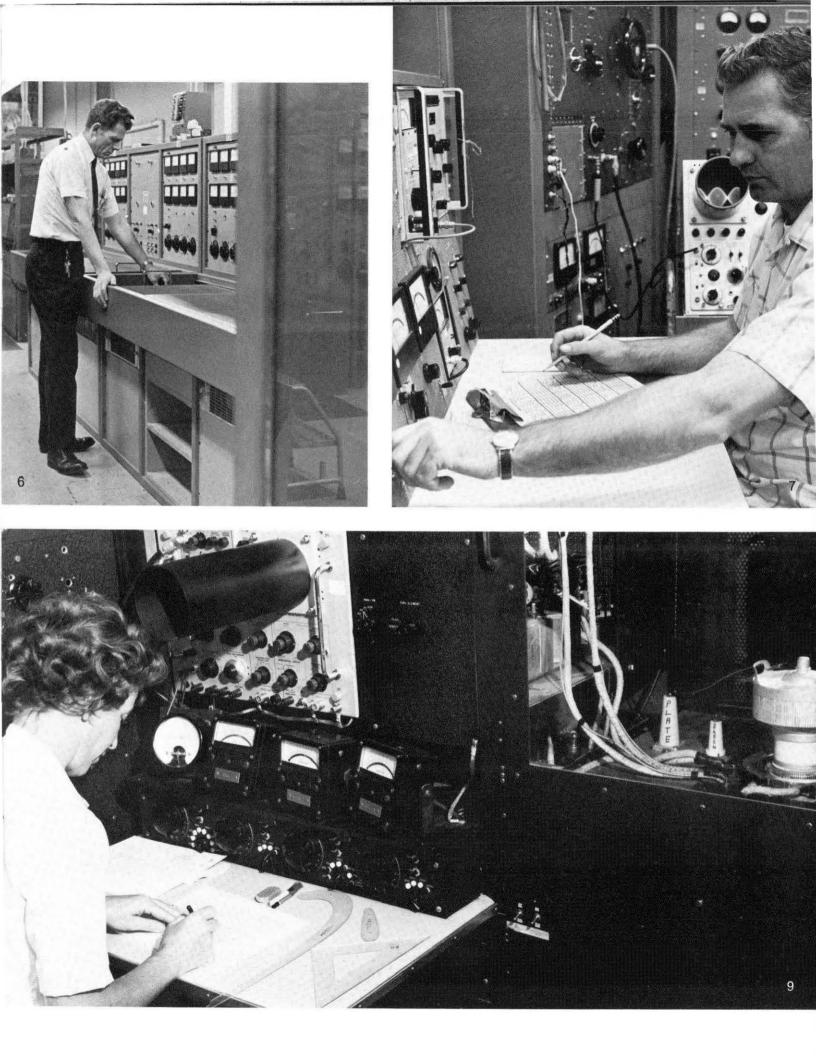






- Carburizing 4-400A filaments—Salt Lake City
   Aging racks—San Carlos

- Aging rucks—sair carlos
   Measuring tube linearity—San Carlos
   Rotary exhaust furnaces—San Carlos
   Curve plotter in development laboratory—San Carlos





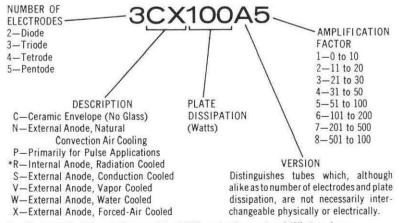
 Aerial view of development and manufacturing plant in San Carlos, California: over 150,000 square feet. The EIMAC Salt Lake City facility occupies another 100,000 square feet.

#### Eimac Power Grid Tube Numbering System

Since 1945 all new tube types developed by Eimac have been given a type number chosen according to a coded number system. This system is designed to convey descriptive information about the tube.

In general, the type numbers consist of: a numeral indicating the number of electrodes, one or more letters denoting special characteristics, a numeral representing the plate dissipation, and a final letter to distinguish the tube from others bearing similar preceding letters and numerals. Triode types carry an additional number to indicate their approximate amplification factor.

To illustrate the method of coding and the information the type number conveys, a 100-watt, ceramic, external-anode, forced-air cooled Eimac triode, type number 3CX100A5, is broken down as follows:



\*In older types, the dash, as in the case of the 4-250A, carries the meaning of "R" given above.

| DIODES AND    | RECTIFIERS | TRIODES     |         |
|---------------|------------|-------------|---------|
| NTERNAL ANODI | Ξ          | INTERNAL AN | DDE     |
| 2-25A         | 253        | 25T         | 3-200A3 |
| 2-50A         | 2-240A     | 35T         | 250TH   |
| 8020/100R     | 250R       | 35TG        | 250TL   |
| 2-150D        | 2-2000A    | 826         | 304TH   |
|               |            | 75TH        | 304TL   |
|               | E.         | 75TL        | 450TH   |
| EXTERNAL ANOD |            | 100TH       | 450TL   |
| 2X1000A       | 2X3000F    | 100TL       | 750TL   |
|               |            | 152TH       | 1000T   |
| MERCURY VAPOR | 8          | 152TL       | 1500T   |
| RX21A         | KY21A      | 592         | 2000T   |

The following Eimac Power Grid Tubes are current for new equipment design.

# DIODES



# 2-01C

A general-purpose UHF instrument diode capable of maintaining an accuracy of  $\pm 1$  db to 700 megacycles. This diode is well suited to probe mounting and is useful as an indicator at frequencies as high as 3000 megacycles. The 2-01C is cooled by convection and radiation.

#### MAXIMUM RATINGS

PEAK INVERSE D-C CURRENT PLATE DISSIPATION

1000 volts 0.001 ampere 0.1 watt

0.125 amperes

100 watts

#### **CHARACTERISTICS**

5.0 volts

Cathode: Oxide-coated, unipotential Heater: Voltage 5 Current 0.31 to 0.3 0.31 to 0.39 ampere 175 °C 1.813 inches 0.563 inches 0.2 ounce Max. Seal Temp. Length Diameter Net Weight



# 322

The 322 is a ceramic and metal diode. This tube is widely used in T-R networks and as a demodulator in VHF omni range equipment.

#### MAXIMUM RATINGS 800 volts

PEAK INVERSE PLATE CURRENT PLATE DISSIPATION Cathode: Oxide-coated, unipotential Heater: Voltage 6.3 Current 0.9 to 1.0 Capacitance (Cpk) Base Socket Max. Seal Temp. Max. Anode-Core Temp. Length Diameter

### CHARACTERISTICS

6.3 volts 0.9 to 1.0 amperes 3.1 to 3.8 pf Coaxial Coaxial Special 250 °C 250 °C 2.75 inches 1.265 inches Net Weight 2.5 ounces

7

C.I.I. O. I.



# 2C39A

UHF

The 2C39A is a ceramic-metal high-mu planar triode with a plate dissipation rating of 100 watts, designed for use as a power amplifier, oscillator, or frequency multiplier at frequencies to above 2500 MHz.

PLATE DISSIPATION 100 watts FREQUENCY FOR MAXIMUM RATINGS 2500 MHz COOLING Forced Air CHARACTERISTICS

| Capacitances:<br>Grid-Cathode 5.4                    | 6.3 volts<br>6.3 volts<br>95 to 1.10 ampe<br>60 to 7.60 pf<br>86 to 2.16 pf<br>0.035 pf |               | Base<br>Socket<br>Maximu<br>Maximu<br>Maximu<br>Maximu<br>Net Wei | m Anode<br>m Height<br>m Diame | Core Ter                    | mp.                        | 25<br>2.7<br>1.2          | Coaxia<br>Special<br>0 °C<br>0 °C<br>5 inches<br>7 inches<br>5 ounces |
|--|---|---------------|---|--------------------------------|-----------------------------|----------------------------|---------------------------|---|
|  | Maximur   | mum Ratings 1 |   |                                |                             | Typical Operation          |                           |   |
| Class of Type of Service<br>Operation                | Plate<br>Voltage<br>(volts  |               | Plate<br>Diss.<br>(watts)   | Grid<br>Diss.<br>(watts)       | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)  |
| C Radio-Frequency Power Ar                           | mplifier 1000   | 0.125         | 100   | 2.0                            | 800                         | 0.08                       | 6.0                       | 27  |
| C Plate-Modulated Radio-Fre<br>Amplifier or Oscillat |   | 0.10          | 70  | 2.0                            | 600                         | 0.065                      | 5.0                       | 16  |
| C Radio-Frequency Oscil                              | lator<br>800  | 0.125         | 100   | 2.0                            | 900                         | 0.09                       |                           | 12  |



## 2C39WA

The 2C39WA is essentially the same as the 2C39A planar triode. It is recommended for replacement in equipment calling for this type.

PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS COOLING

100 watts TINGS 2500 MHz Forced Air

|   | CHAN   | ACIE            | niəlli  | U3                            |                             |                            |                           |   |
|---|--|-----------------|---|-------------------------------|-----------------------------|----------------------------|---------------------------|---|
| Capacitances:<br>Grid-Cathode 5.60 to<br>Grid-Plate 1.86 to | 6.3 volts<br>1.10 amper<br>7.60 pf<br>2.16 pf<br>.035 pf | res             | Base<br>Socket<br>Maximu<br>Maximu<br>Maximu<br>Naximu<br>Net Wei | m Anode<br>m Heigh<br>m Diame | Core Ter<br>t               | πp.                        | 25<br>2.7<br>1.2          | Coaxi<br>Speci<br>0 °C<br>0 °C<br>5 inches<br>7 inches<br>5 ounce |
|   |  | Maximum Ratings |   |                               | Typical Operation           |                            |                           |   |
| Class of Type of Service<br>Operation                       | Plate<br>Voltage<br>(volts)                              |                 | Plate<br>Diss.<br>(watts)   | Grid<br>Diss.<br>(watts)      | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)  |
| C Radio-Frequency Power Amplifi                             | er<br>1000   | 0.125           | 100   | 2.0                           | 800                         | 0.08                       | 6.0                       | 27  |
| C Plate-Modulated Radio-Frequen<br>Amplifier or Oscillator  | cy 600   | 0.10            | 70  | 2.0                           | 600                         | 0.065                      | 5.0                       | 16  |
| C Radio-Frequency Oscillator<br>2500 MHz                    | 800  | 0.125           | 100   | 2.0                           | 900                         | 0.09                       | 4 <del>5 - 1</del> 6      | 12  |

CHARACTERISTICS



# 7211

A planar triode featuring one third more cathode current than the 3CX100A5. The 7211 is of all ceramic-metal construction. The plate-grid ceramic is longer than the 3CX100A5 making the tube more useful in pulse service or high altitude environments. Power output of 30 watts is available at 2500 MHz.

PLATE DISSIPATION 100 watts FREQUENCY FOR MAXIMUM RATINGS 2500 MHz COOLING Forced Air

#### CHARACTERISTICS

| Current<br>Capacitances:<br>Grid-Cathode<br>Grid-Plate 2 | 6.3 volts<br>1.3 amper<br>8.0 pf<br>25 pf<br>06 pf | es                         | Base<br>Maximum<br>Maximum<br>Maximum<br>Maximum<br>Net Weigl | Anode-<br>Height<br>Diamet | Core Tem                    | p.                         | 1.                        | Coaxia<br>250°(<br>250°(<br>75 inche<br>27 inche<br>5 ounche |
|--|--|----------------------------|---|----------------------------|-----------------------------|----------------------------|---------------------------|--|
|  | Maximum Ratings                                    |                            |   | Typical Operation          |                             |                            |                           |  |
| Class of Type of Service<br>Operation                    | Plate<br>Voltage<br>(volts)                        | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)                                     | Grid<br>Diss.<br>(watts)   | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)                                   |
| C Radio-Frequency Power Amplifier<br>500 MHz             | 2500   | 0.19                       | 100   | 2                          | 900                         | 0.14                       | 9                         | 65   |
| C Radio-Frequency Power Amplifier<br>2500 MHz            | 2500   | 0.19                       | 100   | 2                          | 900                         | 0.14                       |                           | 30   |



# 7815/3CPN10A5

This ceramic and metal, UHF, planar triode is designed primarily for use in low-duty pulse applications. It is capable of delivering 1600 watts pulse output power at 3000 MHz at a duty of 0.0025.

The electrical characteristics of the 3CPN10A5 are similar to those of the 3CX100A5. The nominal plate dissipation rating of 10 watts may be exceeded if sufficient additional cooling is provided to maintain the anode and seal temperatures below the specified limits.

PLATE DISSIPATION 10 watts FREQUENCY FOR MAXIMUM RATINGS 3000 MHz COOLING Conduction or Forced Air

| Cathode: Oxide<br>Heater:<br>Voltage<br>Current<br>Capacitances:<br>Grid-Catho<br>Grid-Plate<br>Plate-Catho | 6.0 volts<br>1.05 amp<br>7.00 pf<br>2.15 pf<br>0.035 pf |                             | Maximu<br>Maximu            | um Seal 1<br>um Anode<br>um Heigh<br>um Diame<br>ight | e Temp.<br>t              |                             | 25<br>2.7<br>1.19          | Coaxial<br>50 °C<br>50 °C<br>70 inches<br>75 inches<br>76 ounces |                            |
|---|---|-----------------------------|-----------------------------|---|---------------------------|-----------------------------|----------------------------|--|----------------------------|
|   | Maximum Pulse Ratings                                   |                             |                             | Typical Pulse Operation                               |                           |                             |                            |  |                            |
| Class of<br>Operation   | Type of Service   | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps.) | Plate<br>Diss.<br>(watts)                             | Grid.<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Duty   | Output<br>Power<br>(watts) |
|   | ulsed Power Oscillator—<br>3000 MHz                     | 3,500                       | 3.0                         | 10  | 2                         | 3,500                       | 3.0                        | 0.0025   | 1,600                      |
|   | d Pulsed Amplifier—<br>1100 MHz                         | 2500                        | 3.0                         | 10  | 2                         | 2200                        | 1.9                        | 0.0 01   | 2000                       |

UHF

# 7698

A ceramic-metal pulse planar triode usable to 3000 MHz. As a grid-pulsed amplifier at 1100 MHz or a plate pulsed amplifier at 3000 MHz, 2500 watts of power output is attainable. Cooling is by convection and conduction to a suitable heat sink.

PLATE DISSIPATION 10 watts FREQUENCY FOR MAXIMUM RATINGS 3000 MHz COOLING Conduction and Convection

|  | CHARA  | CTEF                       | RISTIC                    | CS                       |                         |                            |        |  |
|--|--|----------------------------|---------------------------|--------------------------|-------------------------|----------------------------|--------|--|
| Cathode: Oxide-coated, unipotential<br>Heater:<br>Voltage<br>Current<br>Capacitances:<br>Grid-Cathode<br>Grid-Plate<br>Plate-Cathode | 6.3 volts<br>1.3 amper<br>8.0 pf<br>2.25 pf<br>0.06 pf |                            | Maximur<br>Maximur        | n Diamete                | lemp.                   |                            | 1.19   | Coaxial<br>250°C<br>250°C<br>6 inches<br>15 inches<br>6 ounces |
|  | Maximum Pulse Ratings                                  |                            |                           | T                        | Typical Pulse Operation |                            |        |  |
| Class of Type of Service<br>Operation  | Plate<br>Voltage<br>(volts)                            | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) |                         | Plate<br>Current<br>(amps) | Duty   | Output<br>Power<br>(watts)                                     |
|  |  |                            |                           |                          |                         |                            |        |  |
| C Plate-Pulsed Power Oscillator-<br>3000 MHz   | 3500   | 5.0                        | 10                        | 2                        | 3500                    | 4.8                        | 0.0025 | 2500   |

#### CHARACTERISTICS

6.0 volts 0.90 to 1.05 amperes

26.5 volts 0.2 to 0.24 amperes

5.6 to 7.0 nf

5.6 to 7.0 pf

| Contraction of the second |                  |
|---------------------------|------------------|
| Base                      |                  |
| Maximum                   | Seal Temp.       |
| Maximum                   | Anode-Core Temp. |
| Maximum                   |                  |
| Maximum                   |                  |
| Net Weigh                 |                  |

| 250         | Coaxial |
|-------------|---------|
| 250         | °Č      |
| 2.701 1.264 | inches  |
| 2.5         | ounces  |

Output

Power (watts)

40

17

16



# 7289/ 3CX100A5

The 3CX100A5 ceramic and metal planar UHF triode is intended to supersede all tubes in the 2C39A family. Narrow mechanical tolerances plus exacting electrical testing assure tube-to-tube uniformity.

The tube unilaterally replaces 2C39A's and other associated tube types in most equipments without requiring electrical or mechanical modification.

PLATE DISSIPATION 100 watts FREQUENCY FOR MAXIMUM RATINGS 2500 MHz COOLING Forced Air

| Cathode: Oxide-coated, | unipotential |
|------------------------|--------------|
| Heater:                |              |
| Voltage                |              |
| Current                | 0.9          |
| Capacitances:          |              |
| Grid-Cathode           |              |
| Grid-Plate             | 1.9          |
| Dist. Cathoda          |              |

CO

C

C

С

|                                       | Grid-Plate 1.95 to  | 2.15 pf<br>).035 pf         |                              | nor no                    | 6                        |                             |                            | ~                         |  |
|---------------------------------------|---|-----------------------------|------------------------------|---------------------------|--------------------------|-----------------------------|----------------------------|---------------------------|--|
| -                                     |   |                             | Maximun                      | n Ratings                 |                          | Typical Operat              |                            |                           |  |
| Class of Type of Service<br>Operation |   | Plate<br>Voltage<br>(volts) | Cathode<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) |  |
| 2                                     | Radio-Frequency Power Amplifier<br>and Oscillator — 500 MHz                   | 1000                        | 0.125                        | 100                       | 2                        | 900                         | 0.090                      | 6                         |  |
| 2                                     | Radio-Frequency Power Amplifier<br>or Oscillator - 2500 MHz                   | 1000                        | 0.125                        | 100                       | 2                        | 900                         | 0.090                      | 1000                      |  |
| C                                     | Plate-Modulated Radio-Frequency<br>Power Amplifier or Oscillator —<br>500 MHz | 600                         | 0.100                        | 70                        | 2                        | 600                         | 0.065                      | 5                         |  |

#### CHARACTERISTICS

| Base<br>Maximum Seal Temp. |   |
|----------------------------|---|
| Maximum Anode-Core Temp    | ŝ |
| Maximum Height             |   |
| Maximum Diameter           |   |
| Net Weight                 |   |

Coaxial 250 °C 250 °C 2.701 inches 1.264 inches 2.5 ounces

# Emac 3cx100F5

# 8250/3CX100F5

The 3CX100F5 ceramic and metal planar UHF triode features narrow mechanical tolerances plus exacting electrical testing assures tube-to-tube uniformity.

PLATE DISSIPATION 100 watts FREQUENCY FOR MAXIMUM RATINGS 2500 MHz COOLING Forced Air

| Cathode: Oxide-coated, | unipotential |
|------------------------|--------------|
| Heater:                |              |
| Voltage                |              |
| Current                | 0.           |
| Capacitances:          |              |
| Could Cathoda          |              |

Cathode: Oxide-coated, unipoten

Heater: Voltage Current

Capacitances : Grid-Cathode Grid-Plate Plate-Cathode

|                                       | Grid-Plate 1.95 to  | 2.15 pf<br>.035 pf          |                              | Het He                    | 'En                      |                             |                            | 2                         | o ounce                    |  |
|---------------------------------------|---|-----------------------------|------------------------------|---------------------------|--------------------------|-----------------------------|----------------------------|---------------------------|----------------------------|--|
| -                                     |   |                             | Maximun                      | n Ratings                 | 1                        | Typical Operation           |                            |                           |                            |  |
| Class of Type of Service<br>Operation |   | Plate<br>Voltage<br>(volts) | Cathode<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |  |
| С                                     | Radio-Frequency Power Amplifier<br>and Oscillator — 500 MHz                   | 1000                        | 0.125                        | 100                       | 2                        | 900                         | 0.090                      | 6                         | 40                         |  |
| C                                     | Radio-Frequency Power Amplifier<br>or Oscillator — 2500 MHz                   | 1000                        | 0.125                        | 100                       | 2                        | 900                         | 0.090                      | -                         | 17                         |  |
| С                                     | Plate-Modulated Radio-Frequency<br>Power Amplifier or Oscillator —<br>500 MHz | 600                         | 0.100                        | 70                        | 2                        | 600                         | 0.065                      | 5                         | 16                         |  |



# 7815R / 3CPX100A5

A ceramic-metal UHF planar triode intended for pulse and high altitude applications. It is similar to the popular 3CX100A5 but features a longer grid-anode ceramic insulator with a higher voltage breakdown rating. The pulse ratings are applicable to 70,000 feet altitude making the 3CPX100A5 especially suitable for airborne applications.

PLATE DISSIPATION 100 watts FREQUENCY FOR MAXIMUM RATINGS 3000 MHz COOLING Forced Air

| ntial C. O. vielte                           | Base<br>Maximum Seal Temp.                 | 250 °Coaxial<br>250 °C     |
|--|--|----------------------------|
| 6.0 volts<br>0.90 to 1.05 amperes            | Maximum Anode-Core Temp.<br>Maximum Height | 2.701 inches               |
| 5.6 to 7.0 pf<br>1.86 to 2.15 pf<br>0.035 pf | Maximum Diameter<br>Net Weight             | 1.264 inches<br>2.5 ounces |

| Class of Type of Service<br>Operation |  | Maximum Pulse Ratings       |                             |                           |                           | Typical Pulse Operation     |                            |        |                            |
|---------------------------------------|--|-----------------------------|-----------------------------|---------------------------|---------------------------|-----------------------------|----------------------------|--------|----------------------------|
|                                       |  | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps.) | Plate<br>Diss.<br>(watts) | Grid.<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Duty   | Output<br>Power<br>(watts) |
| С                                     | Plate-Pulsed Power Oscillator-<br>3000 MHz | 3,500                       | 3.0                         | 100                       | 2                         | 3,500                       | 3.0                        | 0.0025 | 1,600                      |
| С                                     | Grid Pulsed Amplifier-<br>1100 MHz         | 2,000                       | 3.0                         | 100                       | 2                         | 1,700                       | 1.9                        | 0.01   | 1,500                      |

# 7855

UHF

The 7855 is a ruggedized, high-mu planar triode of ceramic-metal construction, designed for use as a grid-pulsed, plate-pulsed, or CW oscillator, frequency multiplier, or amplifier in radio transmitting service from low frequency to 3 GHz. In addition to low interelectrode capacitance, high transconductance and high mu, this tube incorporates design features which help to assure frequencystable operation.

#### PLATE DISSIPATION 100 watts FREQUENCY FOR MAXIMUM RATINGS 2500 MHz COOLING Forced Air

#### **CHARACTERISTICS**

| Current 1<br>Capacitances:<br>Grid-Cathode G<br>Grid-Plate 2 |   | 6.0 volts<br>1.0 amper<br>6.3 pf<br>2.5 pf<br>.06 pf | es                         | Maximu                    | m Anode<br>m Heigh<br>m Diame | Core Ter                    | mp.                        | 25<br>2.38<br>1.26        | Coaxial<br>Special<br>0°C<br>0°C<br>6 inches<br>4 inches<br>5 ounces |
|--|---|--|----------------------------|---------------------------|-------------------------------|-----------------------------|----------------------------|---------------------------|--|
|  |   |  | Maximu                     | m Rating                  | s                             | Typical                     | I Operation                |                           |  |
|  | Class of Type of Service<br>Operation                   |  | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts)      | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)   |
| С  | Telegraphy RF Power Amplifier<br>and 500 MHz Oscillator | 2500   | 0.100                      | 100                       | 2.0                           | 900                         | 0.09                       | 6.0                       | 40   |
| С  | Plate-Pulsed RF Amplifier and<br>2500 MHz Oscillator    | 3500   | 3.0                        | 35                        | 1.5                           | 3500                        | 3.0                        | _                         | 2000   |
| С  | Grid-Pulsed RF Oscillator and<br>1100 MHz Amplifier     | 2500   | 3.0                        | 20                        | 1.5                           | 1700                        | 1.9                        | 400*                      | 1500   |
|  |   |  |                            |                           |                               | h                           |                            | *Dur                      | ing Pulse  |



# 8403

The 8403 is a ruggedized, high-mu planar triode of ceramic metal construction, designed for use as a grid-pulsed, plate-pulsed or CW oscillator, frequency multiplier or amplifier from low-frequency to 3 GHz. A distinguishing characteristic of this tube is its high cathode-current capability. In addition to low interelectrode capacitance, high transconductance and high mu, this tube incorporates design features which help to assure frequency-stable operation.

3 GHz

PLATE DISSIPATION 100 watts FREQUENCY FOR MAXIMUM RATINGS COOLING Forced Air

| Current<br>Capacitances:<br>Grid-Cathode<br>Grid-Plate | 6.3 volts<br>1.3 amper<br>8.0 pf<br>3.1 pf<br>065 pf | es                         | Maximu                    | m Anode<br>m Height<br>m Diame<br>ght | 1                           |                            | 2.38                      | Coaxia<br>Specia<br>0°C<br>6 inches<br>5 inches<br>5 ounces |
|--|--|----------------------------|---------------------------|---------------------------------------|-----------------------------|----------------------------|---------------------------|---|
|  | Maximum Ratings                                      |                            |                           | Typical Operation                     |                             |                            |                           |   |
| Class of Type of Service<br>Operation                  | Plate<br>Voltage<br>(volts)                          | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts)              | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)                                  |
| C RF Power Amplifier and<br>Oscillator                 | 2500   | 0.150                      | 100                       | 2.0                                   | 900                         | 0.140                      | 9.0                       | 65  |
| C Grid-Pulsed RF Oscillator and<br>Amplifier           | 2500   | 5.0 pk                     | 33                        | 2.0                                   | 2000                        | 4.0                        |                           | 1000pk  |

**CHARACTERISTICS** 



# 8533

The 8533 is a high-mu planar triode designed for use as a grid-pulsed or plate-pulsed oscillator, frequency multiplier, power amplifier or as a switch tube at high plate voltages. Noteworthy differences in this tube as compared to similar types are an extended grid-cathode insulator and a special cathode design, permitting operation with up to 8000 Vdc plate voltage.

PLATE DISSIPATION 100 watts average FREQUENCY FOR MAXIMUM RATINGS 3 GHz COOLING Forced Air

#### **CHARACTERISTICS**

| Cathode: Oxide-coated, unipotential<br>Heater:<br>Voltage<br>Current<br>Capacitances:<br>Grid-Cathode<br>Grid-Plate 1<br>Plate-Cathode | 6.3 volts<br>1.3 amper<br>8.0 pf<br>.65 pf<br>.06 pf | es                         | Base<br>Socket<br>Maximum Envelope Temp.<br>Maximum Height<br>Maximum Diameter<br>Net Weight |                          |                             |                            |                           | Coaxia<br>Specia<br>250 °C<br>2.701 inches<br>1.195 inches<br>2.5 ounces |  |
|--|--|----------------------------|--|--------------------------|-----------------------------|----------------------------|---------------------------|--|--|
|  |  | Typical Operation          |  |                          |                             |                            |                           |  |  |
| Class of Type of Service<br>Operation  | Plate<br>Voltage<br>(volts)                          | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)  | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)   |  |
| <ul> <li>Pulse Modulator or Pulse<br/>Amplifier</li> </ul>   | 8000   | 5.0pk                      | 100  | 1.5                      | _                           | -                          |                           | -  |  |
| C Grid-Pulsed or Plate-Pulsed<br>RF Oscillator and Amplifier   | 8000   | 5.0pk                      | 100  | 1.5                      | _                           |                            | _                         |  |  |



# 8745

airborne applications.

A ceramic metal UHF planar triode intended for pulse and high altitude applications. It is similar to the popular 3CX100A5 but features a longer

grid-anode ceramic insulator with a higher voltage breakdown rating. The pulse ratings are applicable to 70,000 feet altitude making the 8745 especially suitable for

PLATE DISSIPATION 100 watts FREQUENCY FOR MAXIMUM RATINGS 2500 MHz COOLING Forced Air

#### CHARACTERISTICS

Cathode: Oxide-coated, unipotential 6.0 volts 0.90 to 1.05 amperes 5.6 to 7.0 pf 1.86 to 2.15 pf 0.035 pf Plate-Cathode

Cathode : Oxide-co Heater : Voltage Current Capacitances : Grid-Cathode Grid-Plate

Base Maximum Seal Temp. Maximum Anode-Core Temp. Maximum Height Maximum Diameter Net Weight

| Coaxia |
|--------|
| C      |
| °C     |
| inches |
| inches |
| ounces |
|        |

|                                       |  | Max                         | cimum Pu                    | Ise Ratir                 | ngs                       | Typical Pulse Operation     |                            |        |                            |  |
|---------------------------------------|--|-----------------------------|-----------------------------|---------------------------|---------------------------|-----------------------------|----------------------------|--------|----------------------------|--|
| Class of Type of Service<br>Operation |  | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps.) | Plate<br>Diss.<br>(watts) | Grid,<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Duty   | Output<br>Power<br>(watts) |  |
| С                                     | Plate-Pulsed Power Oscillator-<br>3000 MHz | 3,500                       | 3.0 pk                      | 100                       | 2                         | 3,500                       | 3.0                        | 0.0025 | 1,600 pk                   |  |
| С                                     | Grid Pulsed Amplifier –<br>1100 MHz        | 2,000                       | 3.0 pk                      | 100                       | 2                         | 1,700                       | 1.9                        | 0.01   | 1,500 pk                   |  |

#### UHE



# 8755

The 8755 is a miniature, frequency-stable planar triode for advanced airborne and space applications up to 3000 MHz at full ratings. The rugged ceramicmetal pulse tube is designed for high-voltage, highpulse current operation and features large contact areas for improved electrical paths. The tube may be used as an amplifier or an oscillator and employs an arc-resistant cathode.

PLATE DISSIPATION 150 watts\* FREQUENCY FOR MAXIMUM RATINGS 3000 MHz COOLING Forced Air or Conduction

#### CHARACTERISTICS

|  | 6.3 volts<br>1.3 amper<br>9.3 pf<br>1.25 pf<br>0.06 pf | es.                        | Maximu<br>Maximu          | m Height<br>m Diame      | Core Ter                    | np.                        | 25<br>1.4<br>0.8          | Coaxial<br>Special<br>0 °C<br>0 °C<br>7 inches<br>3 inches<br>7 ounces |
|--|--|----------------------------|---------------------------|--------------------------|-----------------------------|----------------------------|---------------------------|--|
|  |  | Maximun                    | n Rating                  | ngs Typical Operation    |                             |                            |                           |  |
| Class of Type of Service<br>Operation            | Plate<br>Voltage<br>(volts)                            | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)   |
| C Grid-Pulsed Oscillator or<br>Amplifier         | 8000   | 5.0**                      | 150*                      | 1.5                      | 5000                        | 5.0                        | 1850                      | 7000**   |
| C Pulse Plate Oscillator or<br>Amplifier         | 10,000   | 5.0**                      | 150*                      | 1.5                      | -                           | -                          | _                         | <u> </u>   |
| <ul> <li>Pulse Modulator or Amplifier</li> </ul> | 8000   | 5.0 **                     | 150°                      | 1.5                      | -                           |                            |                           | -  |
|  |  |                            | 0 \$                      | peak                     |                             | *With                      | suitable                  | e cooler   |



## 8756

The 8756 is a miniature frequency-stable planar triode for pulse applications up to 2500 MHz at full ratings. The tube is designed for high pulse current operation. PLATE DISSIPATION

100 watts (average) FREQUENCY FOR MAXIMUM RATINGS 2500 MHz COOLING **Conduction or Forced Air** 

| Cathode: Oxide-coated, unipotential<br>Heater:<br>Voltage<br>Current<br>Capacitances:<br>Grid-Cathode<br>Grid-Plate<br>Plate-Cathode | 6.0 volts<br>0.7 amper<br>7.0 pf<br>1.6 pf<br>0.04 pf | res                          | Base<br>Socket<br>Maximu<br>Maximu<br>Maximu<br>Naximu<br>Net We |  |  |  |
|--|---|------------------------------|--|--|--|--|
|  |   | Maximur                      | n Ratin  |  |  |  |
| Class of Type of Service<br>Operation  | Plate<br>Voltage<br>(volts)                           | Cathode<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)  |  |  |  |
| C RF Power Amplifier or Oscillato  | r 2500  | 0.125                        | 150*   |  |  |  |
| C Grid-Pulsed Oscillator or<br>Amplifier   | 2500  | 3.0**                        | 150  |  |  |  |

#### CHARACTERISTICS

| coated, unipotential<br>le<br>ide | 6.0 volts<br>0.7 amper<br>7.0 pf<br>1.6 pf<br>0.04 pf | res                          | Base<br>Socket<br>Maximum Seal Temp.<br>Maximum Height<br>Maximum Height<br>Maximum Diameter<br>Net Weight |                          |                             |                            |                           | Coaxial<br>Special<br>0 °C<br>0 °C<br>4 inches<br>3 inches<br>7 ounces |  |  |
|-----------------------------------|---|------------------------------|--|--------------------------|-----------------------------|----------------------------|---------------------------|--|--|--|
|                                   |   | Maximun                      | n Rating   | s                        | Typical Operation           |                            |                           |  |  |  |
| Type of Service                   | Plate<br>Voltage<br>(volts)                           | Cathode<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)  | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)   |  |  |
| r Amplifier or Oscillato          | r 2500  | 0.125                        | 150*   | 1.5                      | 1250                        | 0.50                       | 3.0                       | 60   |  |  |
| Pulsed Oscillator or<br>Amplifier | 2500  | 3.0**                        | 150*   | 1.5                      | 2500                        | 2.0                        | 350                       | 2000pk   |  |  |
|                                   |   |                              | ∘Witl  | h suitabl                | e cooler                    | **Puls                     | se Plate                  | Current  |  |  |



# 8757

The 8757 is a miniature, ceramic and metal planar triode designed primarily for CW amplifier and oscillator application. This tube will also perform well as a grid or a plate-pulsed amplifier or oscillator at frequencies up to at least 3000 MHz.

PLATE DISSIPATION 150 watts FREQUENCY FOR MAXIMUM RATINGS 2500 MHz COOLING Conduction or Forced Air

INTERNAL ANODE

#### CHARACTERISTICS 11.0 1.1.0

| Current 1<br>Capacitances:<br>Grid-Cathode 9<br>Grid-Plate 2.2 | .3 volts<br>.3 amper<br>.5 pf<br>25 pf<br>06 pf | es                           | Maximu<br>Maximu          | m Height<br>m Diame      | Core Ter                    | mp.                        | Coaxia<br>Special<br>0 °C<br>0 °C<br>5 inches<br>3 inches<br>7 ounces |                            |
|--|---|------------------------------|---------------------------|--------------------------|-----------------------------|----------------------------|---|----------------------------|
|  |   | Maximur                      | n Rating                  | s                        |                             | Typical                    | Operation   | n                          |
| Class of Type of Service<br>Operation                          | Plate<br>Voltage<br>(volts)                     | Cathode<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts)   | Output<br>Power<br>(watts) |
| C RF Power Amplifier or Oscillator<br>(2500 MHz)               | 2500  | 0.225                        | 150°                      | 1.5                      | 1400                        | 0.215                      | 4.0   | 100                        |
| C Grid Pulse RF Amplifier or<br>Oscillator                     | 2500  | 5.0**                        | 150*                      | 1.5                      | 2500                        | 3.0                        | 450   | 1960                       |
|  |   |                              | ≈With                     | suitable                 | cooler                      | * • Puls                   | e Plate (   | Current                    |



# 254W

The 254W is a radiation-cooled tube suitable fo use as an RF power amplifier, frequency multiplie or oscillator, and as an AF power amplifier and modulator. The tube is widely used in base-station communications equipment and is exceptionally efficient in VHF operation.

PLATE DISSIPATION COOLING

| uitable for<br>v multiplier<br>plifier and<br>pase-station<br>sceptionally | Filament: Thoriated tungsten<br>Voltage<br>Current<br>Capacitances:<br>Grid-Filament<br>Grid-Plate<br>Plate-Filament | 5.0 volts<br>7.5 amperes<br>3.4 pf<br>2.5 pf<br>0.43 pf | Ba<br>So<br>Ma<br>Ma<br>Ne |
|--|--|---|----------------------------|
|  |  | Maxim   | um R                       |
| 100 watts<br>Radiation   | Class of Type of Service<br>Operation  | Plate Plate<br>Voltage Curren<br>(volts) (amps          | t D                        |
|  | C RF Power Amplifier   | 4000 0.22   | 5                          |

| noriated tungsten<br>s:<br>ament<br>ite<br>lament | 5.0 volts<br>7.5 amper<br>3.4 pf<br>2.5 pf<br>0.43 pf                       | es   | Maximu   | t Johnson<br>num Height 7.13<br>num Diameter 2.69   |   |  |  |  |
|---|---|--|--|---|---|--|--|--|
|   |   | Maximur  | n Rating   | s   |   | Typical  | Operation  | n  |
| Type of Service                                   | Plate<br>Voltage<br>(volts)   | Plate<br>Current<br>(amps)   | Plate<br>Diss.<br>(watts)  | Grid<br>Current<br>(amps)   | Plate<br>Voltage<br>(volts)   | Plate<br>Current<br>(amps)   | Drive<br>Power<br>(watts)  | Output<br>Power<br>(watts)   |
| RF Power Amplifier                                | 4000  | 0.225  | 100  | 0.06  | 3000  | 0.165  | 18   | 400  |
| Telephony   | 3000  | 0.180  | 85   | 0.06  | 2500  | 0.168  | 23   | 335  |
|   | s:<br>ament<br>te<br>lament<br><b>Type of Service</b><br>RF Power Amplifier | 5.0 volts<br>7.5 amper<br>s:<br>ament 3.4 pf<br>te 2.5 pf<br>lament 0.43 pf<br>Type of Service Plate<br>Voltage<br>(volts)<br>RF Power Amplifier 4000<br>Telephony | 5.0 volts       ament     3.4 pf       te     2.5 pf       lament     0.43 pf       Type of Service     Plate       Plate     Plate       Voltage     Current       (volts)     (amps)       RF Power Amplifier     4000     0.225       Telephony     1 | 5.0 volts Socket<br>7.5 amperes Maximum<br>Maximum<br>ament 3.4 pf Net Wei<br>te 2.5 pf<br>Iament 0.43 pf<br>Type of Service Plate Plate<br>Voltage Current Diss.<br>(volts) (amps) (watts)<br>RF Power Amplifier 4000 0.225 100<br>Telephony | S.0 volts     Socket       7.5 amperes     Maximum Height       ament     3.4 pf     Net Weight       te     2.5 pf       lament     0.43 pf       Plate Plate Plate Grid       Voltage Current (volts) (amps)       RF Power Amplifier     4000     0.225     100     0.06 | Socket     Socket       7.5 amperes     Maximum Height<br>Maximum Diameter       ament     3.4 pf       ament     3.4 pf       te     2.5 pf       lament     0.43 pf       Maximum Diameter       Type of Service     Plate       Plate     Plate       Voltage     Current       (volts)     (amps)       (watts)     (amps)       RF Power Amplifier     4000       0.225     100       0.06     3000 | S.0 volts     Socket<br>Maximum Diameter       3:1     7.5 amperes     Maximum Height<br>Maximum Diameter       ament     3.4 pf     Net Weight       te     2.5 pf       1ament     0.43 pf       Maximum Ratings       Type of Service     Plate     Plate       Plate     Plate     Plate       Voltage     Current     Diss.       (volts)     (amps)     (watts)       RF Power Amplifier     4000     0.225       Telephony     100     0.06 | S.0 volts     Socket     Johnson       31     7.5 amperes     Maximum Height     7.1       32     7.5 amperes     Maximum Diameter     2.6       ament     3.4 pf     Net Weight     2.6       te     2.5 pf     1     2       Type of Service     Maximum Ratings     Typical Operation       Plate     Plate     Plate     Plate     Plate     Plate     Prover       Voltage     Current     Diss.     Current     Voltage     Current     Voltage     Voltage       RF Power Amplifier     4000     0.225     100     0.06     3000     0.165     18 |

#### INTERNAL ANODE

# 5867A

COOLING

A new medium-mu triode, the 5867A is capable of over one kilowatt input to 100 Mc. It is useful as a Class AB amplifier, Class C amplifier or industrial oscillator. The plate dissipation rating is 375 watts.

PLATE DISSIPATION 350 watts GRID DISSIPATION **Radiation and Forced Air** 

20 watts

250 watts

Forced Air

60 MHz

| Current 14<br>apacitances:<br>Grid-Filament 7<br>Grid-Plate 5                             | 5.0 volts<br>4.1 amperes<br>7.2 pf<br>5.6 pf<br>0.5 pf |                            |                           | n Anode<br>n Height<br>n Diame |                             |                            | 5-r<br>Eimac SK-4<br>180 °C<br>220 °C<br>5.875 inch<br>3.438 inch<br>6 ounc |                            |  |
|---|--|----------------------------|---------------------------|--------------------------------|-----------------------------|----------------------------|---|----------------------------|--|
|   | 1  | Maximur                    | n Rating                  | S                              |                             | Typical                    | Operatio  | n                          |  |
| Class of Type of Service<br>Operation   | Plate<br>Voltage<br>(volts)                            | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts)       | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts)   | Output<br>Power<br>(watts) |  |
| C Radio-Frequency Power<br>Amplifier or Oscillator  | 4000   | 0.400                      | 350                       | 30                             | 3000                        | 0.365                      | 27  | 840                        |  |
| C Oscillator, Industrial Application,<br>Single Phase, Full Wave<br>Rectifier, Unfiltered | 3800   | 0.360                      | 350                       | 30                             | 2750                        | 0.340                      | ( <u> </u>  | 685                        |  |
| C Oscillator, Industrial<br>Application, Self-Rectified                                   | 4500   | 0.210                      | 350                       | 30                             | 3000                        | 0.180                      | _   | 415                        |  |

CHARACTERISTICS



# 6569

The 6569 is a high-mu power triode designed especially for grounded-grid RF amplifier service, but is also capable of good performance in other applications. Because of its high amplification factor and high perveance, the 6569 will give power gains as high as ten in grounded-grid amplifier applications. Because of internal shielding, neutralization is not required.

PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS COOLING

| Current 14.<br>Capacitances:<br>Grid-Filament 7.<br>Grid-Plate 3.  | 0 volts<br>5 amper<br>6 pf<br>7 pf<br>0 pf | es                         |                           | n Height<br>n Diame       |                             | Jo<br>ap Temp.             |                           | 5-pin Metal Shel<br>Johnson 122-275<br>170 °C<br>6.38 inches<br>3.56 inches<br>8 ounces |  |  |
|--|--|----------------------------|---------------------------|---------------------------|-----------------------------|----------------------------|---------------------------|---|--|--|
|  |  | Maximur                    | n Rating                  | s                         |                             | Typical (                  | Operation                 | 1   |  |  |
| Class of Type of Service<br>Operation                              | Plate<br>Voltage<br>(volts)                | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Current<br>(amps) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)  |  |  |
| C RF Power Amplifier Grounded<br>Grid                              | 4000                                       | 0.300                      | 250                       | 0.12                      | 3500                        | 0.285                      | 85                        | 805   |  |  |
| B Linear RF Amplifier, SSB, Sup-<br>pressed Carrier, Grounded Grid | 4000                                       | 0.300                      | 250                       | 0.12                      | 3500                        | 0.270                      | 75                        | 760   |  |  |

CHARACTERISTICS



# 6580

The 6580 is a 400-watt high-mu power triode designed especially for grounded-grid RF amplifier service, but is also capable of good performance in other applications. Because of its high amplification factor and high perveance, the 6580 will provide power gains as high as ten in grounded-grid amplifier applications. Because of internal shielding, neutralization is not required.

PLATE DISSIPATION 400 watts FREQUENCY FOR MAXIMUM RATINGS 60 MHz COOLING Forced Air

#### CHARACTERISTICS

| Current 14<br>Capacitances:<br>Grid-Filament 7<br>Grid-Plate 3     | .0 volts<br>.5 amper<br>.6 pf<br>.9 pf<br>10 pf | es                         | Maximu                    | n Plate C<br>m Height<br>m Diame<br>ght |                             | 5-pin Metal Shell<br>Johnson 122-275<br>170 °C<br>6.38 inches<br>3.56 inches<br>8 ounces |                           |                            |
|--|---|----------------------------|---------------------------|---|-----------------------------|--|---------------------------|----------------------------|
|  | 1   | Maximur                    | n Rating                  | s                                       |                             | Typical  | Operation                 | n                          |
| Class of Type of Service<br>Operation                              | Plate<br>Voltage<br>(volts)                     | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Current<br>(amps)               | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps)   | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| C RF Power Amplifier Grounded<br>Grid                              | 4000  | 0.350                      | 400                       | 0.12                                    | 3000                        | 0.350  | 87                        | 745                        |
| B Linear RF Amplifier, SSB, Sup-<br>pressed Carrier, Grounded Grid | 4000  | 0.350                      | 400                       | 0.12                                    | 3500                        | 0.300  | 68                        | 765                        |



# 8163/3-400Z

The Eimac 3-400Z is a new zero-bias triode intended for linear amplifier applications. This tube may be used as a Class B R-F amplifier in either the grid-driven or cathode-driven connection, or two 3-400Z's may be used in push-pull as a grid-driven Class B audio amplifier or modulator. At a plate voltage of 3000 volts 1KW PEP input can be run with a single 3-400Z, providing a power gain of over 20 in the cathode-driven connection.

MAXIMUM PLATE DISSIPATION 400 watts FREQUENCY FOR MAXIMUM RATINGS 110 MHz **Radiation and Forced Air** COOLING

|  | O I I AI I A   | C I MI                     |   |  |                             |                            |                           |                            |
|--|--|----------------------------|---|--|-----------------------------|----------------------------|---------------------------|----------------------------|
| apacitances (Grounded Filament):<br>Grid-Filament 6.0        | 5.0 volts<br>o 14.7 amper<br>to 9.0 pf<br>to 5.3 pf<br>0.11 pf | es                         | Base<br>Socket<br>Maximun<br>Maximun<br>Maximun<br>Net Weig | 5-pin, Speci<br>Eimac SK 4<br>200<br>225<br>5.25 inch<br>3.57 inch<br>7 ounc |                             |                            |                           |                            |
|  |  | Maximu                     | m Ratings   | 6  |                             | Typical (                  | Operation                 |                            |
| Class of Type of Service<br>Operation                        | Plate<br>Voltage<br>(volts)                                    | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)                                   | Grid<br>Diss.<br>(watts)   | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| B Audio-Frequency Power Amplifi<br>and Modulator             | ier 3000   | 0.400                      | 400   | 20   | 3000                        | 0.666*                     | 26                        | 1310*                      |
| B Radio-Frequency Linear Powe<br>Amplifier—SSB Grounded-Grid |  | 0.400                      | 400   | 20   | 3000                        | 0.333                      | 32                        | 655                        |
| C Radio-Frequency Power Amplifi<br>and Oscillator            | ier 4000   | 0.350                      | 400   | 20   | 3000                        | 0.333                      | 25                        | 730                        |
| C Plate-Modulated R-F<br>Power Amplifier                     | 3000   | 0.275                      | 270   | 20   | 3000                        | 0.245                      | 18                        | 550                        |
|  |  |                            |   |  | A                           |                            | *T                        | wo tubes                   |

**RF** Power Amplifier Plate Modulated





## 3-500Z

The 3-500Z is a compact power triode intended for use as a zero-bias Class B amplifier in audio or radio-frequency applications. Operation with zero grid bias simplifies associated circuitry by eliminating the bias supply. In addition, grounded-grid operation is attractive because a power gain as high as twenty times can be obtained with the 3-500Z in a cathode-driven circuit.

PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS Radiation and Forced Air COOLING

|  | CHAR  | ACTE                       | RISTI                     | CS                                     |                             |                            |                                     |                            |
|--|---|----------------------------|---------------------------|--|-----------------------------|----------------------------|-------------------------------------|----------------------------|
| Current 14<br>Capacitances:<br>Grid-Filament 7<br>Grid-Plate 4 | .0 volts<br>.5 amper<br>.4 pf<br>.1 pf<br>07 pf | es                         | Maximu                    | m Seal T<br>m Height<br>m Diame<br>ght | t                           |                            | Plate 22<br>Base 20<br>5.87<br>3.43 |                            |
|  |   | n Ratings                  |                           |  | Typical Operation           |                            |                                     |                            |
| Class of Type of Service<br>Operation                          | Plate<br>Voltage<br>(volts)                     | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts)               | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts)           | Output<br>Power<br>(watts) |
| B RF Linear Amplifier, Grounded<br>Grid                        | 4000  | 0.400                      | 500                       | 20                                     | 3000                        | 0.370                      | 30                                  | 750                        |
| B AF Amplifier or Modulator                                    | 4000  | 0.400                      | 500                       | 20                                     | 3000*                       | 0.770                      | 25                                  | 1420*                      |
| C RF Power Amplifier or Oscillator                             |   | The the latest             |                           |  |                             |                            |                                     |                            |

4000

3000

500 watts 110 MHz

## CHADACTEDICTICS

0.350

0.275

| _ | 4 | _ |
|---|---|---|
|   |   | ) |
|   | - | ) |
|   |   |   |

# 8164/3-1000Z

The Eimac 3-1000Z is a zero-bias triode intended for linear amplifier applications. This tube may be used as a class-B R-F amplifier in either the griddriven or cathode-driven connection, or two 3-1000Z's may be used in push-pull as a grid-driven class-B audio amplifier or modulator. At a plate voltage of 3000 volts. 2KW PEP input can be run with a single 3-1000Z, providing a power gain of over 20 in the cathode-driven connection.

MAXIMUM PLATE DISSIPATION 1000 watts FREQUENCY FOR MAXIMUM RATINGS 110 MHz COOLING Radiation and Forced Air

|                           |   | IIMAAP  | CILI                       | 112110                    | 10                       |                             |                            |                           |  |
|---------------------------|---|---|----------------------------|---------------------------|--------------------------|-----------------------------|----------------------------|---------------------------|--|
| V<br>C<br>Capac<br>G<br>G | itances (Grounded Filament) :<br>irid-Filament<br>irid-Plate  | 7.5 volts<br>21.3 amper<br>17.0 pf<br>6.9 pf<br>0.12 pf | res                        | Maximur<br>Maximur        | n Height<br>n Diamet     | eal Temp                    | l.,                        | Eima<br>7.<br>5.          | n, Specia<br>200 °C<br>225 °C<br>88 inche<br>25 inche<br>2 pound |
|                           |   |   | Maximu                     | m Rating                  | 5                        |                             | Typical C                  | Operation                 | 1  |
|                           | ss of Type of Service<br>eration                              | Plate<br>Voltage<br>(volts)                             | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)                                       |
| В                         | Audio-Frequency Power Amplifier<br>and Modulator              | 3000  | 0.800                      | 1000                      | 50                       | 3000                        | 1.340*                     | 42                        | 2570*  |
| В                         | Radio-Frequency Linear Power<br>Amplifier — SSB Grounded-Grid | 3000  | 0.800                      | 1000                      | 50                       | 3000                        | 0.670                      | 65                        | 1360   |
| C                         | Radio-Frequency Power Amplifier<br>and Oscillator             | 6000  | 0.700                      | 1000                      | 50                       | 6000                        | 0.700                      | 57                        | 3300   |
| С                         | Plate-Modulated R-F<br>Power Amplifier                        | 4500  | 0.550                      | 670                       | 50                       | 4500                        | 0.500                      | 35                        | 1765   |
|                           |   | -21   |                            |                           |                          |                             |                            | *T-                       | wo tubes   |

#### EXTERNAL ANODE . FORCED-AIR COOLED

# 8283 / 3CX1000A7

The 3CX1000A7 zero-bias triode features ceramicmetal construction and a mesh thoriated-tungsten filament. Positive socketing is provided by three breechblock terminal surfaces. This tube is intended for class-B linear amplifier service in either the grid-driven or cathode-driven connection. It is equally attractive for use at audio frequencies or at radio frequencies through the TV broadcast bands. It is recommended for use in new equipment.

PLATE DISSIPATION 1000 watts FREQUENCY FOR MAXIMUM RATINGS 220 MHz COOLING. Forced Air

#### CHARACTERISTICS

| illament: Thoriated Tungsten Mesh<br>Voltage<br>Current<br>Capacitances (In Shielded Fixture):<br>Grid-Filament<br>Grid-Plate<br>Plate-Filament<br>Charter | 5.0 volts<br>34 amper<br>35 pf<br>14 pf<br>0.08 pf |                            | Base<br>Socket<br>Maximur<br>Maximur<br>Maximur<br>Net Weig | n Anode<br>n Height<br>n Diamet | Core Tem                    | Eimac                      | 25<br>4.6<br>3.3          |                            |
|--|--|----------------------------|---|---------------------------------|-----------------------------|----------------------------|---------------------------|----------------------------|
|  |  | Maximur                    | n Ratings   | 5                               |                             | Typical C                  | peration                  |                            |
| Class of Type of Service<br>Operation  | Plate<br>Voltage<br>(volts)                        | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)                                   | Grid<br>Diss.<br>(watts)        | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| B Radio-Frequency Linear Power<br>Amplifier, Grounded-Grid—SSB   | 2500   | 1.0                        | 1000  | 45                              | 2500                        | 0.800                      | 65                        | 1250                       |



# 8161/3CX2500A3

This popular high-power triode is widely employed in AM, FM, and TV service. Its coaxial filament and grid terminals insure low-inductance connection to these electrodes and allow operation at maximum ratings through 75 MHz. The use of an external forced-air-cooled anode results in a compact structure with high power-handling capability.

PLATE DISSIPATION 2500 watts FREQUENCY FOR MAXIMUM RATINGS 75 MHz COOLING Forced Air

#### CHARACTERISTICS

| ilament: Tho<br>Voltage<br>Current<br>apacitances:<br>Grid-Filar<br>Grid-Plat<br>Plate-Fila | 49 to<br>ment 29.2 to 4<br>e 16.8 to 2                |                             | res                        | Base<br>Maximum Seal Temp.<br>Maximum Anode-Core Temp.<br>Maximum Height<br>Maximum Diameter<br>Net Weight |                          |                             |                            | Coaxia<br>°C<br>inches<br>inches<br>pounds |                            |  |
|---|---|-----------------------------|----------------------------|--|--------------------------|-----------------------------|----------------------------|--|----------------------------|--|
|   |   |                             | Maximu                     | n Ratings  |                          |                             | Typical C                  | Operation                                  |                            |  |
| Class of<br>Operation   | Type of Service                                       | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)  | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts)                  | Output<br>Power<br>(watts) |  |
| B Audio   | Frequency Power Amplifier<br>and Modulator            | 6000                        | 2.5                        | 2500   | 150                      | 6000                        | 3.0*                       | 113*                                       | 13,000*                    |  |
| C Radio-  | Frequency Power Amplifier,<br>and Oscillator          | 6000                        | 2.5                        | 2500   | 150                      | 6000                        | 2.08                       | 136  | 10,000                     |  |
|   | Frequency Power Amplifier<br>unded-Grid 85 to 110 mc. | 4000                        | 2.0                        | 2500   | 150                      | 4000                        | 1.85                       | 1900                                       | 7500                       |  |
| C Plate-  | Modulated Radio Frequency<br>Power Amplifier          | 5000                        | 2.0                        | 1670   | 150                      | 5000                        | 1.25                       | 115  | 5300                       |  |
|   |   |                             |                            |  |                          |                             |                            | *Two                                       | tubes.                     |  |

22

25

3500

3000

0.300

0.275

20

20

500

320

850

640 \*Two tubes

#### EXTERNAL ANODE . FORCED-AIR COOLED

# 8251/3CX2500F3

This compact, high-power triode has electrical characteristics identical to those of the 3CX2500A3. Coaxial basing is not used, however, and special socketing is not required; conventional grid and filament leads are attached. This tube is frequently employed in industrial-heating or other radio-frequency equipments operating below 30 MHz.

2500 watts PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS 30 MHz COOLING Forced Air

#### CHARACTERISTICS

Filament: Thoriated tungsten Voltage Current 7.5 volts 49 to 54 amperes Capacitances Grid-Filament Grid-Plate Plate-Filament 29.2 to 40.2 pf 16.8 to 23.2 pf 0.6 to 1.2 pf

Maximum Seal Temp. Maximum Anode-Core Temp. Maximum Height Maximum Diameter Net Weight

175 °C 175 °C 18.0 inches 3.625 inches 7.5 pounds

|  |   | Maximun   | n Ratings   |  | Typical Operation  |   |   |   |
|--|---|---|---|--|--|---|---|---|
| Type of Service                                | Plate<br>Voltage<br>(volts)   | Plate<br>Current<br>(amps)  | Plate<br>Diss.<br>(watts)   | Grid<br>Diss.<br>(watts)   | Plate<br>Voltage<br>(volts)  | Plate<br>Current<br>(amps)  | Drive<br>Power<br>(watts)   | Output<br>Power<br>(watts)  |
| io Frequency Power Amplifier<br>and Modulator  | 6000  | 2.5   | 2500  | 150  | 6000   | 3.0*  | 113*  | 13,000*   |
| io-Frequency Power Amplifier<br>and Oscillator | 6000  | 2 5   | 2500  | 150  | 6000   | 2.08  | 136   | 10,000  |
| e-Modulated Radio-Frequency<br>Power Amplifier | 5000  | 2.0   | 1670  | 150  | 5000   | 1.25  | 115   | 5300  |
|  | Arrow Strategy S | Type of Service         Plate Voltage volts           No: Frequency Power Amplifier and Modulator         6000           No: Frequency Power Amplifier and Oscillator         6000           re: Modulated Radio-Frequency         6000 | Type of Service         Plate<br>Voltage         Plate<br>Current<br>volts         Plate<br>Current<br>volts           ho-Frequency Power Amplifier<br>and Modulator         6000         2.5           ho-Frequency Power Amplifier<br>and Oscillator         6000         2.5 | Type of Service         Plate<br>Voltage         Plate<br>Current<br>(amps)         Plate<br>Diss.<br>(watts)           No. Frequency Power Amplifier<br>and Modulator         6000         2.5         2500           Io: Frequency Power Amplifier<br>and Oscillator         6000         2.5         2500           Ie: Frequency Power Amplifier<br>and Oscillator         6000         2.5         2500 | Voltage<br>volts         Current<br>(amps)         Diss.<br>(watts)         Diss.<br>(watts)           ho-Frequency Power Amplifier<br>and Modulator         6000         2.5         2500         150           ho-Frequency Power Amplifier<br>and Oscillator         6000         2.5         2500         150           re-Modulator         6000         2.5         2500         150 | Type of Service         Plate<br>Voltage<br>volts         Plate<br>Eurrent<br>and Modulator         Plate<br>Siss<br>(watts)         Grid<br>Diss.<br>(watts)         Plate<br>Voltage<br>volts           ho-Frequency Power Amplifier<br>and Oscillator         6000         2.5         2500         150         6000           to-Frequency Power Amplifier<br>and Oscillator         6000         2.5         2500         150         6000           te-Modulated Radio-Frequency         6000         2.5         2500         150         6000 | Type of Service         Plate<br>Voltage<br>volts         Plate<br>Current<br>volts         Plate<br>Diss.<br>(watts)         Ord<br>Diss.<br>(watts)         Plate<br>Voltage<br>(watts)         Plate<br>Voltage<br>volts         Plate<br>Current<br>volts         Plate<br>Diss.<br>(watts)         Plate<br>Diss.<br>(watts)         Plate<br>Diss.<br>(watts) | Type of Service         Plate<br>Voltage<br>volts         Plate<br>Current<br>amps         Plate<br>Diss.<br>watts         Orde<br>Diss.<br>(watts)         Plate<br>Voltage<br>(watts)         Plate<br>Voltage<br>(watts)         Plate<br>Diss.<br>(watts)         Plate<br>Voltage<br>(watts)         Plate<br>Voltage<br>( |



# 3CX2500H3

The 3CX2500H3 is an air-cooled ceramic-metal power triode designed primarily for use in industrial radio-frequency heating services. Its air-cooled anode is conservatively rated at 2500 watts of plate dissipation with low air flow and pressure drop. The tube's grid structure is rated at 150 watts making it an excellent choice for severe applications.

PLATE DISSIPATION 2500 watts FREQUENCY FOR MAXIMUM RATINGS 75 MHz COOLING Forced Air

|                                       | 7.5 volts<br>53 amper<br>40.2 pf (ma<br>23.2 pf (ma<br>1.2 pf (ma | ix)<br>ix)                 | Maximum Height<br>Maximum Diameter<br>Net Weight |                          |                             |                            | Special<br>Special<br>250 °C<br>18.437 inches<br>4.156 inches<br>6.5 pounds |                            |
|---------------------------------------|---|----------------------------|--|--------------------------|-----------------------------|----------------------------|---|----------------------------|
|                                       |   | Maximur                    | n Rating   | s                        | Typical Operation           |                            |   |                            |
| Class of Type of Service<br>Operation | Plate<br>Voltage<br>(volts)                                       | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)                        | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts)   | Output<br>Power<br>(watts) |
| C RF Industrial Oscillator            | 6000  | 2.5                        | 2500   | 150                      | 6000                        | 2.08                       | 136   | 10,000                     |

CHARACTERISTICS



# 8238/3CX3000A1 This high-power compact triode was specifically de-

signed to be used in class-AB1 audio-amplifier service. Two tubes will typically deliver 10,000 watts output in such service. The 3CX3000A1 uses coaxial electrode terminals and may be installed or removed with a minimum of delay.

PLATE DISSIPATION GRID DISSIPATION COOLING

Filament: Thoriated tungsten Voltage Current Capacitances : Grid-Filar

| Current 49 to<br>Capacitances:<br>Grid-Filament<br>Grid-Plate | 7.5 volts<br>54 ampe<br>29 pf<br>17 pf<br>2.5 pf |                            | Base<br>Maximun<br>Maximun<br>Maximun<br>Maximun<br>Net Weig | n Anode-<br>n Height<br>n Diamet | Core Tem                    | ip.                        | 175<br>8.594<br>4.156     | Coaxia<br>5 °C<br>5 °C<br>4 inches<br>5 inches<br>5 pounds |
|---|--|----------------------------|--|----------------------------------|-----------------------------|----------------------------|---------------------------|--|
|   |  | Maximu                     | m Rating   |                                  |                             | 1                          |                           |  |
| Class of Type of Service<br>Operation                         | Plate<br>Voltage<br>(volts)                      | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)                                    | Grid<br>Diss.<br>(watts)         | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)                                 |
| AB1 Audio-Frequency Power Amplifier<br>and Modulator          | 6000   | 2.5                        | 3000   |                                  | 6000                        | 2.65*                      | 0                         | 10,000*  |
| L   | 1  |                            |  |                                  |                             |                            | *Two                      | o tubes.   |

CHARACTERISTICS

Base



# 8239/3CX3000F1 This low-mu high-power triode is electrically iden-

tical to the 3CX3000A1. Physically, however, coaxial terminals have been replaced by heavy leads and a special socket is not needed. Typically, 10,000 watts audio may be obtained from two tubes in a class-AB1 amplifier.

PLATE DISSIPATION GRID DISSIPATION COOLING

3000 watts 50 watts Forced Air

3000 watts

Forced Air

50 watts

#### CHARACTERISTICS

| Filament: Thoriated tungsten<br>Voltage<br>Current 49 to<br>Capacitances:<br>Grid-Filament<br>Grid-Plate<br>Plate-Filament | 7.5 volts<br>54 amper<br>29 pf<br>17 pf<br>2.5 pf | es                         | Maximun<br>Maximun<br>Maximun<br>Net Weig | n Anode-<br>n Diamet     | Core Tem                    | p.                         | 4.156                     | °C<br>°C<br>inches<br>pounds |
|--|---|----------------------------|---|--------------------------|-----------------------------|----------------------------|---------------------------|------------------------------|
|  |   | Maximu                     | num Ratings Typical Operation             |                          |                             |                            | 1                         |                              |
| Class of Type of Service<br>Operation  | Plate<br>Voltage<br>(volts)                       | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)                 | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)   |
| AB1 Audio-Frequency Power Amplifier<br>and Modulator   | 6000  | 2.5                        | 3000                                      | _                        | 6000                        | 2.65*                      | 0                         | 10,000*                      |

\*Two tubes.

175 00

Coaxial

#### EXTERNAL ANODE # FORCED-AIR COOLED

# 

# 3CX3000A7

The Eimac 3CX3000A7 is a zero-bias triode intended for class-B linear amplifier applications. Operation with zero grid bias offers circuit simplicity by eliminating the bias supply. In addition, groundedgrid operation is attractive since a power gain of over twenty times can be obtained with the 3CX3000A7 in the cathode-driven connection. Because of its very high mu (200), this tube is also attractive for certain pulse modulator and voltage regulator applications.

| PLATE DISSIPATION             | 3000 watts |
|-------------------------------|------------|
| FREQUENCY FOR MAXIMUM RATINGS | 75 MHz     |
| COOLING                       | Forced Air |

| Filament: Thoriated         | tungsten |
|-----------------------------|----------|
| Voltage<br>Current          |          |
| Capacitances:               |          |
| Grid-Filament<br>Grid-Plate |          |
| Plate-Filament              |          |

#### CHARACTERISTICS

| 7.5 v<br>51 a<br>38<br>24<br>0.6 | ampei<br>pf<br>pf | res     | Maximun<br>Maximun<br>Maximun<br>Maximun<br>Net Weig | n Anode<br>n Height<br>n Diame | Core Ten | np.       | 8.5<br>4.1 | 75 °C<br>75 °C<br>94 inches<br>56 inches<br>55 pound |
|----------------------------------|-------------------|---------|--|--------------------------------|----------|-----------|------------|--|
|                                  |                   | Maximun | n Ratings  |                                |          | Typical ( | Operation  | 1  |
| P                                | late              | Plate   | Plate  | Grid                           | Plate    | Plate     | Drive      | Output   |

|   |   |                             | Maximun                    | n Ratings                 |                          |                             | 1                          |   |                          |
|---|---|-----------------------------|----------------------------|---------------------------|--------------------------|-----------------------------|----------------------------|---|--------------------------|
|   | ss of Type of Service<br>tration                              | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts)<br>120<br>215<br>15 | Output<br>Power<br>watts |
| 8 | Audio-Frequency Power<br>Amplifier or Modulator               | 5000                        | 2.5                        | 3000                      | 225                      | 4000                        | 4.0*                       | 120   | 11,000*                  |
| В | Radio-Frequency Linear Power<br>Amplifier, Grounded-Grid SSB  | 5000                        | 2.5                        | 3000                      | 225                      | 5000                        | 1.56                       | 215   | 5500                     |
| B | Radio-Frequency Linear Power<br>Amplifier, Carrier Conditions | 5000                        | 2.5                        | 3000                      | 225                      | 4000                        | 0.815                      | 15  | 1100                     |
|   |   |                             |                            |                           |                          |                             |                            |   |                          |

\*Two tubes.



# 8162/3CX3000F7 This tube is identical to the 3CX3000A7 except for

the addition of heavy grid and filament leads to simplify socketing problems. A pair of these tubes as audio amplifiers will deliver over 10 kilowatts output power.

| PLATE DISSIPATION             | 3000 watts |
|-------------------------------|------------|
| FREQUENCY FOR MAXIMUM RATINGS | 30 MHz     |
| COOLING                       | Forced Air |

| Filament: Tho<br>Voltage<br>Current                    | iated tungsten |
|--|----------------|
| Capacitances<br>Grid-Filan<br>Grid-Plate<br>Plate-Fila |                |
| Class of<br>Operation                                  | Type of Servio |

#### CHARACTERISTICS

| Filament: Thoriated tungsten<br>Voltage<br>Current<br>Capacitances:<br>Grid-Filament<br>Grid-Pilate<br>Plate-Filament | 7.5 volts<br>51 amper<br>38 pf<br>24 pf<br>0.6 pf | es                         | Maximun<br>Maximun<br>Maximun<br>Net Weig | n Anode<br>n Height<br>n Diamet | Core Tem                    | p.                         | 17<br>8.59<br>4.15        | 5 °C<br>5 °C<br>4 inches<br>6 inches<br>5 pounds |  |  |  |
|---|---|----------------------------|---|---------------------------------|-----------------------------|----------------------------|---------------------------|--|--|--|--|
|   |   | Maximu                     | m Ratings                                 | 6                               |                             | Typical C                  | peration                  |  |  |  |  |
| Class of Type of Service<br>Operation   | Plate<br>Voltage<br>(volts)                       | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)                 | Grid<br>Diss.<br>(watts)        | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)                       |  |  |  |
| B Audio-Frequency Power<br>Amplifier or Modulator   | 5000  | 2.5                        | 3000                                      | 225                             | 4000                        | 4.0*                       | 120                       | 11,000*  |  |  |  |
| B Radio-Frequency Linear Power<br>Amplifier, Grounded-Grid—SSB  | 5000  | 2.5                        | 3000                                      | 225                             | 5000                        | 1.56                       | 215                       | 5500   |  |  |  |
| B Radio-Frequency Linear Power<br>Amplifier, Carrier Conditions   | 5000  | 2.5                        | 3000                                      | 225                             | 4000                        | 0.815                      | 15                        | 1100   |  |  |  |
|   |   |                            |   |                                 |                             |                            |                           |  |  |  |  |

\*Two tubes.



# 3CX5000A3

The 3CX5000A3 is a medium-mu triode designed primarily for use in industrial radio-frequency heating service. A socket is not required because a grid contact flange is provided for bolting the tube directly to the grid deck.

PLATE DISSIPATION 5000 watts FREQUENCY FOR MAXIMUM RATINGS 90 MHz COOLING Forced Air

#### CHARACTERISTICS

| Filament: Thoriated tungsten<br>Voltage<br>Current<br>Capacitances:<br>Grid-Filament<br>Grid-Plate<br>Plate-Filament | 7.5 volts<br>78 amper<br>53 pf<br>2.5 pf<br>1.5 pf | es                         | Maximu                    | m Seal T<br>m Height<br>m Diame<br>ght | t                           |                            | 8.75                      | Specia<br>Specia<br>0 °C<br>0 inches<br>4 inches<br>0 pounds |  |
|--|--|----------------------------|---------------------------|--|-----------------------------|----------------------------|---------------------------|--|--|
|  |  | Maximur                    | n Rating                  | s                                      |                             | Typical Operation          |                           |  |  |
| Class of Type of Service<br>Operation  | Plate<br>Voltage<br>(volts)                        | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Current<br>(amps)              | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)                                   |  |
| C RF Industrial Oscillator   | 10,000   | 3.0                        | 5000                      | 0.5                                    | 9000                        | 2.53                       | 208                       | 18,600   |  |



# 3CX5000H3

The 3CX5000H3 is an air-cooled ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its air-cooled anode is conservatively rated at 5000 watts maximum plate dissipation with low pressure drop. The grid structure is rated at 150 watts making this tube an excellent choice for severe applications.

PLATE DISSIPATION 5000 watts FREQUENCY FOR MAXIMUM RATINGS 90 MHz COOLING Forced Air

| Filament: Thoriated tungsten<br>Voltage<br>Current<br>Capacitances:<br>Grid-Filament<br>Grid-Plate<br>Plate-Filament | 7.5 volts<br>78 amperes (n<br>53 pf<br>25 pf<br>1.5 pf | Maximu          | im Seal Temp.<br>m Height<br>m Diameter<br>ight  | Special<br>Special<br>250 °C<br>17.750 inches<br>6.400 inches<br>10 pounds |
|--|--|-----------------|--|--|
|  | Maxi   | mum Ratings     | Typical  | Operation  |
| Class of Type of Service<br>Operation  | Plate Pla<br>Voltage Curr<br>(volts) (am               | ent Diss. Diss. | Plate Plate<br>Voltage Current<br>(volts) (amps) |  |
| C RF Industrial Oscillator   | 10,000 3   | 0 5000 150      | 9000 2.52  | 208 18,600   |

#### EXTERNAL ANODE . FORCED-AIR COOLED

# 8158/3CX10,000A1

#### The Eimac 3CX10,000A1 is a ceramic-metal low-mu power triode intended for use as a linear amplifier in audio or RF applications requiring high output power with zero driving power. It features a large thoriated - tungsten filament with ample reserve emission and an integral anode cooler with the inherent ability to withstand large overloads. This tube is particularly well suited for use in audio modulators and vibration testing equipment amplifiers supplying up to 25 KW of output power (two tubes, push-pull).

| PLATE DISS | IPATI | ON      |         | 12,000 watts |
|------------|-------|---------|---------|--------------|
| GRID DISSI | PATIC | N       |         | 100 watts    |
| FREQUENCY  | FOR   | MAXIMUM | RATINGS | 140 MHz      |
| COOLING    |       |         |         | Forced Air   |

X10,000A

# 8159/3CX10,000A3

Here is a ceramic-metal medium-mu triode designed for industrial-heating oscillator service. It features a large thoriated-tungsten filament with ample reserve emission and an integral anode cooler with the inherent ability to withstand large overloads. It is intended for use through 140 MHz, also as a grounded-grid FM amplifier developing 20 kilowatts useful output power.

| PLATE DISS | IPATI | ON      |         | 12,000 | watts  |
|------------|-------|---------|---------|--------|--------|
| GRID DISSI | PATIC | N       |         | 250    | watts  |
| REQUENCY   | FOR   | MAXIMUM | RATINGS | 140    | MHz    |
| COOLING    |       |         |         | Force  | ed Air |
|            |       |         |         |        |        |

|  |   | 200 Sectors 200 Sectors |                           |                          |                             |                            |  |                            |
|--|---|-------------------------|---------------------------|--------------------------|-----------------------------|----------------------------|--|----------------------------|
| Filament: Thoriated tungsten<br>Voltage<br>Current<br>Capacitances (Grounded Filame<br>Grid-Filament<br>Grid-Plate<br>Plate-Filament | 7.5 volt:<br>94.0 to 104.0 amp<br>nt):<br>45.0 to 57.0 pf<br>25.0 to 32.0 pf<br>3.4 to 4.2 pf |                         | Maximur<br>Maximur        | n Height<br>n Diamet     | Core Tem                    | ıp.                        | Eimac<br>8.1<br>7.0<br>1<br>ypical Operation |                            |
|  |   | Maximu                  | m Rating                  | 5                        |                             | Typical (                  | <b>Operation</b>                             | i.                         |
| Class of Type of Service<br>Operation  | e Plate<br>Voltag<br>(volts   | e Current               | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts)                    | Output<br>Power<br>(watts) |
| AB1 Audio-Frequency Power<br>or Modulator  | Amplifier 7000  | 5.0                     | 12,000                    | 100                      | 7000                        | 7.40*                      | 0  | 29,100*                    |
| C Radio-Frequence<br>Industrial Oscilla  |   | 4.0                     | 10,000                    | 100                      | 5000                        | 2.75                       | -  | 11,000                     |
| A Voltage Regulator S  | ervice 7000   | **                      | 12,000                    | 100                      | 0-5000                      | **                         | 0  |                            |

CHARACTERISTICS

|                           | L. L   | - UAH                       | ACIE   | RISIN                     | 20                       |   |                            |                           |                            |
|---------------------------|--|-----------------------------|--|---------------------------|--------------------------|---|----------------------------|---------------------------|----------------------------|
| V<br>C<br>Capac<br>G<br>G | ament Thoriated tungsten<br>Voltage 94 to I<br>current 94 to I<br>gacitances (Grounded Filament)<br>Grid-Filament 48.0 to 50<br>Grid-Plate 30.0 to 30<br>Plate-Filament 1.20 to 1. |                             | Base<br>Socket<br>Maximum Seal Temp.<br>Maximum Anode-Core Tem<br>Maximum Deight<br>Maximum Diameter<br>Net Weight |                           |                          | Coaxia<br>Eimac SK-1300<br>1p. 250 °C<br>8.50 inche<br>7.00 inche<br>12 pound |                            |                           |                            |
|                           |  |                             | Maximu   | n Ratings                 | ē.                       |   | Typical (                  | Operation                 | J.                         |
|                           | ss of Type of Service<br>sration   | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps)   | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts)   | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| C                         | Radio-Frequency<br>Industrial Oscillator   | 7000                        | 4.0  | 10,000                    | 250                      | 7000  | 4.0                        |                           | 22,400                     |
| AB <sub>2</sub>           | Radio-Frequency Linear Power<br>Amplifier SSB, Grounded-Grid   | 7000                        | 5.0  | 12,000                    | 250                      | 7000  | 4.0                        | 2050                      | 20,000                     |
| С                         | Radio-Frequency Power Amplifier,<br>Grounded-Grid  | 7000                        | 4.0  | 10,000                    | 250                      | 7000  | 4.0                        | 4100                      | 24,500                     |
| С                         | Plate-Modulated R-F<br>Power Amplifier   | 5500                        | 3.0  | 6500                      | 250                      | 5000  | 3.0                        | 515                       | 12,400                     |

CHARACTERISTICS



# 3CX10,000H3

The 3CX10,000H3 is an air-cooled ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its air-cooled anode is conservatively rated at 10,000 watts of plate dissipation. Input of 40,000 watts is permissible up to 90 MHz. Plentiful reserve emission is available from its 750 watt filament. The grid structure is rated at 250 watts.

PLATE DISSIPATION 10,000 watts FREQUENCY FOR MAXIMUM RATINGS 90 MHz COOLING Forced Air

#### CHARACTERISTICS

| Filament: Thoriated tungsten<br>Voltage<br>Current<br>Capacitances: | 7.5 volts<br>104 amper      |                                | Base<br>Socket<br>Maximum Seal Temp.<br>Maximum Height |                          |                             | Speci<br>Specia<br>250 °C<br>15.8 inches<br>7.050 inches<br>12 pound<br>al Operation |                           |                            |
|---|-----------------------------|--------------------------------|--|--------------------------|-----------------------------|--|---------------------------|----------------------------|
| Grid-Filament<br>Grid-Plate<br>Plate-Filament                       | 58 pf<br>38 pf<br>1.5 pf    | Maximum Diameter<br>Net Weight |  |                          |                             |  |                           |                            |
| Class of Type of Service<br>Operation                               | Plate<br>Voltage<br>(volts) | Plate                          | Plate<br>Diss.<br>(watts)                              | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate  | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| C RF Industrial Oscillator  | 10,000                      | 4.0                            | 10,000   | 250                      | 9000                        | 4.0  | 570                       | 29,000                     |



# 8160/3CX10,000A7

The Eimac 3CX10,000A7 is a ceramic-metal zerobias triode intended for use in grounded-grid linear amplifiers delivering 20 kilowatts of useful output power. Because of its low intermodulation distortion characteristics the 3CX10,000A7 is particularly well suited for single-sideband amplifiers. Two tubes operating in a push-pull audio amplifier under class B zero-bias conditions will deliver up to 45 kilowatts of useful output power.

| PLATE DISSI | DATI    | ON | 1       | 2.000 | watte |
|-------------|---------|----|---------|-------|-------|
| GRID DISSI  |         |    | 1       |       | watts |
| FREQUENCY   | 1233337 |    | RATINGS |       | MH    |
| COOLING     |         |    |         | Force | d Ai  |

| volts<br>ampere<br>pf<br>pf<br>I | S N<br>N<br>N<br>N<br>N<br>N | lase<br>locket<br>Maximum<br>Maximum<br>Maximum<br>Naximum<br>Let Weigh | Anode C<br>Height<br>Diamete   | ore Temp   | ۱.  | 250<br>250<br>8.5  | SK-130<br>)°C<br>)°C<br>inches   |  |
|----------------------------------|------------------------------|---|--|--|---|--|--|--|
| 1                                |                              |   |  |  |   |  | Coaxial<br>SK-1300<br>D °C<br>D °C<br>5 inches<br>0 inches<br>2 pounds   |  |
|                                  | Maximum                      | 1 Ratings   | 1  |  | Typical O   | peration   | li -   |  |
| Plate<br>oltage<br>volts)        | Plate<br>Current<br>(amps)   | Plate<br>Diss.<br>(watts)   | Grid<br>Diss.<br>(watts)   | Plate<br>Voltage<br>(volts)  | Plate<br>Current<br>(amps)  | Drive<br>Power<br>(watts)  | Outpu<br>Powe<br>(watts  |  |
| 7000                             | 5.0                          | 12,000  | 500  | 7000   | 10.0*   | 560*   | 47,700   |  |
| 7000                             | 5.0                          | 12,000  | 500  | 7000   | 5.0   | 1540   | 24,20  |  |
| 7000                             | 4.0                          | 10,000  | 500  | 7000   | 4.0   | 430  | 21,30  |  |
| 5500                             | 3.0                          | 6500  | 500  | 5000   | 3.0   | 380  | 11,90  |  |
| 2 17 17                          | 7000<br>7000<br>7000<br>7000 | voltš) (amps)<br>7000 5.0<br>7000 5.0<br>7000 4.0                       | volts         (amps)         (watts)           7000         5.0         12,000           7000         5.0         12,000           7000         4.0         10,000 | volts         (amps)         (watts)         (watts)           7000         5.0         12,000         500           7000         5.0         12,000         500           7000         4.0         10,000         500 | volts         (amps)         (watts)         (watts)         (watts)         (volts)           7000         5.0         12,000         500         7000           7000         5.0         12,000         500         7000           7000         4.0         10,000         500         7000 | volts         (amps)         (watts)         (watts)         (volts)         (amps)           7000         5.0         12,000         500         7000         10.0*           7000         5.0         12,000         500         7000         5.0           7000         4.0         10,000         500         7000         4.0 | volts         (amps)         (watts)         (watts)         (wolts)         (amps)         (watts)           7000         5.0         12,000         500         7000         10.0*         560*           7000         5.0         12,000         500         7000         5.0         1540           7000         4.0         10,000         500         7000         4.0         430 |  |

#### EXTERNAL ANODE . FORCED-AIR COOLED

# 3CX15,000A3

The 3CX15,000A3 is a medium-mu triode designed especially for rf heating service. Six amperes of dc plate current is available from a one kilowatt filament and the grid structure is rated at 500 watts. Adequate forced-air cooling permits 15 kilowatts of plate dissipation. The 3CX15,000A3 is also useful as a linear or plate-modulated rf amplifier.

| PLATE DISS | IPATI | ON      | 1       | 5,000 watts |
|------------|-------|---------|---------|-------------|
| GRID DISSI | PATIC | IN      |         | 500 watts   |
| FREQUENCY  | FOR   | MAXIMUM | RATINGS | 100 MHz     |
| COOLING    |       |         |         | Forced Air  |

|                 | C  | папа                        | CIEF                        | 13110   | ,5                              |                             |                            |                           |  |
|-----------------|--|-----------------------------|-----------------------------|---|---------------------------------|-----------------------------|----------------------------|---------------------------|--|
| Capa            | citances (Grounded Filament):<br>Grid-Filament 40.0 to 5<br>Grid-Plate 30.0 to 3 |                             | res                         | Base<br>Socket<br>Maximur<br>Maximur<br>Maximur<br>Net Weig | n Anode<br>n Height<br>n Diamet | Core Terr                   | ıp.                        |                           | Coaxia<br>c SK-1300<br>250°C<br>250°C<br>8.5 inches<br>7.0 inches<br>12 pounds |
|                 |  | Maximum Ratings             |                             |   | Typical Operation               |                             |                            |                           |  |
|                 | iss of Type of Service<br>eration  | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps.) | Plate<br>Diss.<br>(watts)                                   | Grid.<br>Diss.<br>(watts)       | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)   |
| С               | Radio-Frequency<br>Oscillator or Amplifier                                       | 10,000                      | 6.0                         | 15,000  | 500                             | 10,000                      | 4.3                        | 75                        | 33,000   |
| AB <sub>2</sub> | Radio-Frequency Linear Power<br>Amplifier  | 10,000                      | 6.0                         | 15,000  | 500                             | 10,000                      | 4.8                        | 2050                      | 33,000   |
| C               | Plate-Modulated RF<br>Power Amplifier  | 7000                        | 5.0                         | 10,000  | 500                             | 7000                        | 5.0                        | 750                       | 27,500   |
|                 |  |                             |                             |   |                                 |                             |                            |                           |  |

CHARACTERISTICS



9 3CX 15,500A

# 3CX15,000H3

The 3CX15,000H3 is an air-cooled ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its air-cooled anode is rated at 15,000 watts of plate dissipation. Plentiful reserve emission is available from its 1000 watt filament. The grid structure is rated at 500 watts making this tube an excellent choice for severe applications.

PLATE DISSIPATION 15,000 watts FREQUENCY FOR MAXIMUM RATINGS 90 MHz COOLING Forced Air

#### CHARACTERISTICS

| 'ilament: Thoriated tungsten<br>Voltage<br>Current<br>Capacitances:<br>Grid-Filament<br>Grid-Plate<br>Plate-Filament | 6.3 volts<br>172 amper<br>58 pf<br>38 pf<br>1.5 pf | es (max)                   |                           | Maximu                   | m Seal T<br>m Height<br>m Diame<br>ght |                            | 17.75                     | Specia<br>Specia<br>0 °C<br>0 inches<br>0 inches<br>3 pounds |
|--|--|----------------------------|---------------------------|--------------------------|--|----------------------------|---------------------------|--|
|  | Maximum Ratings                                    |                            |                           | s Typical                |  |                            | Operation                 |  |
| Class of Type of Service<br>Operation  | Plate<br>Voltage<br>(volts)                        | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts)            | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)                                   |
| C RF Industrial Oscillator   | 12,000   | 6.0                        | 15,000                    | 500                      | 10,000                                 | 5.0                        | 650                       | 41,200   |



## 3CX20,000A3

The 3CX20,000A3 is a ceramic and metal air-cooled power triode intended for use in radio frequency heating, plate-modulated AM transmitters and grounded grid FM transmitter service.

PLATE DISSIPATION 20,000 watts FREQUENCY FOR MAXIMUM RATINGS 110 MHz COOLING Forced Air

#### CHARACTERISTICS

|   | .0 pf                       | es                         | Base<br>Socket<br>Maximur<br>Maximur<br>Maximur<br>Net Weig | n Anode<br>n Heigh<br>n Diame | Temp.                       |                            | 25<br>25<br>1             | Coaxia<br>SK-1300<br>0 °C<br>0 °C<br>0 inches<br>8 inches<br>5 pounds |
|---|-----------------------------|----------------------------|---|-------------------------------|-----------------------------|----------------------------|---------------------------|---|
|   |                             | Maximu                     | m Rating  | s                             |                             | Typical                    | Operatio                  | n   |
| Class of Type of Service<br>Operation                                     | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)                                   | Grid<br>Diss.<br>(watts)      | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)  |
| C Radio-Frequency Power Amplifier<br>or Oscillator                        | 12,000                      | 9.0                        | 20,000  | 750                           | 11,000                      | 6.8                        | 1620                      | 60,000  |
| C Plate-Modulated Radio-Frequency<br>Power Amplifier (Carrier Conditions) | 6500                        | 5.5                        | 13,000  | 750                           | 6500                        | 5.0                        | 1500                      | 25,000  |
| AB Radio Frequency Linear Amplifier                                       | 12,000                      | 9.0                        | 20,000  | 750                           | 10,000                      | 6.0                        | 215                       | 40,000  |



# 3CX20,000H3

The 3CX20,000H3 is a ceramic and metal air-cooled power triode intended for use in radio frequency heating and plate-modulated AM transmitters.

PLATE DISSIPATION 20,000 watts FREQUENCY FOR MAXIMUM RATINGS 110 MHz COOLING Forced Air

|   | 0 pf                        | es                         | Base<br>Maximun<br>Maximur<br>Maximur<br>Net Weig | n Anode<br>n Height<br>n Diame | Temp.                       |                            | 25<br>1                   | Special<br>0 °C<br>0 °C<br>0 inches<br>3 inches<br>1 pounds |
|---|-----------------------------|----------------------------|---|--------------------------------|-----------------------------|----------------------------|---------------------------|---|
|   |                             | Maximu                     | m Ratings   | 5                              |                             | Typical (                  | Operatio                  | n   |
| Class of Type of Service<br>Operation                                     | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)                         | Grid<br>Diss.<br>(watts)       | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)                                  |
| C Radio-Frequency Power Amplifier<br>or Oscillator                        | 12,000                      | 9.0                        | 20,000  | 750                            | 11,000                      | 6.8                        | 1620                      | 60,000  |
| C Plate-Modulated Radio-Frequency<br>Power Amplifier (Carrier Conditions) | 6500                        | 5.5                        | 13,000  | 750                            | 6500                        | 5.0                        | 1500                      | 25,000  |
| AB Radio Frequency Linear Amplifier                                       | 12,000                      | 9.0                        | 20,000  | 750                            | 10,000                      | 6.0                        | 215                       | 40.000  |

#### EXTERNAL ANODE # FORCED-AIR COOLED

## 6697A

This popular triode finds wide use in industrial and broadcast equipment. The 6697A is all ceramicmetal construction for increased tube reliability. The anode is constructed of copper disk fins; forcedair cooling is required for rated plate dissipation of 35 kilowatts.

| PLATE DISSIPATION             | 35,000 watts |
|-------------------------------|--------------|
| GRID DISSIPATION              | 750 watts    |
| FREQUENCY FOR MAXIMUM RATINGS | 5 30 MHz     |
| COOLING                       | Forced Air   |

|  | ····        |
|--|-------------|
| Filament: Thoriated tungsten<br>Voltage            | 13 volts    |
| Current  | 205 amperes |
| Capacitances (Grounded Filament):<br>Grid-Filament | 76 pf       |
| Grid-Plate   | 55 pf       |
| Plate-Filament                                     | 2.7 pf      |
|  | Ma          |

#### **CHARACTERISTICS**

Terminals Maximum Seal Temp. Maximum Anode-Core Temp. Maximum Height Maximum Diameter Net Weight

Coaxial 250°C 250°C 19.75 inches 5.3 inches 45 pounds

| Caj | pacitances (Grounded Filament):<br>Grid-Filament<br>Grid-Plate<br>Plate-Filament | 76 pf<br>55 pf<br>2.7 pf    |                            | Maximun<br>Maximun<br>Net Weig | n Diamet                 | er                          |                            |                           | 0.75 inches<br>5.3 inches<br>45 pounds |
|-----|--|-----------------------------|----------------------------|--------------------------------|--------------------------|-----------------------------|----------------------------|---------------------------|--|
|     |  |                             | Maximur                    | n Ratings                      |                          |                             | Typical (                  | Operation                 | n                                      |
|     | Class of Type of Service<br>Operation  | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)      | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)             |
| B   | Audio Frequency Power Amplifier<br>or Modulator                                  | 16,000                      | 11.0                       | 35,000                         | 750                      | 10,000                      | 17.4 *                     | 550 *                     | 110,000*                               |
| C   | Radio-Frequency Power Amplifier<br>or Oscillator                                 | 16,000                      | 11.0                       | 35,000                         | 750                      | 10,000                      | 10.0                       | 1400                      | 70,000                                 |
| С   | Plate-Modulated RF<br>Power Amplifier  | 10,000                      | 8.5                        | 23,000                         | 750                      | 10,000                      | 8.2                        | 2080                      | 60,000                                 |
|     |  |                             |                            |                                |                          |                             |                            | *Tw                       | o tubes.                               |

#### EXTERNAL ANODE . WATER COOLED



1231

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# 8240/3CW5000A1

The 3CW5000A1 is a water-cooled version of the 3CX3000A1 and is useful in audio service when reserve anode dissipation is needed or when water is easily employed as a coolant. It has coaxial terminals which allow rapid tube installation or removal.

PLATE DISSIPATION **GRID DISSIPATION** COOLING

|       | 5000 watts     |
|-------|----------------|
|       | 50 watts       |
| Water | and Forced Air |

| Current 49 to<br>Capacitances :<br>Grid-Filament<br>Grid-Plate | 7.5 volts<br>54 amper<br>29 pf<br>17 pf<br>2.5 pf | es                         | Maximur                   | n Diamet                 |                             |                            | 3.625                     | Coaxi<br>°C<br>inches<br>inches<br>pound |
|--|---|----------------------------|---------------------------|--------------------------|-----------------------------|----------------------------|---------------------------|--|
|  | 1   | Maximu                     | m Rating                  | 5                        |                             | Typical C                  | peration                  |  |
| Class of Type of Service<br>Operation                          | Plate<br>Voltage<br>(volts)                       | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Outpu<br>Powe<br>(watts                  |
| AB1 Audio-Frequency Power Amplifier<br>and Modulator           | 6000  | 2.5                        | 5000                      | -                        | 6000                        | 2.65*                      | 0                         | 10,00                                    |
|  | 11  |                            |                           |                          |                             |                            | *Two                      | tubes.                                   |

**CHARACTERISTICS** 



# 8241/3CW5000F1 The 3CW5000F1 is a water-cooled version of the

3CX3000F1. Conventional grid and filament leads allow installation without special socketing. It is designed for use in audio-amplifier applications where plate dissipation may be as high as 5000 watts or for similar service when water cooling is preferred.

PLATE DISSIPATION **GRID DISSIPATION** COOLING

|       | 5000 watts     |
|-------|----------------|
|       | 50 watts       |
| Water | and Forced Air |

#### CHARACTERISTICS Filament: Thoriated tungsten Maximum Seal Temp. 250 °C 3.625 inches Voltage Current Capacitances: Grid-Filament Grid-Plate Plate-Filament 7.5 volts Maximum Diameter 49 to 54 amperes Net Weight 4.8 pounds 29 pf 17 pf 2.5 pf Maximum Ratings **Typical Operation** Output Power (watts) Class of Type of Service Plate Plate Plate Grid Plate Plate Drive Operation Voltage (volts) Current (amps) Diss. (watts) Diss. (watts) Voltage Current Power (volts) (amps) (watts) AB1 Audio-Frequency Power Amplifier and Modulator 6000 2.5 5000 6000 2 65\* 0 10.000





# 8242/3CW5000A3 This water-cooled version of the 3CX2500A3 is for

use in equipments where water is the preferred cooling medium or where additional plate-dissipation capability is required. It, too, is coaxial based and may be employed at maximum ratings through 75 MHz

PLATE DISSIPATION 5000 watts FREQUENCY FOR MAXIMUM RATINGS 75 MHz COOLING Water and Forced Air

| V<br>C<br>Capac<br>G<br>G | itances :<br>rid-Filament<br>rid-Plate             | 7.5 volts<br>54 ampei<br>36 pf<br>20 pf<br>1.2 pf | res                        | Base<br>Maximur<br>Maximur<br>Maximur<br>Net Weig | n Height<br>n Diamet     | - 10-                       |                            | 3.625                     | Coaxia<br>°C<br>2 inches<br>5 inches<br>5 pounds |
|---------------------------|--|---|----------------------------|---|--------------------------|-----------------------------|----------------------------|---------------------------|--|
|                           |  |   | Maximu                     | n Ratings   |                          |                             | Typical C                  | peration                  | 1  |
| Clas<br>Ope               | s of Type of Service<br>ration                     | Plate<br>Voltage<br>(volts)                       | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)                         | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)                       |
| AB <sub>2</sub>           | Audio-Frequency Power Amplifier<br>and Modulator   | 6000  | 2.5                        | 5000  | 150                      | 5000                        | 2.26*                      | 59*                       | 8000*  |
| В                         | Audio-Frequency Power Amplifier<br>and Modulator   | 6000  | 2.5                        | 5000  | 150                      | 6000                        | 3.0*                       | 113*                      | 13.000*  |
| С                         | Radio-Frequency Power Amplifier<br>and Oscillator  | 6000  | 2.5                        | 5000  | 150                      | 6000                        | 2.08                       | 136                       | 10,000   |
| C                         | Plate-Modulated Radio-Frequency<br>Power Amplifier | 5000  | 2.0                        | 3350  | 150                      | 5000                        | 1.45                       | 76                        | 5580   |
|                           |  |   |                            |   | ~ ~ ~ ~ ~                |                             |                            | *Two                      | tubes.   |

EXTERNAL ANODE . WATER COOLED

# 8243/3CW5000F3 The 3CW5000F3 is electrically identical to the

3CX2500F3 except for plate-dissipation rating. Its water-cooled anode with 5000-watt capability makes it an ideal choice for equipments where high power must be dissipated or where it is more convenient to cool with water than forced air. Conventional grid and filament leads allow installation without special socketing.

PLATE DISSIPATION 5000 watts FREQUENCY FOR MAXIMUM RATINGS 75 MHz COOLING Water and Forced Air

| CHA | RA | СТ | ERI | ST | CS |
|-----|----|----|-----|----|----|
|     |    |    |     |    |    |

| 011/11/1   |   |  |   |  |   |  |  |
|--|---|--|---|--|---|--|--|
| 7.5 volts<br>to 54 ampei<br>36 pf<br>21 pf<br>1.2 pf | es  | Maximun<br>Maximun   | n Height<br>n Diamet  | 1  |   | 22.0   | )°C<br>) inches<br>inches<br>} pounds  |
|  | Maximu  | m Ratings  | Typical Operation   |  |   |  |  |
| Plate<br>Voltage<br>(volts)                          | Plate<br>Current<br>(amps)  | Plate<br>Diss.<br>(watts)  | Grid<br>Diss.<br>(watts)  | Plate<br>Voltage<br>(volts)  | Plate<br>Current<br>(amps)  | Drive<br>Power<br>(watts)  | Output<br>Power<br>(watts)   |
| r 6000   | 2.5   | 5000   | 150   | 5000   | 2.26*   | 59*  | 8000*  |
| r 6000   | 2.5   | 5000   | 150   | 6000   | 3.0*  | 113*   | 13.000*  |
| r 6000   | 2.5   | 5000   | 150   | 6000   | 2.08  | 136  | 10,000   |
| y<br>5000  | 2.0   | 3350   | 150   | 5000   | 1.45  | 76   | 5580   |
|  | to 54 amper<br>36 pf<br>21 pf<br>1.2 pf<br>Plate<br>Voltage<br>(volts)<br>r<br>6000<br>r<br>6000<br>y | to 54 amperes<br>36 pf<br>21 pf<br>1.2 pf<br>Plate Plate<br>Voltage Current<br>(volts) (amps)<br>r<br>6000 2.5<br>r<br>6000 2.5<br>y | 7.5 volts Maximum<br>to 54 amperes Maximum<br>Net Weig<br>36 pf<br>21 pf<br>1.2 pf<br>Plate Plate Plate<br>Voltage Current Diss.<br>(volts) (amps) (watts)<br>r<br>6000 2.5 5000<br>r<br>6000 2.5 5000<br>y | 7.5 volts         Maximum Height<br>Maximum Diamet<br>Net Weight           36 pf         21 pf           21 pf         1.2 pf           Plate         Plate         Plate         Offsec           Volts)         (amps)         (watts)           r         6000         2.5         5000         150           r         6000         2.5         5000         150           r         6000         2.5         5000         150 | to 54 amperes Maximum Diameter<br>Net Weight<br>36 pf<br>21 pf<br>1.2 pf<br>Maximum Ratings<br>Plate Plate Plate Oiss. Voltage<br>(volts) (amps) (watts) (watts)<br>r 6000 2.5 5000 150 6000<br>r 6000 2.5 5000 150 6000<br>y | Maximum Height<br>Maximum Diameter<br>Net Weight         Typical G           36 pf<br>21 pf<br>1.2 pf         Maximum Ratings         Typical G           Plate<br>Voltage Current<br>(volts) (amps) (watts)         Plate<br>Diss.         Plate<br>Diss.         Plate<br>Voltage Current<br>(volts) (amps) (watts)         Plate<br>(watts) (amps)           r         6000         2.5         5000         150         5000         2.26*           r         6000         2.5         5000         150         6000         3.0*           r         6000         2.5         5000         150         6000         2.08 | Maximum Height<br>No 54 amperes         Maximum Height<br>Maximum Diameter<br>Net Weight         22.0<br>36.00           36.00         pf<br>21.00         1.2         1.2           Maximum Ratings         Typical Operation<br>Voltage         Typical Operation<br>Plate           Plate         Plate         Plate         Diss.           Voltage         Current         Diss.         Voltage         Current           r         6000         2.5         5000         150         5000         2.26*           r         6000         2.5         5000         150         6000         3.0*         113*           r         6000         2.5         5000         150         6000         2.08         136 |

\*Two tubes.



# 3CW5000H3

The 3CW5000H3 is a water-cooled ceramic-metal power triode designed primarily for use in industrial radio-frequency heating services. Its water-cooled anode is conservatively rated at 5000 watts of plate dissipation with low water flow and pressure drop. A power input of 12,500 watts is permissible up to 75 MHz. Plentiful reserve emission is available from its 375 watt filament.

PLATE DISSIPATION 5000 watts FREQUENCY FOR MAXIMUM RATINGS 75 MHz COOLING Water and Forced Air

#### CHARACTERISTICS

|                                       | 7.5 volts<br>53 amper<br>40.2 pf<br>24.2 pf<br>1.20 pf | 53 amperes (max)<br>0.2 pf<br>1.2 pf<br>20 pf |                           |                          | Base<br>Maximum Seal Temp.<br>Maximum Height<br>Maximum Diameter<br>Net Weight |                            | Flexible Leads<br>250 °C<br>9.93 inches<br>5.42 inches<br>7.5 pounds |                            |  |
|---------------------------------------|--|---|---------------------------|--------------------------|--|----------------------------|--|----------------------------|--|
|                                       | Maximum Rat  |   |                           | atings T                 |  |                            | ical Operation   |                            |  |
| Class of Type of Service<br>Operation | Plate<br>Voltage<br>(volts)                            |   | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts)  | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts)  | Output<br>Power<br>(watts) |  |
| C RF Industrial Oscillator            | 6000   | 2.5   | 5000                      | 150                      | 6000   | 2.08                       | 136  | 10,000                     |  |



# 3CW10,000A3

The 3CW10.000A3 is a medium-mu water-cooled triode designed primarily for use in industrial radiofrequency heating service.

PLATE DISSIPATION 10,000 watts FREQUENCY FOR MAXIMUM RATINGS 90 MHz Water and Forced Air COOLING

#### **CHARACTERISTICS** Base

| Filament: Thoriated tungsten<br>Voltage<br>Current<br>Capacitances:<br>Grid-Filament<br>Grid-Plate<br>Plate-Filament | 7.5 volts<br>78 amper<br>53 pf<br>25 pf<br>1.5 pf | res (max)                  | Mai<br>Mai                | ket                       |                             | *                          | 250<br>10<br>6.05         | Coaxia<br>SK-130<br>0 °C<br>0 inches<br>5 inches<br>0 pound |
|--|---|----------------------------|---------------------------|---------------------------|-----------------------------|----------------------------|---------------------------|---|
|  |   | m Rating                   | s                         |                           | Typical                     | Operation                  |                           |   |
| Class of Type of Service<br>Operation  | Plate<br>Voltage<br>(volts)                       | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Current<br>(amps) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)                                  |
| B RF Industrial Oscillator   | 10,000  | 3.0                        | 10,000                    | 0.5                       | 9000                        | 2.9                        | 215                       | 20,000  |



# 3CW10,000H3

The 3CW10,000H3 is a water-cooled ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its water-cooled anode is conservatively rated at 10,000 watts plate dissipation with low water flow and pressure drop. Input of 30,000 watts is permissible up to 90 MHz. Plentiful reserve emission is available from its 560 watt filament. A grid contact flange is provided for bolting the tube directly to a strap or grid deck, eliminating the need for a socket.

PLATE DISSIPATION 10,000 watts FREQUENCY FOR MAXIMUM RATINGS 90 MHz COOLING Water and Forced Air

| Filament: Thoriated tungsten<br>Voltage<br>Current<br>Capacitances:<br>Grid-Filament<br>Grid-Plate<br>Plate-Filament | 7.5 volts<br>78 amper<br>53 pf<br>25 pf<br>1.5 pf | 78 amperes (max)<br>53 pf<br>25 pf |                           |                          | Base<br>Maximum Seal Ter<br>Maximum Height<br>Maximum Diamete<br>Net Weight |                            |                           | 17.9 inches                |  |  |
|--|---|------------------------------------|---------------------------|--------------------------|---|----------------------------|---------------------------|----------------------------|--|--|
|  | Maximum Ratings                                   |                                    |                           | ngs Typical Operation    |   |                            |                           | n                          |  |  |
| Class of Type of Service<br>Operation  | Plate<br>Voltage<br>(volts)                       | Plate<br>Current<br>(amps)         | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts)   | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |  |  |
| B RF Industrial Oscillator   | 10,000  | 3.0                                | 10,000                    | 150                      | 9000  | 2.9                        | 215                       | 20,600                     |  |  |

#### EXTERNAL ANODE . WATER COOLED



# 3CW20,000A1

The Eimac 3CW20,000A1 is a ceramic-metal low-mu power triode intended for use as a linear amplifier in audio or rf applications requiring high output power with zero driving power. It features a large thoriatedtungsten filament with ample reserve emission and an integral anode cooler with the inherent ability to withstand large overloads. This tube is particularly well suited for use in audio modulators and vibration testing equipment amplifiers supplying up to 25 kw of output power (two tubes, push-pull).

| PLATE DISSIPATION |       | 20  | ,000 w | atts |
|-------------------|-------|-----|--------|------|
| GRID DISSIPATION  |       |     | 100 w  | atts |
| COOLING           | Water | and | Forced | Air  |

| СНАК                            | ACTE   | RISTI  | CS   |  |  |   |   |  |
|---------------------------------|--|--|--|--|--|---|---|--|
| 4.0 amperes<br>7.0 pf<br>2.0 pf |  | Base<br>Socket<br>Maximum Seal Temp.<br>Maximum Anode-Core T<br>Maximum Height<br>Maximum Diameter<br>Net Weight |  |  | Coax<br>Eimac SK-13<br>250<br>emp. 250<br>8.50 inch<br>7.00 inch<br>12 poun  |   |   |  |
| Maximum Ratings                 |  |  |  | Typical Operation  |  |   |   |  |
| Plate<br>Voltage<br>(volts)     | Plate<br>Current<br>(amps)   | Plate<br>Diss.<br>(watts)  | Grid<br>Diss.<br>(watts)   | Plate<br>Voltage<br>(volts)  | Plate<br>Current<br>(amps)   | Drive<br>Power<br>(watts)   | Output<br>Power<br>(watts)  |  |
| 7000                            | 5.0  | 20,000   | 100  | 7000   | 7.40*  | 0   | 29,100*   |  |
| 10,000                          | **   | 12,000   | 100  | 0-5000   | **   | 0   | -   |  |
|                                 | 7.5 volts<br>04.0 amper<br>57.0 pf<br>32.0 pf<br>4.2 pf<br>Plate<br>Voltage<br>(volts)<br>7000 | 7.5 volts<br>04.0 amperes<br>57.0 pf<br>4.2 pf<br>Plate Plate<br>Voltage Current<br>(volts) (amps)<br>7000 5.0   | 7.5 volts Socket<br>Maximur<br>57.0 pf Maximur<br>4.2 pf Maximur<br>4.2 pf Net Weig<br>Plate Plate Plate<br>Voltage Current Diss.<br>(volts) (amps) (watts)<br>7000 5.0 20,000 | 7.5 volts Socket<br>44.0 amperes Maximum Seal Te<br>Maximum Anode-<br>57.0 pf Maximum Height<br>4.2 pf Net Weight<br>Maximum Ratings<br>Plate Plate Plate Grid<br>Voltage Current Diss. Diss.<br>(volts) (amps) (watts)<br>7000 5.0 20,000 100 | Base           7.5 volts         Socket           04.0 amperes         Maximum Seal Temp.<br>Maximum Anode-Core Tem           57.0 pf         Maximum Height           20.0 pf         Maximum Height           4.2 pf         Net Weight           Plate Plate Plate Grid<br>Voltage Current Diss. Diss.<br>(volts) (amps) (watts) (watts)           7000         5.0         20,000         100         7000 | 7.5 volts Socket<br>4.0 amperes Maximum Seal Temp.<br>Maximum Anode-Core Temp.<br>57.0 pf Maximum Height<br>32.0 pf Maximum Diameter<br>4.2 pf Net Weight<br>Maximum Ratings Typical C<br>Plate Plate Plate Grid.<br>Voltage Current Diss.<br>(volts) (amps) (watts) (watts) (volts) (amps)<br>7000 5.0 20,000 100 7000 7.40* | Base     Eimac       7.5 volts     Socket     Eimac       04.0 amperes     Maximum Anode-Core Temp.     Socket     8.       57.0 pf     Maximum Height     8.       20.0 pf     Maximum Diameter     7.       4.2 pf     Net Weight     1       Maximum Ratings     Typical Operation       Plate     Plate     Plate       Voltage     Current     Diss.     Voltage       (volts)     (amps)     (watts)     (watts)     (watts)       7000     5.0     20,000     100     7000     7.40* |  |

OUADAOTEDIOTIOO

\*Two tubes. \*\*Up to 5 amperes depending on voltage drop across tube.



### 3CW20,000A3

Here is a ceramic-metal medium-mu triode designed for industrial-heating oscillator service. It features a large thoriated-tungsten filament with ample reserve emission and an integral anode cooler with the inherent ability to withstand large overloads. It is intended for use through 140 MHz, also as a grounded-grid FM amplifier developing 20 kilowatts useful output power.

| PLATE DISSIPATION     | 20,000 watts         |
|-----------------------|----------------------|
| GRID DISSIPATION      | 250 watts            |
| FREQUENCY FOR MAXIMUM | RATINGS 140 MHz      |
| COOLING               | Water and Forced Air |

|                      | 0  | HAR                         | ACTE                       | RISTIC  | CS                               |                             |                            |                           |   |
|----------------------|--|-----------------------------|----------------------------|---|----------------------------------|-----------------------------|----------------------------|---------------------------|---|
| V<br>Capac<br>G<br>G |  | 8.0 pf                      | es                         | Base<br>Socket<br>Maximun<br>Maximun<br>Maximun<br>Net Weig | n Anode-<br>n Height<br>n Diamet | Core Tem                    | ıp.                        | 8.<br>7.                  | Coaxi<br>SK-130<br>250<br>50 inch<br>00 inch<br>2 pount |
|                      |  |                             | Maximu                     | m Ratings   |                                  |                             | Typical (                  | Operation                 | 1   |
|                      | ss of Type of Service<br>eration                             | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)                                   | Grid<br>Diss.<br>(watts)         | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Outpu<br>Power<br>(watts                                |
| С                    | Radio-Frequency<br>Industrial Oscillator                     | 7000                        | 4.0                        | 20,000  | 250                              | 7000                        | 4.0                        | _                         | 22,40(  |
| AB <sub>2</sub>      | Radio-Frequency Linear Power<br>Amplifier—SSB, Grounded-Grid | 7000                        | 5.0                        | 20,000  | 250                              | 7000                        | 4.0                        | 2050                      | 20,00   |
| С                    | Radio-Frequency Power Amplifier,<br>Grounded-Grid            | 7000                        | 4.0                        | 20,000  | 250                              | 7000                        | 4.0                        | 4100                      | 24,50   |
| С                    | Plate-Modulated RF<br>Power Amplifier                        | 5500                        | 3.0                        | 13,500  | 250                              | 5000                        | 3.0                        | 515                       | 12,40   |

|  |   | CHAR/   | ACTEI                      | RISTIC                    | CS                       |                             |                            |                           |  |
|--|---|---|----------------------------|---------------------------|--------------------------|-----------------------------|----------------------------|---------------------------|--|
| Filament: Thoriated tungsten<br>Voltage<br>Current 94.0 to 104<br>Capacitances (Grounded Filament):<br>Grid-Filament<br>Grid-Plate |   | 7.5 volts<br>104.0 amper<br>63 pf<br>41 pf<br>0.05 pf | res                        | Maximur<br>Maximur        | n Height<br>n Diamet     | Core Tem                    | ıp.                        | 2<br>2<br>8<br>7          | Coa<br>c SK-1<br>50 °C<br>50 °C<br>3.5 inch<br>7.0 inch<br>12 pour |
|  |   |   | Maximum Ratings            |                           |                          | 1                           | Typical (                  | Operation                 | 1  |
|  | ass of Type of Service<br>seration  | Plate<br>Voltage<br>(volts)                           | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Outp<br>Powe<br>(watt  |
| B  | Audio-Frequency Power Amplifie<br>or Modulator                                  | er<br>7000  | 5.0                        | 20,000                    | 500                      | 7000                        | 10.0*                      | 560*                      | 47,70  |
| В  | Radio-Frequency Linear Power<br>Amplifier, Grounded-Grid—SSB                    |   | 5.0                        | 20,000                    | 500                      | 7000                        | 5.0                        | 1540                      | 24,20  |
| В  | Radio-Frequency Linear Power<br>Amplifier, Carrier Conditions,<br>Grounded-Grid | 7000  | 5.0                        | 20,000                    | 500                      | 7000                        | 2.4                        | 330                       | 565  |
| C  | Radio-Frequency Power Amplifie<br>or Oscillator                                 | r 7000  | 4.0                        | 20,000                    | 500                      | 7000                        | 4.0                        | 430                       | 21,30  |
| С  | Plate-Modulated RF<br>Power Amplifier   | 5500  | 3.0                        | 13,500                    | 500                      | 5000                        | 3.0                        | 380                       | 11,90  |

# SCW20.000A

# 3CW20,000A7

The Eimac 3CW20,000A7 is a ceramic-metal zero-bias triode intended for use in grounded-grid linear amplifiers delivering 20 kilowatts of useful output power. Because of its low intermodulation distortion characteristics the 3CW20,000A7 is particularly well suited for single-sideband amplifiers. Two tubes operating in a push-pull audio amplifier under class-B zero-bias conditions will deliver up to 45 kilowatts of useful output power.

 MAXIMUM PLATE DISSIPATION
 20,000 watts

 GRID DISSIPATION
 500 watts

 FREQUENCY FOR MAXIMUM RATINGS
 140 MHz

 COOLING
 Water and Forced Air

\*Two tubes.



# 3CW20,000H3

The 3CW20,000H3 is a water-cooled, ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its water-cooled anode is conservatively rated at 20,000 watts plate dissipation with low water flow and pressure drop. The grid structure is rated at 250 watts making this tube an excellent choice for severe applications.

PLATE DISSIPATION 20,000 watts FREQUENCY FOR MAXIMUM RATINGS 90 MHz COOLING Water and Forced Air

| Filament: Thoriated tungsten<br>Voltage<br>Current<br>Capacitances:<br>Grid-Filament<br>Grid-Plate<br>Plate-Filament | 7.5 volts<br>104 amper<br>58 pf<br>38 pf<br>1.5 pf | res (max)                  | Base<br>Maximum Seal Temp.<br>Maximum Height<br>Maximum Diameter<br>Net Weight |                          |                             |                            | Flexible Le:<br>250 °C<br>17.750 inch<br>5.090 inch<br>12 pou |                     |  |
|--|--|----------------------------|--|--------------------------|-----------------------------|----------------------------|---|---------------------|--|
|  | Maximum Ratings                                    |                            |  | s                        | Typical Operation           |                            |   |                     |  |
| Class of Type of Service<br>Operation  | Plate<br>Voltage<br>(volts)                        | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)  | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts)                                     | Outr<br>Pow<br>(wat |  |
| C RF Industrial Oscillator   | 12,000   | 4.0                        | 20,000   | 250                      | 10,000                      | 4.0                        | 340   | 28,0                |  |

#### EXTERNAL ANODE . WATER COOLED



# 3CW25,000A3

An integral water jacket allows an anode dissipation rating of 25 kilowatts with this new medium-mu, ceramic-metal triode. A 500 watt grid structure makes this tube attractive for industrial heating service. The tube is rated at 60 kilowatts of input power to 100 Mc with operation at slightly reduced ratings to 140 Mc.

PLATE DISSIPATION 25,000 watts **GRID DISSIPATION** 500 watts FREQUENCY FOR MAXIMUM RATINGS 100 MHz Water and Forced Air COOLING

|                          | CHARACI            | -   |
|--------------------------|--------------------|-----|
| Filament: Thoriated tung | sten               |     |
| Voltage                  | 6.3 volts          |     |
| Current                  | 152 to 168 amperes |     |
| Capacitances (Grounded   |                    |     |
| Grid-Filament            | 48.0 to 58.0 pf    |     |
| Grid-Plate               | 30.0 to 38.0 pf    |     |
| Plate-Filament           | 1.2 to 1.5 pf      |     |
|                          | Maxir              | nun |
|                          |                    | 1   |

#### CHARACTERISTICS

Base Socket Maximum Seal Temp. Maximum Height Maximum Diameter Net Weight

Coaxial Eimac SK-1300 250°C

11.4 inches 4.7 inches 12 pounds

Flexible Leads

250 °C 7.750 inches 5.090 inches

12 pounds

|                 |  | Maximum Ratings             |                             |                           |                           |                             | Typical C                  | peration                  |                            |
|-----------------|--|-----------------------------|-----------------------------|---------------------------|---------------------------|-----------------------------|----------------------------|---------------------------|----------------------------|
|                 | ass of Type of Service<br>eration          | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps.) | Plate<br>Diss.<br>(watts) | Grid.<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| C               | Radio-Frequency<br>Oscillator or Amplifier | 10,000                      | 6.0                         | 25,000                    | 500                       | 10,000                      | 6.0                        | 365                       | 42,000                     |
| AB <sub>2</sub> | Radio-Frequency Linear Power<br>Amplifier  | 10,000                      | 6.0                         | 25,000                    | 500                       | 10,000                      | 6.0                        | 250                       | 41,000                     |
| C               | Plate-Modulated RF<br>Power Amplifier      | 7000                        | 6.0                         | 16,500                    | 500                       | 7000                        | 5.0                        | 750                       | 27,500                     |



# 3CW30,000H3

The 3CW30,000H3 is a water-cooled ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its water-cooled anode is conservatively rated at 30,000 watts plate dissipation with low water flow and pressure drop. Input of 60,000 watts is permissible up to 90 MHz. The grid structure is rated at 500 watts.

PLATE DISSIPATION 30,000 watts FREQUENCY FOR MAXIMUM RATINGS 90 MHz COOLING Water and Forced Air

## Filament: Thoriated tungsten Voltage Current Capacitances: Grid-Filament Grid-Plate Plate-Filament

#### 48 pf 38 pf 1.5 pf **Maximum Ratings** Typical Operation Plate Plate Grid Diss. Plate Plate Drive Output Class of Type of Service Plate Operation Voltage Current (volts) (amps) Diss Voltage Current Power Power (watts) (watts) (volts) (amps) (watts) (watts) C **RF Industrial Oscillator** 12,000 6.0 30,000 500 10.000 6.0 365 42,000

CHARACTERISTICS

6.3 volts

172 amperes (max)

Base

Maximum Seal Temp.

Maximum Height Maximum Diameter

Net Weight



# 3CW40,000H3

The 3C40,000H3 is a water-cooled ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its water-cooled anode is conservatively rated at 40,000 watts plate dissipation with low water flow and pressure drop. The grid structure is rated at 750 watts making this tube an excellent choice for severe applications.

PLATE DISSIPATION 40,000 watts FREQUENCY FOR MAXIMUM RATINGS 90 MHz COOLING Water and Forced Air

#### CHARACTERISTICS

| Filament: Thoriated tungsten<br>Voltage<br>Current<br>Capacitances:<br>Grid-Filament<br>Grid-Plate<br>Plate Filament | 10 volts<br>168 amper<br>75 pf<br>48 pf<br>2.6 pf | 168 amperes (max)<br>75 pf<br>48 pf |                           |                          | Base<br>Maximum Seal Temp.<br>Maximum Height<br>Maximum Diameter<br>Net Weight |                            |                           | Flexible Leads<br>250 °C<br>19.050 inches<br>5.090 inches<br>14 pounds |  |
|--|---|-------------------------------------|---------------------------|--------------------------|--|----------------------------|---------------------------|--|--|
|  | Maximum Ratings                                   |                                     |                           | s                        | Typical Operation  |                            |                           |  |  |
| Class of Type of Service<br>Operation  | Plate<br>Voltage<br>(volts)                       | Plate<br>Current<br>(amps)          | Plate<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts)  | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)   |  |
| C RF Industrial Oscillator   | 12,000  | 9.0                                 | 40,000                    | 750                      | 10,000   | 9.0                        | 1040                      | 70,000   |  |



## 6696A

A rugged, all ceramic-metal, water-cooled triode, the 6696A is rated at 120 kilowatts input and 60 kilowatts plate dissipation to 30MHz. It is attractive for general broadcast or industrial service where a high-power, medium mu triode is required. Accessories such as water jackets and terminal connectors are available from Eimac.

| PLATE DISSIPATION     | 60        | ,000 watts |
|-----------------------|-----------|------------|
| GRID DISSIPATION      |           | 750 watts  |
| FREQUENCY FOR MAXIMUM | RATINGS   | 30 MHz     |
| COOLING               | Water and | Forced Air |

| C  | HAR  | ACTE                        | RISTIC   | S                           |                             |                            |                           |   |
|--|--|-----------------------------|--|-----------------------------|-----------------------------|----------------------------|---------------------------|---|
| Current 20<br>Capacitances (Grounded Filament):<br>Grid-Filament<br>Grid-Plate | 13 volts<br>05 amper<br>76 pf<br>55 pf<br>2.7 pf | es                          | Terminals<br>Maximum<br>Maximum<br>Maximum<br>Net Weig | Seal Te<br>Height<br>Diamet | 87221                       |                            | 100                       | Coaxia<br>250°C<br>75 inches<br>4.8 inches<br>20 pounds |
|  |  | Maximu                      | n Ratings  |                             |                             | Typical (                  | Operation                 | 1   |
| Class of Type of Service<br>Operation  | Plate<br>Voltage<br>(volts)                      | Plate<br>Current<br>(amps.) | Plate<br>Diss.<br>(watts)                              | Grid.<br>Diss.<br>(watts)   | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)                              |
| B Audio-Frequency Power Amplifier<br>or Modulator                              | 16,000   | 11.0                        | 60,000   | 750                         | 12,000                      | 20.0*                      | 600*                      | 150,000   |
| C Radio-Frequency Power Amplifier<br>or Oscillator                             | 16,000   | 11.0                        | 60,000   | 750                         | 15,000                      | 7.0                        | 600                       | 80,000  |
| C Plate-Modulated RF<br>Power Amplifier  | 10,000   | 8.5                         | 40,000   | 750                         | 10,000                      | 8.2                        | 2080                      | 60,000  |
|  |  |                             |  |                             |                             |                            | *Tv                       | vo tubes.   |

#### EXTERNAL ANODE . VAPOR COOLED

# 3CV30,000A1

COOLING

The 3CV30,000A1 is a vapor-cooled triode with characteristics similar to the 3CX10,000A1. It has low mu value and is recommended for Class AB1, audio, or regulator service.

PLATE DISSIPATION 30,000 watts Vapor Phase and Air

#### CHARACTERISTICS

| ilament: Thoriate<br>Voltage<br>Current<br>Base<br>Socket |                                     | 7.5 volts<br>100 amper<br>axial<br>1310 | res                        | Maximur<br>Maximur<br>Maximur<br>Net Weij | n Height<br>n Diame      |                             |                            | 8.75                      | 0 °C<br>0 inches<br>0 inches<br>8 pounds |
|---|-------------------------------------|---|----------------------------|---|--------------------------|-----------------------------|----------------------------|---------------------------|--|
|   |                                     |   | Maximur                    | n Rating                                  | s                        |                             | Typical                    | Operatio                  | n  |
| Class of Ty<br>Operation                                  | be of Service                       | Plate<br>Voltage<br>(volts)             | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)                 | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)               |
|   | Frequency Power<br>er and Modulator | 7000                                    | 5.0                        | 30,000                                    | 100                      | 7000                        | 7.0*                       | -                         | 29,000                                   |
|   |                                     |   |                            |   |                          |                             |                            | *T                        | wo tubes                                 |

# 3CV30,000A3

A vapor-cooled triode with a heavy, one kilowatt filament and 30 kW anode dissipation capability. It is highly recommended for heavy duty applications such as industrial, rf heating service. A complete line of accessories is available including boiler, condenser, etc. for simplified systems installation.

PLATE DISSIPATION 30,000 watts FREQUENCY FOR MAXIMUM RATINGS 100 MHz COOLING Vapor and Forced Air

| Capacitances (Grounded Filament):<br>Grid-Filament 48.0 to 1<br>Grid-Plate 30.0 to 3 |   | res  | Socket<br>Maximur<br>Maximur<br>Maximur   | n Height<br>n Diamete  | and the second  |  | 8.<br>7.   | Coaxi<br>SK-13<br>250<br>75 inch<br>75 inch<br>2 poun   |
|--|---|--|---|--|---|--|--|---|
|  |   | Maximur  | n Rating  | 1  |   | Typical (  | Operation  |   |
| Type of Service  | Plate<br>Voltage<br>(volts)   | Plate<br>Current<br>(amps)   | Plate<br>Diss.<br>(watts)   | Grid<br>Current<br>(amps)  | Plate<br>Voltage<br>(volts)   | Plate<br>Current<br>(amps)   | Plate<br>Diss.<br>(watts)  | Outpu<br>Power<br>(watts  |
| Radio-Frequency<br>Industrial Oscillator   | 10,000  | 6.0  | 30,000  | 1.0  | 10,000  | 6.0  | 18,000   | 4 2,000   |
|  | (Grounded Filament):<br>ment 48.(<br>e 30.0<br>ment 1<br>Type of Service<br>Radio-Frequency | 6.3 volts           158 ampent           nent         48.0 to 58.0 pf           e         30.0 to 38.0 pf           nent         1.2 to 1.5 pf           Type of Service         Plate           Voltage         (volts)           Radio-Frequency         Voltage | 6.3 volts<br>158 amperes<br>(Grounded Filament):<br>ment 48.0 to 58.0 pf<br>e 30.0 to 38.0 pf<br>iment 1.2 to 1.5 pf<br>Type of Service Plate<br>Voltage Current<br>(volts) (amps)<br>Radio-Frequency | 6.3 volts Socket<br>158 amperes Maximur<br>Maximur<br>Maximur<br>e 30.0 to 38.0 pf Maximur<br>e 30.0 to 38.0 pf Net Weig<br>ament 1.2 to 1.5 pf<br>Type of Service Plate Plate<br>Voltage Current Diss.<br>(volts) (amps) (watts)<br>Radio-Frequency | 6.3 volts     Socket       158 amperes     Maximum Seal Te       Maximum Height     Maximum Height       ment     48.0 to 58.0 pf     Maximum Diamete       e     30.0 to 38.0 pf     Net Weight       ment     1.2 to 1.5 pf     Maximum Ratings       Type of Service     Plate     Plate       Voltage     Current     Diss.       (volts)     (amps)     (watts)       Radio-Frequency     Image: Current     Diss. | 6.3 volts     Socket       158 amperes     Maximum Seal Temp.       Maximum Maximum Seal Temp.       Maximum Maximum Meight       ment     48.0 to 58.0 pf       Maximum Meight       ment     30.0 to 38.0 pf       Net Weight       Type of Service       Plate     Plate       Voltage       Vo | Autor tangota     6.3 volts<br>158 amperes     Socket<br>Maximum Seal Temp.<br>Maximum Height       (Grounded Filament):<br>ment     48.0 to 58.0 pf<br>30.0 to 38.0 pf<br>e     Maximum Diameter<br>Net Weight       Type of Service     Maximum Ratings     Typical C       Plate<br>Voltage     Plate<br>Current<br>(volts)     Grid<br>(watts)     Plate<br>(amps)     Plate<br>Voltage     Plate<br>(volts)       Radio-Frequency     Fequency     Voltage     Current<br>(volts)     Voltage     Voltage | Maximum Gas     6.3 volts<br>158 amperes     Socket<br>Maximum Height     Eimac       (Grounded Filament):<br>ment     48.0 to 58.0 pf<br>30.0 to 38.0 pf     Maximum Diameter     7.<br>Net Weight     8.       re     30.0 to 38.0 pf     Net Weight     2       Type of Service     Plate<br>Voltage     Plate<br>Current<br>(volts)     Plate<br>(amps)     Plate<br>(watts)     Plate<br>(amps)     Plate<br>(watts)     Plate<br>(amps)     Plate<br>(volts)     Plate<br>(amps)     Plate<br>(watts) |

**CHARACTERISTICS** 



# 3CV30,000H3

The 3CV30,000H3 is a ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its vapor-cooled anode is conservatively rated at 30,000 watts plate dissipation when mounted in an Eimac BR-200 boiler.

PLATE DISSIPATION 30,000 watts FREQUENCY FOR MAXIMUM RATINGS 100 MHz Vapor and Forced Air COOLING

#### CHARACTERISTICS

| Grid-Plate 3                          | 6.3 volts<br>172 amper<br>8 to 58 pf<br>0 to 38 pf<br>2 to 1.5 pf | es (max)                   | Soci<br>Max<br>Maxi<br>Maxi | Base<br>Socket<br>Maximum Seal Temp.<br>Maximum Height<br>Maximum Diameter<br>Net Weight |                             |                            | Spec<br>SK-13<br>250 °C<br>8.75 inche<br>7.75 inche<br>18 poun |                          |  |
|---------------------------------------|---|----------------------------|-----------------------------|--|-----------------------------|----------------------------|--|--------------------------|--|
|                                       |   | Maximum Ratings            |                             |  |                             | Typical                    | Operatio   | n                        |  |
| Class of Type of Service<br>Operation | Plate<br>Voltage<br>(volts)                                       | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)   | Grid<br>Diss.<br>(watts)   | Plate<br>Voitage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts)                                      | Outpu<br>Power<br>(watts |  |
| C RF Industrial Oscillator            | 10,000  | 6.0                        | 30,000                      | 500  | 10,000                      | 6.0                        | 365  | 42,00                    |  |



# 7480

This triode is rated at 140 kilowatts input and 80 kilowatts of plate dissipation at frequencies to 30 Mc. Boilers and other accessories are available for the 7480 from Eimac.

PLATE DISSIPATION 80,000 watts GRID DISSIPATION 750 watts FREQUENCY FOR MAXIMUM RATINGS 30 MHz Vapor and Forced Air COOLING

|   |  | 3.0 volts<br>205 amper<br>76 pf<br>55 pf<br>2.7 pf | res                        | Terminals<br>Maximum<br>Maximun<br>Maximun<br>Net Weig | n Seal Te<br>n Height<br>n Diamet | 0.000                       |                            |                           | Coaxia<br>250°C<br>0.2 inches<br>7.1 inches<br>50 pounds |  |  |  |
|---|--|--|----------------------------|--|-----------------------------------|-----------------------------|----------------------------|---------------------------|--|--|--|--|
|   |  | 1  | Maximu                     | m Ratings  | i)                                |                             | Typical                    | pical Operation           |  |  |  |  |
|   | lass of Type of Service<br>Operation               | Plate<br>Voltage<br>(volts)                        | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts)                              | Grid<br>Diss.<br>(watts)          | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts)                               |  |  |  |
| В | B Audio-Frequency Power Amplifier<br>or Modulator  |  | 11.0                       | 80,000   | 750                               | 12,000                      | 20.0*                      | 600*                      | 150,000*   |  |  |  |
| C | C Radio-Frequency Power Amplifier<br>or Oscillator |  | 11.0                       | 80,000   | 750                               | 15,000                      | 7.0                        | 600                       | 80,000   |  |  |  |
| C | Plate-Modulated RF<br>Power Amplifier              | 10,000   | 8.5                        | 53,000   | 750                               | 10,000                      | 8.2                        | 2080                      | 60,000   |  |  |  |
|   |  |  |                            |  |                                   | 114                         |                            | *T                        | wo tubes   |  |  |  |

#### INTERNAL ANODE



| -           |   | - | 1 |   |    |   | - |   |
|-------------|---|---|---|---|----|---|---|---|
| <b>K</b> I. | h | 5 | 1 | Δ | -1 | h | 5 | A |
|             | v |   | 1 |   | -  | v | - | ~ |

A general-purpose radial-beam power tetrode, the 4-65A is cooled by radiation and convection and may be used without forced air in most installations. Maximum ratings extend to 150 MHz PLATE DISSIPATION 65 watts

FREQUENCY FOR MAXIMUM RATINGS COOLING CHARACTER

Filament: Thoriated fungsten Voltage 6.0 volts Current 3.2 to 3.8 amperes Capacitances (Grounded Filament): Input 6.0 to 8.3 pf Output 1.9 to 2.6 pf Feed-Through 0.12 pf

| 35        |         | 150      | MHz    | ÷  |
|-----------|---------|----------|--------|----|
| Conve     | ction a | nd Rad   | iation | I. |
| RISTIC    | S       |          |        | ł  |
| Base      |         |          | 5-pin  |    |
| Socket    | Nat     | ional H) | (29 or | ł  |
|           |         | nson 12  |        | Т  |
| Max. Bas  |         |          |        |    |
| Max. Env  | elope T | emp. 2.  | 25 C.  | r  |
| Max. Heij | ght     |          |        | Т  |
| Max. Diai |         | 2.38 i   |        | ŀ  |
| Net Weig  | ht      | 3 0      | unces  |    |

|                 | Class of Type of<br>Operation Service |  |                             | Maxin                     | num Ra                    | tings                      |                          | Typical Operation           |                              |                           |                           |                          |  |
|-----------------|---------------------------------------|--|-----------------------------|---------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|---------------------------|---------------------------|--------------------------|--|
|                 |                                       |  | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Drive<br>Power<br>(watts) | Outpu<br>Power<br>(watts |  |
| AB <sub>1</sub> |                                       | Frequency Power<br>fier and Modulator  | 3000                        | 0.150                     | 65                        | 10                         | _                        | 1750                        | 500                          | 0.170*                    | 0                         | 175*                     |  |
| AB <sub>1</sub> |                                       | Frequency Linear<br>Amplifier—SSB      | 3000                        | 0.150                     | 65                        | 10                         | _                        | 3000                        | 360                          | 0.065                     | 0                         | 130                      |  |
| AB <sub>2</sub> |                                       | Frequency Power<br>lier and Modulator  | 3000                        | 0.150                     | 65                        | 10                         | 5                        | 1800                        | 250                          | 0.220*                    | 1.3*                      | 270*                     |  |
| C               |                                       | Frequency Power<br>fier and Oscillator | 3000                        | 0.150                     | 65                        | 10                         | 5                        | 3000                        | 250                          | 0.115                     | 1.7                       | 280                      |  |
| С               |                                       | Modulated R-F<br>Amplifier             | 2500                        | 0.120                     | 45                        | 10                         | 5                        | 2500                        | 250                          | 0.110                     | 2.6                       | 230                      |  |
|                 |                                       |  |                             |                           |                           |                            |                          |                             |                              |                           | *Two                      | lubes.                   |  |



4D21/4-125A

| This 125-watt general-purpose power tet<br>ratings to 120 MHz. Its low interelect<br>ideal for r-f amplifier service but it i<br>applications. | rode capaci | tances make it |
|--|-------------|----------------|
| PLATE DISSIPATION  |             | 125 watts      |
| FREQUENCY FOR MAXIMUM RATINGS  |             | 120 MHz        |
| COOLING  | Radiation   | and Forced Air |

Radiation and Forced Air CHARACTERISTICS

Filament: Thoriated tungsten Voltage 5.0 volts Current 6.0 to 7.0 amperes

Capacitances (Grounded Filament): Input 9.2 to 12.4 pf Output 2.5 to 3.5 pf Feed-Through 0.07 pf

ISTICS Base 5-pin metal shell Socket National HX100 or Johnson 122-275 Max. Base-Seal Temp. 120 °C. Max. Envelope Temp. 225 °C. Max. Height 5.69 inches Net Weight 6.5 ounces

120 MHz

Forced Air

| Class of Type of<br>Operation Service |   | 3  | Maxin   | um Ra   | tings   | Typical Operation   |   |   |  |  |  |
|---------------------------------------|---|--|---|---|---|---|---|---|--|--|--|
|                                       |   | Plate<br>Voltage<br>(volts)                                      | Plate<br>Current<br>(amp)   | Plate<br>Diss.<br>(watts)   | Screen<br>Diss.<br>(watts)  | Grid<br>Diss.<br>(watts)  | Plate<br>Voltage<br>(volts)   | Screen<br>Voltage<br>(volts)  | Plate<br>Current<br>(amp)  | Drive<br>Power<br>(watts)  | Outpu<br>Power<br>(watts   |
|                                       |   | 3000   | 0.225   | 125   | 20  | -   | 2500  | 600   | 0.232*   | 0  | 330*   |
|                                       |   | 3000   | 0.225   | 125   | 20  | -   | 3000  | 510   | 0.105  | 0  | 200  |
|                                       |   | 3000   | 0.225   | 125   | 20  | 5   | 2500  | 350   | 0.260*   | 1*   | 400*   |
| Radio-Frequence<br>Amplifier and O    | y Power<br>scillator  | 3000   | 0.225   | 125   | 20  | 5   | 3000  | 350   | 0.167  | 2.5  | 375  |
|                                       |   | 2500   | 0.200   | 85  | 20  | 5   | 2500  | 350   | 0.152  | 3.3  | 300  |
|                                       | tion Service<br>Audio-Frequenc<br>Amplifier and Mc<br>Radio-Frequenc<br>Power Amplifier<br>Audio-Frequenc<br>Amplifier and Mc<br>Radio-Frequenc<br>Amplifier and O<br>Plate-Modulated | tion Service<br>Audio-Frequency Power<br>Amplifier and Modulator | Service         Voltage<br>(volts)           Audio-Frequency Power<br>Amplifier and Modulator         3000           Radio-Frequency Linear<br>Power Amplifier – SSB         3000           Audio-Frequency Power<br>Amplifier and Modulator         3000           Radio-Frequency Power<br>Amplifier and Oscillator         3000           Power Amplifier And Modulator         3000 | of<br>tion         Type of<br>Service         Plate<br>Voltage<br>Current<br>(volts)         Plate<br>Current<br>(amp)           Audio-Frequency Power<br>Amplifier and Modulator         3000         0.225           Radio-Frequency Linear<br>Power Amplifier and Modulator         3000         0.225           Audio-Frequency Power<br>Amplifier and Modulator         3000         0.225           Radio-Frequency Power<br>Amplifier and Oscillator         3000         0.225           Plate-Modulator         3000         0.225 | Type of<br>Service         Plate<br>Voltage<br>(volts)         Plate<br>Current<br>(walts)         Plate<br>Diss.<br>(amp)         Plate<br>Diss.<br>(walts)           Audio-Frequency Power<br>Amplifier and Modulator         3000         0.225         125           Audio-Frequency Linear<br>Power Amplifier and Modulator         3000         0.225         125           Audio-Frequency Power<br>Amplifier and Modulator         3000         0.225         125           Radio-Frequency Power<br>Amplifier and Oscillator         3000         0.225         125           Plate-Modulated R-F         3000         0.225         125 | Service         Voltage         Current         Diss.         Watts         Watts | of<br>tion         Type of<br>Service         Plate<br>Voltage<br>(volts)         Plate<br>Current<br>(amp)         Plate<br>Diss.<br>(watts)         Grid<br>Diss.<br>(watts)           Audio-Frequency Power<br>Amplifier and Modulator         3000         0.225         125         20            Radio-Frequency Linear<br>Power Amplifier and Modulator         3000         0.225         125         20            Audio-Frequency Power<br>Amplifier and Modulator         3000         0.225         125         20            Radio-Frequency Power<br>Amplifier and Oscillator         3000         0.225         125         20         5           Radio-Frequency Power<br>Amplifier and Oscillator         3000         0.225         125         20         5           Plate-Modulated R-F         F         5         5         5         5         5 | of<br>tion         Type of<br>Service         Plate<br>Voltage<br>(volts)         Plate<br>Current<br>(wats)         Plate<br>Diss.<br>(wats)         Screen<br>Diss.<br>(wats)         Grid<br>Voltage<br>(volts)           Audio-Frequency Power<br>Amplifier and Modulator         3000         0.225         125         20         2500           Radio-Frequency Linear<br>Power Amplifier and Modulator         3000         0.225         125         20         3000           Audio-Frequency Power<br>Amplifier and Modulator         3000         0.225         125         20         5         2500           Radio-Frequency Power<br>Amplifier and Oscillator         3000         0.225         125         20         5         3000           Plate Modulator         3000         0.225         125         20         5         3000 | Type of<br>tion         Type of<br>Service         Plate<br>Voltage<br>(volts)         Plate<br>Current<br>(walts)         Plate<br>Diss.         Screen<br>Diss.         Plate<br>Diss.         Screen<br>Voltage<br>Voltage           Audio-Frequency Power<br>Amplifier and Modulator         3000         0.225         125         20         3000         510           Audio-Frequency Power<br>Amplifier and Modulator         3000         0.225         125         20         5         2500         350           Radio-Frequency Power<br>Amplifier and Oscillator         3000         0.225         125         20         5         3000         350           Plate Modulated R-F         F         5         3000         350         350         350 | of<br>tion         Type of<br>Service         Plate<br>Voltage<br>(volts)         Plate<br>Current<br>(volts)         Plate<br>Current<br>(watts)         Screen<br>Diss.<br>(watts)         Plate<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss.<br>Diss | of<br>tion         Type of<br>Service         Plate<br>Voltage<br>(volts)         Plate<br>Current<br>(walts)         Plate<br>Diss.<br>(walts)         Screen<br>Diss.<br>(walts)         Plate<br>Diss.<br>(walts)         Screen<br>Voltage<br>(volts)         Plate<br>Current<br>(volts)         Drive<br>Power<br>Power<br>(walts)           Audio-Frequency Power<br>Amplifier and Modulator         3000         0.225         125         20         2500         600         0.232*         0           Radio-Frequency Linear<br>Power Amplifier and Modulator         3000         0.225         125         20         3000         510         0.105         0           Audio-Frequency Power<br>Amplifier and Modulator         3000         0.225         125         20         5         2500         350         0.260*         1*           Radio-Frequency Power<br>Amplifier and Modulator         3000         0.225         125         20         5         3000         350         0.167         2,5           Plate-Modulated R-F         Flate-Modulated R-F         Flate-Modulated R-F         Flate-Modulated R-F         Flate-Modulated R-F         Flate-Modulated R-F         Flate-Modulated R-F |



## 6155

This 125-watt general-purpose power tetrode is usable at maximum ratings to 120 MHz. Its low interelectrode capacitances make it ideal for r.f amplifier service but it is equally useful in audio applications. PLATE DISSIPATION 125 watts

FREQUENCY FOR MAXIMUM RATINGS COOLING

CHARACTERISTICS Base 5-pin Socket National HX100 or Johnson 122-275 Max, Base-Seal Temp, 170 °C. Max, Envelope Temp, 225 °C. Max, Height 5.59 inches Max, Diameter 2.81 inches Net Weight 6.5 ounces

Filament: Thoriated tungsten Voltage 5.0 volts Current 6.0 to 7.0 amperes Capacitances (Grounded Filament): Input 9.2 to 12.4 pf Output 2.5 to 3.5 pf Feed-Through 0.07 pf

| Type of<br>Service                    | Plate<br>Voltage<br>(volts)        | Plate<br>Current<br>(amp)               | Plate<br>Diss.                                | Screen  | Grid   | Plate  | Screen  | Plate   | D   |   |
|---------------------------------------|------------------------------------|---|---|---|--|--|---|---|---|---|
| Frequency Power                       |                                    | COMPARE NO.                             | (watts)                                       | (watts)   | Diss.<br>(watts)                                     | Voltage<br>(volts)                                     | Voltage<br>(volts)  | Current<br>(amp)  | Drive<br>Power<br>(watts)   | Outpu<br>Power<br>(watts  |
| ier and Modulator                     | 3000                               | 0.225                                   | 125   | 20  |  | 2500   | 600   | 0.232*  | 0   | 330*  |
| Frequency Linear<br>Amplifier SSB     | 3000                               | 0.225                                   | 125   | 20  | -  | 3000   | 510   | 0.105   | 0   | 200   |
| Frequency Power<br>ier and Modulator  | 3000                               | 0.225                                   | 125   | 20  | 5  | 2500   | 350   | 0.260*  | 1*  | 400*  |
| Frequency Power<br>ier and Oscillator | 3000                               | 0.225                                   | 125   | 20  | 5  | 3000   | 350   | 0.167   | 2.5   | 375   |
| Nodulated R-F<br>Amplifier            | 2500                               | 0.200                                   | 85  | 20  | 5  | 2500   | 350   | 0.152   | 3.3   | 300   |
| V                                     | er and Oscillator<br>Iodulated R-F | er and Oscillator 3000<br>Iodulated R-F | er and Oscillator 3000 0.225<br>Iodulated R-F | er and Oscillator 3000 0.225 125<br>Iodulated R-F | er and Oscillator 3000 0.225 125 20<br>Iodulated R-F | er and Oscillator 3000 0.225 125 20 5<br>Iodulated R-F | er and Oscillator 3000 0.225 125 20 5 3000<br>Iodulated R-F | er and Oscillator 3000 0.225 125 20 5 3000 350<br>todulated R-F | er and Oscillator 3000 0.225 125 20 5 3000 350 0.167<br>Iodulated R-F | er and Oscillator 3000 0.225 125 20 5 3000 350 0.167 2.5<br>todulated R-F |



## 5D22/4-250A

The Eimac 4-250A enjoys a 250-watt plate dissipation rating and is usable at maximum ratings through the FM broadcast band. Its low interelectrode capacitances make it an ideal choice for high-frequency applications but it is often used in audio-amplifier work as well. PLATE DISSIPATION 250 watts FREQUENCY FOR MAXIMUM RATINGS 110 megacycles COOLING Radiation and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten Voltage 5.0 volts Current 13.5 to 14.7 ampres Capacitances (Grounded Filament): Input 10.7 to 14.5 pf Output 3.7 to 5.1 pf Feed-Through 0.14 pf

Base 5-pin metal shell Socket Eimac SK-400 Max. Base-Seal Temp, 170 °C. Max. Envelope Temp, 225 °C. Max. Dispatch 6.38 inches Net Weight 8 ounces

|                                       |                  |                                       |                           | Maxin                     | num Rat                    | lings                    |                             | Typical Operation            |                           |                           |                            |        |  |
|---------------------------------------|------------------|---------------------------------------|---------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|---------------------------|---------------------------|----------------------------|--------|--|
| Class of Type of<br>Operation Service |                  | Plate<br>Voltage<br>(volts)           | Plate<br>Current<br>(amp) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |        |  |
| AB <sub>1</sub>                       |                  | Frequency Power<br>ier and Modulator  | 4000                      | 0.350                     | 250                        | 35                       | _                           | 3000                         | 600                       | 0.417*                    | 0                          | 750*   |  |
| AB <sub>1</sub>                       |                  | Frequency Linear<br>Amplifier—SSB     | 4000                      | 0.350                     | 250                        | 35                       | -                           | 4000                         | 510                       | 0.165                     | 0                          | 450    |  |
| AB <sub>2</sub>                       | Audio-<br>Amplif | Frequency Power<br>ier and Modulator  | 4000                      | 0.350                     | 250                        | 35                       | 10                          | 3000                         | 300                       | 0.473*                    | 1.9*                       | 1040*  |  |
| С                                     |                  | Frequency Power<br>ier and Oscillator | 4000                      | 0.350                     | 250                        | 35                       | 10                          | 4000                         | 500                       | 0.312                     | 2.46                       | 1000   |  |
| С                                     |                  | Nodulated R-F<br>Amplifier            | 3200                      | 0.275                     | 165                        | 35                       | 10                          | 3000                         | 400                       | 0.225                     | 3.2                        | 510    |  |
|                                       |                  | - 1                                   |                           |                           |                            |                          |                             |                              |                           |                           | *Two ]                     | lubes. |  |

#### INTERNAL ANODE



| 6 | 1 | 56 |
|---|---|----|
|   |   |    |

The Eimac 6156 is a compact, ruggedly constructed power tetrode having a maximum plate dissipation rating of 250 watts. It is in-tended for use as an amplifier, oscillator or modulator. PLATE DISSIPATION 250 watts 110 MHz

FREQUENCY FOR MAXIMUM RATINGS COOLING

#### CHARACTE

Filament: Thoriated tungsten Voltage 5.0 volts Current 13.5 to 14.7 amperes Capacitances (Grounded Filament): Input 10.7 to 14.5 pt Output 3.7 to 5.1 pt Feed-Through 0.14 pt

|    | Radiation a                              | nd Forced Air   |
|----|--|---|
| EF | RISTICS                                  |   |
|    | Socket<br>Max. Base-Sea<br>Max. Envelope | pin metal shell<br>Eimac SK-400<br>I Temp. 170 °C.<br>Temp. 225 °C.<br>6.38 inches<br>3.56 inches<br>8 ounces |

|                 |                 |                                       |                             | Maxin                     | num Ra                    | tings                      |                          | Typical Operation           |                              |                           |                           |                            |  |
|-----------------|-----------------|---------------------------------------|-----------------------------|---------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|---------------------------|---------------------------|----------------------------|--|
| Class<br>Opera  |                 | Type of<br>Service                    | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |  |
| AB <sub>1</sub> |                 | Frequency Power<br>ier and Modulator  | 4000                        | 0.350                     | 250                       | 35                         | -                        | 3000                        | 600                          | 0.417*                    | 0                         | 750*                       |  |
| AB <sub>1</sub> | Radio-<br>Power | Frequency Linear<br>Amplifier—SSB     | 4000                        | 0.350                     | 250                       | 35                         | 12                       | 4000                        | 510                          | 0.165                     | 0                         | 450                        |  |
| AB:             |                 | Frequency Power<br>ier and Modulator  | 4000                        | 0.350                     | 250                       | 35                         | 10                       | 3000                        | 300                          | 0.473*                    | 1.9*                      | 1040*                      |  |
| C               |                 | Frequency Power<br>ier and Oscillator | 4000                        | 0.350                     | 250                       | 35                         | 10                       | 4000                        | 500                          | 0.312                     | 2.46                      | 1000                       |  |
| С               |                 | Modulated R-F<br>Amplifier            | 3200                        | 0.275                     | 165                       | 35                         | 10                       | 3000                        | 400                          | 0.225                     | 3.2                       | 510                        |  |
|                 |                 |                                       |                             |                           |                           |                            |                          |                             |                              |                           | *Two                      | lubes.                     |  |



## 8438/4-400A

A 400-watt general-purpose radial-beam tetrode, the 4-400A is ideal for any r-1 application below 110 MHz. Its ratings allow an input power of up to 1400 watts in such service or in others where lower radio frequencies or audio frequencies are to be amplified. PLATE DISSIPATION 400 watts

FREQUENCY FOR MAXIMUM RATINGS 110 MHz Radiation and Forced Air COOLING

CHARACTERISTICS

Filament: Thoriated tungsten Voltage 5.0 volts Current 13.5 to 14.7 amperes Capacitances (Grounded Filament): Input 10.7 to 14.5 pt Output 4.2 to 6.6 pt Feed-Through 0.17 pt

Base 5-pin metal shell Socket Eimac SK-400 Max. Base-Seal Temp. 170 °C. Max. Envelope Temp. 225 °C. Max. Lenvelope Temp. 225 °C. Max. Diameter 3.56 inches Net Weight 9 ounces

| Type of<br>Service<br>dio-Frequency Power<br>nolifier and Modulator | Plate<br>Voltage<br>(volts)  | Plate<br>Current<br>(amp)   | Plate<br>Diss.<br>(watts)   | Screen<br>Diss.   | Grid<br>Diss.   | Plate  | Screen  | Plate  | Drive  | Output   |
|---|--|---|---|---|---|--|---|--|--|--|
|   |  |   | Diss.   |   |   | Plate<br>Voltage<br>(volts)  | Screen<br>Voltage<br>(volts)  | Plate<br>Current<br>(amp)  | Drive<br>Power<br>(watts)  | Output<br>Power<br>(watts)   |
| ipinier and modulator   | 4000   | 0.350   | 400   | 35  |   | 4000   | 750   | 0.585*   | 0  | 1540*  |
| dio-Frequency Linear<br>wer Amplifier SSB                           | 4000   | 0.350   | 400   | 35  | -   | 4000   | 705   | 0.250  | 0  | 650  |
| idio-Frequency Power<br>nplifier and Modulator                      | 4000   | 0.350   | 400   | 35  | 10  | 4000   | 500   | 0.638*   | 3.5*   | 1750*  |
| dio-Frequency Power<br>nplifier and Oscillator                      | 4000   | 0.350   | 400   | 35  | 10  | 4000   | 500   | 0.350  | 5.8  | 1100   |
| ate-Modulated R-F<br>wer Amplifier                                  | 3200   | 0.275   | 270   | 35  | 10  | 3000   | 500   | 0.275  | 3.5  | 630  |
|   | wer Amplifier SSB<br>dio-Frequency Power<br>plifier and Modulator<br>dio-Frequency Power<br>plifier and Oscillator<br>te-Modulated R-F | ver Amplifier SSB 4000<br>dio-Frequency Power<br>iplifier and Modulator 4000<br>dio-Frequency Power<br>polifier and Oscillator 4000<br>te-Modulated R-F | ver Amplifier – SSB 4000 0.350<br>dio-Frequency Power<br>plifier and Modulator 4000 0.350<br>dio-Frequency Power<br>plifier and Oscillator 4000 0.350<br>te-Modulated R-F | wer Amplifier         SSB         4000         0.350         400           dio-Frequency Power<br>iplifier and Modulator         4000         0.350         400           dio-Frequency Power<br>plifier and Oscillator         4000         0.350         400           te-Modulated R-F         600         0.350         400 | wer Amplifier         SSB         4000         0.350         400         35           dio-Frequency Power<br>iplifier and Modulator         4000         0.350         400         35           dio-Frequency Power<br>polifier and Oscillator         4000         0.350         400         35           te-Modulated R-F         5         5         5         5         5 | wer Amplifier         SSB         4000         0.350         400         35         —           dio-Frequency Power<br>iplifier and Modulator         4000         0.350         400         35         10           dio-Frequency Power<br>polifier and Oscillator         4000         0.350         400         35         10           te-Modulated R-F         4000         0.350         400         35         10 | wer Amplifier         SSB         4000         0.350         400         35         4000           dio-Frequency Power<br>iplifier and Modulator         4000         0.350         400         35         10         4000           dio-Frequency Power<br>plifier and Oscillator         4000         0.350         400         35         10         4000           te-Modulated R-F         4000         0.350         400         35         10         4000 | wer Amplifier         SSB         4000         0.350         400         35         4000         705           dio-Frequency Power<br>plifier and Modulator         4000         0.350         400         35         10         4000         500           dio-Frequency Power<br>plifier and Oscillator         4000         0.350         400         35         10         4000         500           te-Modulated R-F         4000         0.350         400         35         10         4000         500 | wer Amplifier         SSB         4000         0.350         400         35         4000         705         0.250           dio-Frequency Power<br>plifier and Modulator         4000         0.350         400         35         10         4000         500         0.638*           fio-Frequency Power<br>plifier and Oscillator         4000         0.350         400         35         10         4000         500         0.638*           te-Modulated R-F         E | wer Amplifier         SSB         4000         0.350         400         35         4000         705         0.250         0           dio-Frequency Power<br>plifier and Modulator         4000         0.350         400         35         10         4000         500         0.638*         3.5*           dio-Frequency Power<br>plifier and Oscillator         4000         0.350         400         35         10         4000         500         0.638*         3.5*           te-Modulated R-F         4000         6.350         400         35         10         4000         500         0.350         5.8 |



## 7527

The 7527 is an all glass power tetrode designed for amplifier, oscillator or modulator service. This tube is capable of operation at full ratings up to 110 MHz.

| PLATE DISSIPATION            | 400 watts                |
|------------------------------|--------------------------|
| FREQUENCY FOR MAXIMUM RAT    | INGS 110 MHz             |
| COOLING                      | Radiation and Forced Air |
| CHARAC                       | TERISTICS                |
| Eilement: Theylated togetten | Dana E sin sector        |

voltage 5.0 volts Current 14.5 amperes Capacitances (Grounded Filament): Input 12.5 pf Output 4.7 pf Feed-Through 0.12 ef Base 5-pin special Socket Johnson 122-275 Max. Base-Seal Temp. 170 °C. Max. Envelope Temp. 225 °C Max. Height 5.9562 inches Max. Diameter 3.422 inches Net Weight 6.7 ounces

|    |   |                             | Maxim                      | um Rat                    | ings                       |                          | Typical Operation           |                              |                            |                           |                            |  |
|----|---|-----------------------------|----------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|---------------------------|----------------------------|--|
|    | eration Service                                     | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |  |
| C  | Radio-Frequency Powe<br>Amplifier and Oscillate     |                             | 0.350                      | 400                       | 35                         | 10                       | 3000                        | 500                          | 0.350                      | 6.0                       | 800                        |  |
| С  | Plate Modulated Radio<br>Frequency Amplifier        | 3200                        | 0.275                      | 400                       | 35                         | 10                       | 3000                        | 500                          | 0.275                      | 3.5                       | 630                        |  |
| AB | Audio Frequency Powe<br>Amplifier and<br>Modulator* | 4000                        | 0.350                      | 400                       | 35                         | 10                       | 4000                        | 750                          | 0.585                      |                           | 1500                       |  |



# 6775

Input Output Feed-Through

The 6775 is a ruggedized version of the 4-400A power tetrode which can be used as a direct replacement. PLATE DISSIPATION 400 watts

|                 |                    |             | TOO Mails         |
|-----------------|--------------------|-------------|-------------------|
| FREQUENCY FO    | OR MAXIMUM RATIN   | GS          | 110 MHz           |
| COOLING         |                    | Radiation   | and Forced Air    |
|                 | CHARACTE           | RISTICS     |                   |
| Filament: Thori | ated tungsten      | Base        | E1A A5-97         |
| Voltage         | 5.0 volts          | Socket      | Eimac SK-400      |
| Current         |                    | Max. Base-S | eal Temp. 170 °C. |
| Capacitances (G | rounded Filament): | Max. Envelo | pe                |

Max. Envelope Max. Envelope Temp. 225 °C Max. Height 6.375 inches Max. Diameter 3.562 inches Net Weight 9 ounces 12.5 pf 4.5 pf 0.12 pf

|    |  |                             | Maxim        | um Rat | ings                       |                          | Typical Operation           |                              |       |                           |                            |  |
|----|--|-----------------------------|--------------|--------|----------------------------|--------------------------|-----------------------------|------------------------------|-------|---------------------------|----------------------------|--|
|    | ss of Type of<br>eration Service                               | Plate<br>Voltage<br>(volts) | tage Current |        | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) |       | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |  |
| С  | Radio-Frequency Power<br>Amplifier and Oscillato<br>(CW or FM) |                             | 0.350        | 400    | 35                         | 10                       | 3000                        | 500                          | 0.350 | 5.9                       | 800                        |  |
| C  | Plate Modulated Radio<br>Frequency Amplifier                   | 3200                        | 0.275        | 270    | 35                         | 10                       | 3000                        | 500                          | 0.275 | 3.5                       | 630                        |  |
| AB | Audio-Frequency Power<br>Amplifier and Modulato<br>(Two tubes) |                             | 0.350        | 400    | 35                         | 10                       | 4000                        | 750                          | 0.585 | -                         | 1550                       |  |



## 8166/4-1000A

INTERNAL ANODE

This high-power general-purpose tetrode is capable of dissipating 1000 watts from its radiation-cooled anode. Maximum ratings apply through the FM broadcast band but its low drive-power requirements make it an ideal choice for audio and low-frequency applications as well. PLA atts

| PLATE DISSIP             | ATION   |   | 1000 watts  |
|--------------------------|---|---|---|
| FREQUENCY FO             | OR MAXIMUM RATING   | GS  | 110 MHz   |
| COOLING                  |   | Radiation an  | d Forced Air  |
|                          | CHARACTE  | RISTICS   |   |
| Capacitances (G<br>Input | 7.5 volts<br>20.0 to 22.7 amperes<br>rounded Filament):<br>23.8 to 32.4 pf<br>6.8 to 9.4 pf | Base 5-p<br>Socket<br>Max. Base-Seal<br>Max. Envelope<br>Max. Height<br>Max. Diameter<br>Net Weight | Temp.<br>150 °C.<br>Temp. 225 °C.<br>9.63 inches<br>5.25 inches |

|                 |                |   |                             | Maxin          | num Rat                   | tings                      |                          |                             | Typic                        | al Operat                 | ion                     |                            |
|-----------------|----------------|---|-----------------------------|----------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|---------------------------|-------------------------|----------------------------|
| Class<br>Opera  |                |   | Plate<br>Voltage<br>(volts) | oltage Current | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Drive<br>Power<br>watts | Output<br>Power<br>(watts) |
| AB <sub>1</sub> |                | -Frequency Power<br>fier and Modulator  | 6000                        | 0.700          | 1000                      | 75                         | -                        | 6000                        | 1000                         | 0.950*                    | 0                       | 3840*                      |
| AB <sub>1</sub> |                | Frequency Linear<br>Amplifier—SSB       | 6000                        | 0.700          | 1000                      | 75                         |                          | 6000                        | 1000                         | 0.475                     | 0                       | 1920                       |
| AB <sub>2</sub> | Audio<br>Ampli | -Frequency Power<br>fier and Modulator  | 6000                        | 0.700          | 1000                      | 75                         | 25                       | 6000                        | 500                          | 0.950*                    | 4.7*                    | 3900*                      |
| С               | Radio<br>Ampli | -Frequency Power<br>fier and Oscillator | 6000                        | 0.700          | 1000                      | 75                         | 25                       | 6000                        | 500                          | 0.700                     | 15                      | 3400                       |
| С               |                | Modulated R-F<br>r Amplifier            | 5000                        | 0.600          | 670                       | 75                         | 25                       | 5500**                      | 500                          | 0.600                     | 9                       | 2630                       |
|                 |                |   |                             |                | **                        | Below 30                   | mc.                      |                             |                              |                           | *Two                    | Tubes.                     |

#### EXTERNAL ANODE . CONDUCTION COOLED



## 4CN15A

A special version of the popular 4CX300A intended for use in low-duty pulse applications or where size and weight are important. The 4CN15A carries a nominal plate-dissipation rating of 15 watts but this may be extended by employing liquid immersion or another suitable heat sink. Its rugged design makes it ideal for applications where shock and/or vibration are encountered. PLATE DISSIPATION 15 watts FREQUENCY FOR MAXIMUM RATINGS 500 MHz COOLING **Convection** or Conduction CHARACTERISTICS

Cathode: Oxide-coated, unipotential Heater: Voltage 6.0 volts Current 2.6 to 3.1 amperes Capacitances (Grounded Cathode): Input 25 to 33 pf Output 3.5 to 4.5 pf Feed-Through 0.06 pf

HISTICS Base Special, breechblock Socket Eimac SK-700 series Maximum Seal Temp, 250 °C Max, Anode-Core Temp, 250 °C Max, Height 2.5 inches Nat Diameter 0.894 inches Net Weight 2.5 ounces

|                       |  |                                       |                             | Ma              | ximum Rat | tings                      |                          | Typical Operation          |
|-----------------------|--|---------------------------------------|-----------------------------|-----------------|-----------|----------------------------|--------------------------|----------------------------|
| Class of<br>Operation |  | Type of<br>Service                    | Plate<br>Voltage<br>(volts) | Voltage Current |           | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) |                            |
| С                     | Radio-Frequency Power<br>Amplifier or Oscillator |                                       | 2000                        | 0.250           | 15*       | 12                         | 2                        | Values dependent           |
| C                     |  | -Modulated Radio<br>quency Amplifier  | 1500                        | 0.200           | 9.5*      | 12                         | 2                        | dissipation                |
| AB <sub>1</sub>       |  | -Frequency Linear<br>er Amplifier—SSB | **<br>2500                  | 0.250           | 15*       | 12                         | 2                        | (determined by heat sink). |
|                       |  |                                       | **Below 250 Mc.             |                 |           | *May be i                  | ncreased b               | by conduction cooling.     |

### 7843

COOLING

Heater: Voltage Current

The 7843 is a small coaxial power tetrode designed for UHF power amplifier and oscillator service up to 1200 MHz. The coaxial con-struction makes this tube suitable for cavity circuits.

PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS

CHARACTERISTICS

Cathode: Oxide-coated, unipotential Cathode: Oside-coared, uniposition Heater: Voltage 26.5 volts Current 0.45 to 0.57 ampress Capacitances (Grounded Cathode): Input 28.7 to 36.2 pf Output 4.0 to 5.0 pf Feed-Through 0.065 pf Base Coaxial Max. Seal Temp. 250 °C Max. Anode Core Temp. 250 °C Max. Height 1.805 inches Max. Diameter 1.085 inches

115 watts

1200 MHz

Conduction

|  |                             | Typical Operation          |       |                            |                          |     |                              |       |     |       |
|--|-----------------------------|----------------------------|-------|----------------------------|--------------------------|-----|------------------------------|-------|-----|-------|
| Class of Type of<br>Operation Service  | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Diss. | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) |     | Screen<br>Voltage<br>(volts) |       |     | Power |
| C RF Power Amplifier<br>and Oscillator | 1000                        | 0.180*                     | 115   | 4.5                        | _                        | 900 | 300                          | 0.170 | 5.0 | 40    |



## 8560A

The 8560A is a conduction cooled, general purpose tetrode. This compact power tube can be used at maximum ratings at frequen-cies up to 500 MHz. It is recommended for use in equipments of new design. PLATE DISSIPATION See Note

#### FREQUENCY FOR MAXIMUM RATINGS 500 MHz COOLING Conduction CHARACTERISTICS Base Special 9-pin, JEDEC B8-236 Socket Eimac SK-600 Series Max. Envelope Temp. 250 °C Max. Anode Core Temp. 250 °C Max. Height 2.445 inches Max. Diameter 1.630 inches Net Weight 8.5 ounces Cathode: Oxide-coated, unipotential Base Cathode: Uxide-coated, unipotential Heater: Voltage 6.0 volts Current 2.6 amperes Capacitances (Grounded Cathode): Input 16.5 pf Output 5.0 pf Feed-Through 0.04 pf

|                 |  |                                     |                             | Maxim                      | um Rat | ings                       |                          | Typical Operation |                              |                            |                           |                          |  |
|-----------------|--|-------------------------------------|-----------------------------|----------------------------|--------|----------------------------|--------------------------|-------------------|------------------------------|----------------------------|---------------------------|--------------------------|--|
|                 |  | Type of<br>Service                  | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Diss.  | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) |                   | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Outpu<br>Power<br>(watts |  |
| С               |  | requency Power<br>ier or Oscillator | 2000                        | 250                        | 250    | 12                         | 2.0                      | 900<br>2000       | 200<br>250                   | 0.195<br>0.250             | 5.0<br>2.9                | 112<br>390               |  |
| AB <sub>1</sub> |  | Frequency<br>Amplifier              | 2000                        | 250                        | 250    | 12                         | 2.0                      | 1500              | 350                          | 0.250                      | -                         | 215                      |  |

to a surable timal contents, bicarbox, and the second strain of the flat surface is  $1/\gamma_{\rm K} {\rm m}^* \times 3/4 {\rm m}^*$ . Thermal design should insure that for maximum expected anode dissipation, heat flow through the berylium oxide wafer will be high enough to dissipate that power with no more than 225°C temperature at the interface between anode and berylium oxide wafer.

25

#### EXTERNAL ANODE . CONDUCTION COOLED



| The 4CS250H and 4CS250HA are conduct<br>the basic electrical characteristics of the<br>intended primarily for class AB <sub>1</sub> linear set<br>conductance and produce full output with | 4CX350A. These tubes are<br>rvice. They have high trans- |
|--|--|
| PLATE DISSIPATION  | 250 watts  |
| COOLING  | Conduction   |
|  |  |

4CS250H and 4CS250HA

#### CHARACTERISTICS

| Cathode: Oxide-coa | ted, unipotential | Base Sp            | ecial 9-pin |
|--------------------|-------------------|--------------------|-------------|
| Heater:            |                   | Socket             | SK-600      |
| Voltage            | 6.0 volts         | Max. Seal Temp.    | 250 °C      |
| Current            | 3.6 amps (max)    | Max. Height        | 2.4 inches  |
| Capacitances (Grou | inded Cathode):   | Net Weight         | 4 ounces    |
| Input              | 26.2 pf(max)      | N CHICK L'ESPECIAL |             |
| Output             | 6.0 pf(max)       |                    |             |
| Feed-Through       | 0.05 pf           |                    |             |

|                             | Plate   | Plate | Coreen        | A                        | 44000                 | CONTRACTOR OF A DESCRIPTION |                                |                                      |  |
|-----------------------------|---------|-------|---------------|--------------------------|-----------------------|-----------------------------|--------------------------------|--------------------------------------|--|
| Plate<br>Voltage<br>(volts) | Current | Diss. | Diss.         | Grid<br>Diss.<br>(watts) | (volts)               |                             | Current                        |                                      | Outp<br>Powe<br>(watt                  |
| 00                          | 0.300   | 250   | 8.0           | 2.0                      | 2200                  | 400                         | 0.580                          | 57                                   | 770                                    |
| 500                         | 0.300   | 250   | 8.0           | 2.0                      | 1500                  | 400                         | 0.265                          |                                      | 200                                    |
|                             | 500     | 0.300 | 600 0.300 250 | 600 0.300 250 8.0        | 500 0.300 250 8.0 2.0 | 500 0.300 250 8.0 2.0 2200  | 500 0.300 250 8.0 2.0 2200 400 | 500 0.300 250 8.0 2.0 2200 400 0.580 | 500 0.300 250 8.0 2.0 2200 400 0.580 — |

#### EXTERNAL ANODE . FORCED-AIR COOLED I

500 MHz

Forced Air

### 4CX125C and 4CX125F

The 4CX125C is a nonzontally-finned version of the 4CX300A and is intended for use where transverse air cooling is desired. It is also use-ful where anode power is dissipated by liquid immersion. Its electrical characteristics are identical to those of the 4CX300A with the excep-tion of plate dissipation which is established at 125 watts with air cooling. It is ideally suited for applications where shock and/or vibra-tion are experienced. The 4CX125F is an identical tube with a 26.5 volt heater. PLATE DISSIPATION 125 watts

FREQUENCY FOR MAXIMUM RATINGS COOLING

#### CHARACTERISTICS

CHARACTERISTICS Cathode: Oxide-coated, unipotential Heater: 4CX125C 4CX125F Voltage 6.0 2.65 volts Current 2.6 to 31. 59 to 7.0 amps Capacitances (Grounded Cathode): Input 25 to 33 pf Output 3.5 to 4.5 pf Feed-Through 0.06 pf Net Weight 3.5 ounces

|        |                    |                                       |                           | Maxin                     | um Ra                      | tings                    | Typical Operation           |                              |                           |                           |     |    |
|--------|--------------------|---------------------------------------|---------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|---------------------------|---------------------------|-----|----|
| Amplif | Type of<br>Service | Plate<br>Voltage<br>(volts)           | Plate<br>Current<br>(amp) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Drive<br>Power<br>(watts) |     |    |
| С      |                    | Frequency Power<br>ier and Oscillator | 2000                      | 0.250                     | 125                        | 12                       | 2                           | 2000                         | 250                       | 0.250                     | 2.9 | 39 |
| С      |                    | lodulated RF<br>Amplifier             | 1500                      | 0.200                     | 80                         | 12                       | 2                           | 1500                         | 250                       | 0.200                     | 1.7 | 23 |

6816

The 6816 is a small coaxial power tetrode designed for UHF po amplifier and oscillator service up to 1200 MHz. Coaxial of struction makes this tube suifable for cavity circuits. PLATE DISSIPATION 115 w 1200

FREQUENCY FOR MAXIMUM RATINGS COOLING

#### CHARACTERISTICS

 Cathode: Oxide-coated, unipotential Heater:
 Base
 Coaxial Socket
 Coaxial

 Voltage
 6.3 volts
 Max. Seal Temp.
 250 °C

 Current
 2.26 amps (max)
 Max. Pight
 1.95 linches

 Capacitances:
 Input
 36.2 pf(max)
 Net Weight
 2.2 ounces

 Output
 5.0 pf(max)
 Net Weight
 2.2 ounces

| UHF power<br>coaxial con- |  |                             | Typical Operation |       |     |       |                             |     |       |     |      |
|---------------------------|--|-----------------------------|-------------------|-------|-----|-------|-----------------------------|-----|-------|-----|------|
| 115 watts<br>1200 MHz     | Class of Type of<br>Operation Service  | Plate<br>Voltage<br>(volts) | Current           | Diss. |     | Diss. | Plate<br>Voltage<br>(volts) |     |       |     | Powe |
| Forced Air                | C RF Power Amplifier<br>and Oscillator | 1000                        | 0.180             | 115   | 4.5 | -     | 900                         | 300 | 0.170 | 5.0 | 40   |

# 6884

The 6884 is a small coaxial tetrode designed for UHF power a plifier and oscillator service up to 1200 MHz. The coaxial c struction makes this tube suitable for cavity circuits. This tube identical to the 6816 except for heater voltage. 115 wa

PLATE, DISSIPATION FREQUENCY FOR MAXIMUM RATINGS COOLING

CHARACTERISTICS

Cathode: Oxide-coated, unipotential Voltage 26.5 volts Current 0.45 to 0.57 amperes Capacitances: Input 28.7 to 36.2 pf Output 4.0 to 5.0 pf Feed-Through .065 pf Base Coaxial Socket Erie 2948-000 Max. Seal Temp. 250 °C Max. Height 1.95 inches Nax. Diameter 1.31 inches Net Weight 2.2 ounces

| power am-  |  |                             | Maxim   | um Rat | tings                      | Typical Operation |         |     |                            |     |     |
|--|--|-----------------------------|---------|--------|----------------------------|-------------------|---------|-----|----------------------------|-----|-----|
| oaxial con<br>his tube is<br>115 watts<br>1200 MHz | Class of Type of<br>Operation Service              | Plate<br>Voltage<br>(volts) | Current | Diss.  | Screen<br>Diss.<br>(watts) | Diss.             | Voltage |     | Plate<br>Current<br>(amps) |     | Pow |
|  | C Radio-Frequency Power<br>Amplifier and Oscillato |                             | 0.180   | 115    | 4.5                        | -                 | 900     | 300 | 0.170                      | 5.0 | 40  |

#### EXTERNAL ANODE . FORCED-AIR COOLED

# 7034/4X150A and 7035/4X150D

The veteran of external-anode tetrodes, and an Eimac original, continues to enjoy its deserved popularity. Recent tube improve-ments have made possible increases in maximum plate-voltage and plate-dissipation ratings. In Class-AB or Class-C service an input power of 500 walts is now allowed at frequencies up to 150 MHz, The 4X150D is a 26.5 volt heater version of the 4X150A.

PLATE DISSIPATION 250 watts FREQUENCY FOR MAXIMUM RATINGS 150 MHz COOLING Forced Air

#### CHARACTERISTICS

| Cathode: Oxide-co  | stad uninstantial | Dana           | 9-pin, special |
|--------------------|-------------------|----------------|----------------|
|                    |                   |                |                |
| Heater: 4X150A     | 4X150D            | Socket Eimac   | SK-600 series  |
| Voltage 6.0        | 26.5 volts        | Max. Base-Seal | Temp. 175 °C   |
| Current            |                   | Max. Anode Co. | re Temp.       |
|                    | 0.50 to 0.62 amps |                | 250 °C         |
| Capacitances (Grou | inded Cathode):   | Max, Height    | 2.404 inches   |
| Input              | 14.5 to 17.0 pt   | Max, Diameter  | 1.640 inches   |
| Output             | 4.0 to 4.8 pf     | Net Weight     | 4 ounces       |
| Feed-Through       | 0.05 pf           | the margine    |                |

|                 |   |                             | Maxir                     | num Ra                    | tings                      |                          |                             | Typic                        | al Operat                 | tion                      |                            |
|-----------------|---|-----------------------------|---------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|---------------------------|---------------------------|----------------------------|
|                 | ss of Type of<br>eration Service                  | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| AB1             | Audio-Frequency Power<br>Amplifier and Modulator  | 2000                        | 0.250                     | 250                       | 12                         | _                        | 2000                        | 350                          | 0.500*                    | 0                         | 600*                       |
| AB <sub>1</sub> | Radio Frequency Linear<br>Power Amplifier SSB     | 2000                        | 0.250                     | 250                       | 12                         | -                        | 2000                        | 350                          | 0.250                     | 0                         | 300                        |
| С               | Radio-Frequency Power<br>Amplifier and Oscillator | 2000                        | 0.250                     | 250                       | 12                         | 2                        | 2000                        | 250                          | 0.250                     | 2.9                       | 390                        |
| С               | Plate-Modulated RF<br>Power Amplifier             | 1600                        | 0.200                     | 165                       | 12                         | 2                        | 1500                        | 250                          | 0.200                     | 1.7                       | 235                        |
|                 |   |                             |                           |                           |                            |                          | -                           |                              |                           | *Two                      | tubes.                     |

4X150G

4X150A



4X1508

P

# 8172/4X150G

One of the forerunners in external-anode coaxial-based tetrodes, the 4X150G continues to deliver long life and high reliability in VHF and UHF applications. It is intended for use in CW service at frequencies up to 1200 MHz and is useful in pulse service at fre-quencies up to 1500 MHz. PLATE DISSIPATION 250 watts

FREQUENCY FOR MAXIMUM RATINGS

#### COOLING

CHARACTERISTICS Cathode: Oxide-coated, unipotential Heater: Voltage Current Heater: 2.5 volts Voltage 6.2 to 7.3 amperes Carpacitances (Grounded Cathode): Input 25.0 to 29.0 pf Output 4.0 to 4.9 pf Feed-Through 0.05 pf



150 MHz Forced Air

|                       |  |                                     |                             | Maxir                      | num Ra                    | tings                      | Typical Operation        |                             |                              |                            |                           |                            |
|-----------------------|--|-------------------------------------|-----------------------------|----------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|---------------------------|----------------------------|
| Class of<br>Operation |  | Type of<br>Service                  | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| Вту                   |  | Frequency Linear<br>ier — TV Visual | 1250                        | 0.250                      | 250                       | 12                         | 2                        | 1250                        | 300                          | 0.305*                     | 9                         | 250*                       |
| C                     |  | Pulsed RF<br>Amplifier<br>scilator  | 7000<br>pulse               | **                         | 250                       | 12                         | 2                        | 7000<br>pulse               | 1000                         | 6.0 M                      | 1200<br>AHz Osc           | 17,000                     |

Peak synchronizing level. \*\*Maximum pulse cathode current, 7 amperes; maximum pulse duration, 5 microseconds.

## 8296/4X150R and 8297/4X150S

This Eimac tetrode is a ruggedized version of the famous 4X150A. It incorporates construction features found in the 4CX300A and 4CX250R resulting in a tube capable of operating at full voltages in environments where moderate shock and vibration are present. The 4X150R will replace the 4X150A in nearly all applications since it is electrically identical except for a small (1.75 pt) increase in input-capacitance limits, in feed-through capacitance (0.01 pt) and in heater current (0.1 ampere). The 4X150S is identical but incorporates a 26.5 volt heater for mobile or airborne applications. PLATE DISSIPATION 250 watts

FREQUENCY FOR MAXIMUM RATINGS COOLING

#### CHARACTERISTICS

Cathode: Oxide-coated, unipotential Heater: 4X150R 4X1508 Voltage 6.0 26.5 volts Current 2.4 to 3.0 0.56 to 0.68 amps Capacitances (Grounded Cathode): Input 16.25 to 18.75 pf Output 4.0 to 4.8 pf Feed-Through 0.06 pf

|                 |   |                             | Maxin                     | num Ra                    | tings                      |                          | Typical Operation           |                              |                           |                           |                           |  |
|-----------------|---|-----------------------------|---------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|---------------------------|---------------------------|---------------------------|--|
|                 | eration Service                                   | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts |  |
| ABı             | Audio-Frequency Power<br>Amplifier and Modulator  |                             | 0.250                     | 250                       | 12                         |                          | 2000                        | 350                          | 0.500*                    | 0                         | 600*                      |  |
| AB <sub>1</sub> | Radio-Frequency Linear<br>Power Amplifier—SSB     | 2000                        | 0.250                     | 250                       | 12                         |                          | 2000                        | 350                          | 0.250                     | 0                         | 300                       |  |
| С               | Radio-Frequency Power<br>Amplifier and Oscillator |                             | 0.250                     | 250                       | 12                         | 2                        | 2000                        | 250                          | 0.250                     | 2.9                       | 390                       |  |
| С               | Plate-Modulated RF<br>Power Amplifier             | 1600                        | 0.200                     | 165                       | 12                         | 2                        | 1500                        | 250                          | 0.200                     | 1.7                       | 235                       |  |
|                 |   |                             |                           |                           |                            |                          |                             |                              |                           | *Two                      | tubes                     |  |



# 7203/4CX250B and 7204/4CX250F

A 250-watt general purpose external-anode tetrode featuring cer-amic-metal construction. This compact power tube can be used at maximum ratings at frequencies up to 500 MHz. It is recommended for use in equipments of new design. The 4CX250F is identical in all respects except for a heater rated at 26.5 volts.

PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS COOLING

## CHARACTERISTICS

Cathode: Oxide-coated, unipotential Heater; 4CX250B 4CX250F Voltage 6.0 26.5 volts Current 2.3 to 2.9 0.5 to 0.62 amps Capacitances (Grounded Cathode); Input 14.2 to 17.2 pf Output 4.0 to 5.0 pf Feed-Through 0.06 pf

|                 |  |   | Maxin   | num Rat   | tings   |  | Typical Operation  |  |   |  |   |  |
|-----------------|--|---|---|---|---|--|--|--|---|--|---|--|
|                 |  | Plate<br>Voltage<br>(volts)   | Plate<br>Current<br>(amp)   | Plate<br>Diss.<br>(watts)   | Screen<br>Diss.<br>(watts)  | Grid<br>Diss.<br>(watts)   | Plate<br>Voltage<br>(volts)  | Screen<br>Voltage<br>(volts)   | Plate<br>Current<br>(amp)   | Drive<br>Power<br>(watts)  | Output<br>Power<br>(watts)  |  |
| ABı             | Audio-Frequency Power<br>Amplifier and Modulator | 2000  | 0.250   | 250   | 12  | _  | 2000   | 350  | 0.500*  | 0  | 600*  |  |
| AB <sub>1</sub> | Radio-Frequency Linear<br>Power Amplifier—SSB    | 2000  | 0.250   | 250   | 12  |  | 2000   | 350  | 0.250   | 0  | 300   |  |
| С               |  |   | 0.250   | 250   | 12  | 2  | 2000   | 250  | 0.250   | 2.9  | 390   |  |
| C               | Plate-Modulated RF<br>Power Amplifier            | 1500  | 0.200   | 165   | 12  | 2  | 1500   | 250  | 0.200   | 1.7  | 235   |  |
|                 | Op<br>AB1<br>AB1<br>C                            | Operation         Service           AB1         Audio-Frequency Power<br>Amplifier and Modulator           AB1         Radio-Frequency Linear<br>Power Amplifier — SSB           C         Radio-Frequency Power<br>Amplifier and Oscillator           C         Plate-Modulated RF | Operation         Service         Voltage<br>(volts)           AB1         Audio-Frequency Power<br>Amplifier and Modulator         2000           AB1         Radio-Frequency Linear<br>Power Amplifier —SSB         2000           C         Radio-Frequency Power<br>Amplifier and Oscillator         2000           C         Plate-Modulated RF         2000 | Class of<br>Operation         Type of<br>Service         Plate<br>Voltage         Plate<br>Current<br>(volts)           AB1         Audio-Frequency Power<br>Amplifier and Modulator         2000         0.250           AB1         Radio-Frequency Linear<br>Power Amplifier – SSB         2000         0.250           C         Radio-Frequency Power<br>Amplifier and Oscillator         2000         0.250           C         Plate-Modulated RF         2000         0.250 | Class of<br>Operation         Type of<br>Service         Plate<br>Voltage<br>(volts)         Plate<br>Current<br>(amp)         Plate<br>Diss.<br>(watts)           AB1         Audio-Frequency Power<br>Amplifier and Modulator         2000         0.250         250           AB1         Radio-Frequency Linear<br>Power Amplifier –SSB         2000         0.250         250           C         Radio-Frequency Power<br>Amplifier and Oscillator         2000         0.250         250           C         Plate-Modulated RF         2000         0.250         250 | Operation         Service         Voltage<br>(volts)         Current<br>(wolts)         Diss.<br>(amp)         Diss.<br>(watts)         Diss.<br>(watts)           ABi         Audio-Frequency Power<br>Amplifier and Modulator         2000         0.250         250         12           ABi         Radio-Frequency Linear<br>Power Amplifier – SSB         2000         0.250         250         12           C         Radio-Frequency Power<br>Amplifier and Oscillator         2000         0.250         250         12           C         Piate-Modulated RF         2000         0.250         250         12 | Class of<br>Operation         Type of<br>Service         Plate<br>Voltage         Plate<br>Current         Plate<br>Diss.         Diss.         Diss. <thdiss.< th=""> <thdiss.< th=""></thdiss.<></thdiss.<> | Class of<br>Operation         Type of<br>Service         Plate<br>Voltage<br>(volts)         Plate<br>Current         Plate<br>Diss.         Crean<br>Diss.         Plate<br>Diss.         Plate<br>Diss.         Plate<br>Diss.         Plate<br>Voltage<br>(volts)           AB1         Audio-Frequency Power<br>Amplifier and Modulator         2000         0.250         250         12         2000           AB1         Radio-Frequency Linear<br>Power Amplifier - SSB         2000         0.250         250         12         2000           C         Radio-Frequency Power<br>Amplifier and Oscillator         2000         0.250         250         12         2000           C         Plate-Modulated RF         2000         0.250         250         12         2         2000 | Class of<br>Operation         Type of<br>Service         Plate<br>Voltage<br>(volts)         Plate<br>Current<br>(volts)         Plate<br>Diss.<br>(amp)         Screen<br>Diss.<br>(watts)         Plate<br>Diss.<br>(watts)         Screen<br>Voltage<br>(volts)         Voltage<br>Voltage         Voltage<br>Voltage         Voltage<br>Voltage         Voltage<br>Voltage         Voltage         Vo | Class of<br>Operation         Type of<br>Service         Plate<br>Voltage<br>(volts)         Plate<br>Current<br>(volts)         Plate<br>Diss.<br>(amp)         Screen<br>Diss.<br>(watts)         Plate<br>Diss.<br>(watts)         Plate<br>Diss.<br>(watts)         Plate<br>Diss.<br>(watts)         Screen<br>Diss.<br>(watts)         Plate<br>Voltage         Screen<br>Voltage         Plate<br>Voltage         Current<br>(volts)           ABi         Audio-Frequency Power<br>Amplifier and Modulator         2000         0.250         250         12         2000         350         0.500*           ABi         Radio-Frequency Linear<br>Power Amplifier and Scillator         2000         0.250         250         12         2000         350         0.250           C         Radio-Frequency Power<br>Amplifier and Scillator         2000         0.250         250         12         2         2000         250         0.250           C         Plate-Modulated RF         F         2         2         2         0.250         0.250 | Class of<br>Operation         Type of<br>Service         Plate<br>Voltage<br>(wolts)         Plate<br>Current<br>(wolts)         Plate<br>Diss.<br>(watts)         Plate<br>Diss.<br>(watts)         Plate<br>Diss.<br>(watts)         Plate<br>Diss.<br>(wolts)         Plate<br>Diss.<br>(volts)         Plate<br>Voltage<br>(volts)         Plate<br>Voltage<br>Voltage<br>(volts)         Plate<br>Voltage<br>(volts)         Plate<br>Voltage<br>(volts)         Plate<br>Voltage<br>(volts)         Plate<br>Voltage<br>(volts)         Plate<br>Voltage<br>(volts)         Plate<br>Voltage<br>(volts)         Plate<br>Voltage<br>(volts)         Plate<br>Voltage<br>(volts)         Plate<br>Voltage<br>(volts)         Dise<br>Voltage<br>(volts)         Plate<br>Voltage<br>(volts)         Plate<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage<br>Voltage |  |

27

#### EXTERNAL ANODE . FORCED-AIR COOLED



| 8 | 6 | 2 | 1   | /4 | CX | 2 | 5( | )F | G |  |
|---|---|---|-----|----|----|---|----|----|---|--|
| - | ~ | _ | - 1 |    |    |   | -  |    | - |  |

2

The 4CX250F/G is essentially a 4CX250F manufactured for extra stability in airborne linear amplifier service. PLATE DISSIPATION 250 watt

FREQUENCY FOR MAXIMUM RATINGS COOLING

#### CHARACTER

| Cathode: Oxide-co<br>Heater: | ated, unipotential | Es |
|------------------------------|--------------------|----|
| Voltage                      | 26.,5 volts        | Ň  |
| Current                      | 0.62 amperes       | N  |
| Capacitances (Gro            | unded Cathode):    |    |
| Input                        | 17.2 pf            | A  |
| Output                       | 5.0 pf             | N  |
| Feed-Through                 | 0.06 pf            | ħ  |
|                              |                    |    |

| RISTICS  |           |  |
|--|-----------|--|
| Base<br>Socket Eimac S<br>Max. Seal Tem<br>Max. Anode Co | p. 250 °C |  |
| Temp.  | 250 °C    |  |
| Max. Height<br>Max. Diameter                             |           |  |
| Net Weight   | 4 ounces  |  |

| d for extra          |   | Maximum Ratings             |         |       |       |       | Typical Operation           |         |         |  |                            |
|----------------------|---|-----------------------------|---------|-------|-------|-------|-----------------------------|---------|---------|--|----------------------------|
| 250 watts<br>500 MHz | Class of Type of<br>Operation Service             | Plate<br>Voltage<br>(volts) | Current | Diss. | Diss. | Diss. | Piate<br>Voltage<br>(volts) | Voltage | Current |  | Output<br>Power<br>(watts) |
| Forced Air           | AB1 Radio-Frequency Linear<br>Power Amplifier SSB | 2000                        | 0.250   | 250   | 12    | -     | 2000                        | 350     | 0.250   |  | 300                        |

**75800W / 4CX2250R** 4CX250R is a ruggedized version of the 7580. It is intended for use in environments where shock and vibration levels preclude the use of such a tube as the 4CX250B, and where the use of a higher-perveance tetrode is indicated. The 4CX250R is designed to operate with maximum rated plate and screen voltages applied in equipment where shock and/or vibration is experienced. 250 watts

PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS COOLING

#### CHARACTERISTICS

Cathode: Oxide-coated, unipotential Cathode: Oxide-coated, unpotential Heater: Voltage 6.0 volts Current 2.3 to 2.9 amperes Capacitances (Grounded Cathode): Input 16.0 to 18.5 pf Output 4.2 to 5.2 pf Feed-Through 0.06 pf Base 9-pin, special Socket Eimac SK-600 series Max. Seal Temp. 250 °C Max. Anode-Core Temp. 250 °C Max. Height 2.464 inches Max. Diameter 1.640 inches Net Weight 4 ounces

150 MH

|     |   |                             | Maxin                     | num Ra                    | tings                      |                          |                             | Typic                        | al Operat                 | tion                      |                            |
|-----|---|-----------------------------|---------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|---------------------------|---------------------------|----------------------------|
|     | ass of Type of<br>eration Service                 | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| AB; | Audio-Frequency Power<br>Amplifier and Modulator  |                             | 0.250                     | 250                       | 12                         | -                        | 2000                        | 350                          | 0.500*                    | 0                         | 625*                       |
| AB: | Radio-Frequency Linear<br>Power Amplifier—SSB     | 2000                        | 0.250                     | 250                       | 12                         | -                        | 2000                        | 400                          | 0.245                     | 0                         | 495                        |
| C   | Radio-Frequency Power<br>Amplifier and Oscillator |                             | 0.250                     | 250                       | 12                         | 2                        | 2000                        | 250                          | 0.250                     | 2.9                       | 390                        |
| С   | Plate-Modulated R-F<br>Power Amplifier            | 1500                        | 0.200                     | 165                       | 12                         | 2                        | 1500                        | 250                          | 0.200                     | 1.7                       | 235                        |
| _   |   |                             |                           | -                         |                            |                          |                             | -                            |                           | *Two                      | tubes.                     |



## 7609

The 7609 is a power tetrode intended for use as an amplifier or oscillator at full ratings up to 150 MHz. Useful power can be obtained at reduced ratings up to 500 MHz. 250 watt

PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS COOLING

#### CHARAC

Cathode: Oxide-coated, unipotentia Heater: Voltage 26.5 volts Current 0.62 amps (r Capacitances: 26.5 volts 0.62 amps (r 17.0 pf(max 4.3 pf(max 0.05 pf Input Output Feed-Through

|      |                                 | Forced Air                     |          |
|------|---------------------------------|--------------------------------|----------|
| TEF  | RISTICS                         |                                | $\vdash$ |
| al   | Base<br>Socket<br>Max. Seal Tem | 9-pin special<br>SK-600 series | L        |
| max) |                                 | 2.40 inches                    |          |
| ()   |                                 |                                |          |

|   |   |                             | Typical Operation          |                           |                            |                          |      |                              |                            |                           |                          |
|---|---|-----------------------------|----------------------------|---------------------------|----------------------------|--------------------------|------|------------------------------|----------------------------|---------------------------|--------------------------|
|   | eration Service                                       | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) |      | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Outpu<br>Power<br>(watts |
| С | RF Power Amplifier<br>or Oscillator                   | 1600                        | 0.250                      | 250                       | 12                         | 2.0                      | 1500 | 250                          | 0.250                      | 3.2                       | 280                      |
| C | RF Power Amplifier<br>or Oscillator<br>150 to 500 MHz | 1250                        | 0.250                      | 250                       | 12                         | 2.0                      | 1250 | 250                          | 0.200                      | 10                        | 140                      |



# 8245 / 4CX250K and 8246 / 4CX250M

These coaxial base tetrodes are particularly useful as a CW rf amplifier between 500 and 1200 MHz, in pulse applications, the useful frequency is above 1500 MHz. The 4CX250K employs a 6.0 volt heater while the 4CX250M uses a 26.5 volt heater. PLATE DISSIPATION 250 watts

FREQUENCY FOR MAXIMUM RATINGS COOLING

CHARACTERISTICS

Cathode: Oxide-coated, unipotential Heater: 4CX250K 4CX250M Voltage 6.0 26.5 volts Current 2.3 to 3.0 0.53 to 0.68 amps Capacitances (Grounded Cathode): Input 25.0 to 29.0 pf Output 4.0 to 4.9 pf Feed-Through 0.05 pf

| particularly useful as a CW rf<br>fHz, in pulse applications, the  |                                       |   |                             | Maxin                     | num Ra                    | tings                      |                          | Typical Operation           |                              |                           |                           |                            |
|--|---------------------------------------|---|-----------------------------|---------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|---------------------------|---------------------------|----------------------------|
| z. The 4CX250K employs a 6.0<br>a 26.5 volt heater.  | Class of Type of<br>Operation Service |   | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| IGS 250 watts 500 MHz  | ABı                                   | Radio-Frequency Linear<br>Power Amplifier—SSB     | 2000                        | 0.250                     | 250                       | 12                         | -                        | 2000                        | 350                          | 0.250                     | 0                         | 300                        |
| RISTICS  | C                                     | Radio-Frequency Power<br>Amplifier and Oscillator | 2000                        | 0.250                     | 250                       | 12                         | 2                        | 2000                        | 250                          | 0.250                     | 2.9                       | 390                        |
| Base Special, coaxial<br>Max. Seal Temp. 250 °C  | C                                     | Plate-Modulated RF<br>Power Amplifier             | 1500                        | 0.200                     | 165                       | 12                         | 2                        | 1500                        | 250                          | 0.200                     | 1.7                       | 235                        |
| Max. Anode-Core Temp.<br>250 °C<br>Max. Height 2.813 inches<br>Max. Diameter 1.640 inches<br>Net Weight 4 ounces |                                       |   |                             |                           |                           |                            |                          |                             |                              |                           |                           |                            |



#### EXTERNAL ANODE . FORCED-AIR COOLED



#### 4CPX250K

Heater:

This tube is a pulse rated version of the coaxial 4CX250K. New cathode techniques permit pulse currents of over three amperes at pulse lengths up to 250 microseconds. Peak power output of 10kW is available at 0.005 duty. PLATE DISSIPATION 250 watts

#### FREQUENCY FOR MAXIMUM RATINGS COOLING

CHARACTERISTICS Cathode: Oxide-coated, unipotential Heater: Voltage 6.0 volts Current 2.3 to 3.0 amperes Capacitances (Grounded Grid): Input 14.5 to 19.0 pf Output 3.9 to 4.1 pf Feed-Through 0.01 pf

Base Special, coaxia Max. Seal Temp. 250 °C Max. Anode-Core Temp. 250 °C Max. Height 2.813 inches Max. Diameter 1.640 inches Net Weight 4 ounces

500 MHz

Forced Air

500 MHz

Forced Air

2.5 inches 1.65 inches 4 ounces

400 watts

110 MHz

500 MHz Conduction

Forced Air

|  |                             | Maxir                      | num Ra | tings                      |       | Typical Operation           |                              |                            |       |                            |  |
|--|-----------------------------|----------------------------|--------|----------------------------|-------|-----------------------------|------------------------------|----------------------------|-------|----------------------------|--|
| Class of Type of<br>Operation Service              | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Diss.  | Screen<br>Diss.<br>(watts) | Diss. | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Duty  | Output<br>Power<br>(watts) |  |
| C Grid-Pulsed Amplifier<br>450 MHz-250 usec pulses | 5,500                       | 0.250                      | 250    | 12                         | 2     | 5,500                       | 1,000                        | 0.250                      | 0.005 | 10,000                     |  |



## 8167/4CX300A

This rugged ceramic-metal tetrode with unique breechblock basing has electrical characteristics similar to other tubes in the 4X150 and 4X250 families but is especially suited for service in severe environments. Its unusual internal construction assures reliable operation at acceleration levels up to 20 g/s. Suitable for service from dc to 500 MHz, the 4CX300A is first choice for use in new equipment where shock and/or vibration are expected. PLATE DISSIPATION 300 watts

#### FREQUENCY FOR MAXIMUM RATINGS COOLING

CHARACTERISTICS

Base Special, breechblock Socket Eimac SK-700 series Max, Seal Temp, 225 °C Max, Anode Core Temp, 250 °C Max, Height 2.5 inches Cathode: Oxide-coated, unipotential Cathode: Oxide-coated, unipotential Heater: Voltage 6.0 volts Current 2.6 to 3.1 amperes Capacitances (Grounded Cathode): Input 25 to 33 pf Output 3.5 to 4.5 pf Feed-Through 0.06 pf Max. Height Max. Diameter Net Weight

|                 |   |                             | Maxir                     | num Ra                    | tings                      | Typical Operation        |                             |                              |                           |                           |                            |
|-----------------|---|-----------------------------|---------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|---------------------------|---------------------------|----------------------------|
|                 | eration Service                                 | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| AB <sub>1</sub> | Audio-Frequency Powe<br>Amplifier and Modulato  |                             | 0.250                     | 300                       | 12                         |                          | 2500                        | 350                          | 0.500*                    | 0                         | 800*                       |
| AB              | Radio-Frequency Linea<br>Power Amplifier—SSB    | 2500                        | 0.250                     | 300                       | 12                         | -                        | 2500**                      | 350                          | 0.250                     | 0                         | 400                        |
| С               | Radio-Frequency Powe<br>Amplifier and Oscillato |                             | 0.250                     | 300                       | 12                         | 2                        | 2500**                      | 250                          | 0.250                     | 2.8                       | 500                        |
| C               | Plate-Modulated R-F<br>Power Amplifier          | 1500                        | 0.200                     | 200                       | 12                         | 2                        | 1500                        | 250                          | 0.200                     | 1.7                       | 235                        |
|                 |   |                             |                           |                           |                            | *                        | wo tubes                    |                              | **Below                   | 250 MH                    | z only.                    |



## 4CX300Y

COOLING

This special version of the 4CX300A has a higher plate current rating which allows 60 per cent more input power. Physically identical to the 4CX300A, the Eimac 4CX300Y is attractive for general use wherever a compact high-power letrode is indicated.

PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS

# CHARACTERISTICS Base Special breechblock Socket Eimac SK-700 series Max. Seal Temp. 250 °C Max. Anode Core Temp. 250 °C Max. Height 2.5 inches Net Weight 4 ounces

Cathode: Oxide-coated, unipotential Heater Heater Voltage 60 volts Current 3.00 to 3.85 amperes Capacitances Grounded Cathode: Input 3.00 to 38.0 pf Output 3.9 to 5.0 pf Feed-Through 0.07 pf

FREQUENCY FOR MAXIMUM RATINGS

|                 |                     |                                  |                             | Maxir                      | num Ra                    | tings                      |                          | Typical Operation           |                              |                            |                           |                            |  |
|-----------------|---------------------|----------------------------------|-----------------------------|----------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|---------------------------|----------------------------|--|
|                 | ass of<br>peration  |                                  | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |  |
| AB              |                     | equency Power<br>rand Modulator  |                             | 0,4                        | 400                       | 8                          | -                        | 2,000                       | 400                          | 0.75*                      | 0                         | 850*                       |  |
| AB <sub>1</sub> | Radio-Fr<br>Power A | equency Linear<br>mplifier — SSB | 2,000                       | 0.4                        | 400                       | 8                          | -                        | 2,000                       | 400                          | 0.375                      | 0                         | 450                        |  |
| C               |                     | equency Power<br>and Oscillator  |                             | 0.4                        | 400                       | 8                          | 1                        | 2,000                       | 250                          | 0.4                        | 3.8                       | 600                        |  |
| C               |                     | dulated R-F<br>Amplifier         | 1,500                       | 0.3                        | 250                       | 8                          | 1                        | 1,500                       | 250                          | 0.3                        | 1.7                       | 300                        |  |
|                 |                     |                                  |                             |                            |                           |                            |                          | A                           |                              |                            | *Two                      | tubes.                     |  |



## 8072

The 8072 is a conduction cooled ceramic and metal power tetrode designed for use in radio frequency power amplifier, oscillator and linear RF power amplifier service. PLATE DISSIPATION See Note

#### COOLING CHARACTERISTICS

| Cathode: Oxide-coa<br>Heater: | ited, unipotential | Base<br>Socket Myc | 11-pin<br>alex CP464-2 |
|-------------------------------|--------------------|--------------------|------------------------|
| Voltage                       | 13.5 volts         | Max. Seal Tem      |                        |
| Current                       | 1.3 amperes        | Max. Anode Co      | re                     |
| Capacitances (Grou            | inded Cathode):    | Temp.              | 250 °C                 |
| Input                         | 16.0 pf            | Max. Height        | 2.26 inches            |
| Output                        | 7.0 pf             | Max. Diameter      | 1.436 inches           |
| Feed Through                  | 0.01 pf            | Net Weight         | 2 ounces               |

|    |                                     |                             | Maxim                      | um Rat      | ings                       |                          |                             | Typic | al Opera                   | tion                      |                            |
|----|-------------------------------------|-----------------------------|----------------------------|-------------|----------------------------|--------------------------|-----------------------------|-------|----------------------------|---------------------------|----------------------------|
|    | eration Service                     | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) |             | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) |       | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| С  | RF Power Amplifie<br>and Oscillator | 2200                        | 0.300                      | See<br>Note | 8.0                        |                          | 700                         | 175   | 0.30                       | 1.2                       | 110                        |
| AB | Linear Radio-Freq<br>Amplifier      | Jency 2200                  | 0.300                      | See<br>Note | 8.0                        |                          | 700                         | 250   | 0.205                      | 0.3                       | 80                         |

NOTE:

Maximum plate dissipation is limited by maximum anode core temperature which is dependent on the type of conduction cooling employed. With a suitable thermal conductor, such as berylium oxide, the thermal design should insure that for maximum expected anode dissipation, heat flow through the berylium oxide thermal conductor will be sufficient to dissipate that power with no more than 225°C at the interface between anode and berylium oxide.

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#### EXTERNAL ANODE . FORCED-AIR COOLED

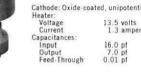
### 8121 and 8122

The 8121 and 8122 are ceramic and metal air-cooled power tetrodes intended for use in radio-frequency power amplifier, oscil-lator and linear RF power amplifier service.

PLATE DISSIPATION 8121 - 150 watts, 8122 - 400 watts FREQUENCY FOR MAXIMUM RATINGS 500 MHz COOLING Forced Air

## CHARACTERISTICS

13.5 volts 1.3 ampe 16.0 pf 7.0 pf 0.01 pf



| -10  | RISTICS      |                |
|------|--------------|----------------|
| tial | Base         | 11-pin         |
|      | Socket M     | vcalex CP464-2 |
|      | Max. Seal Te |                |
| res  | Max. Anode ( | Core           |
|      | Temp.        | 250 °C         |
|      | Max. Height  |                |
|      | 8121         | 2.196 inches   |
|      | 8122         | 2.260 inches   |
|      | Max. Diamete |                |
|      | 8121         | 1.75 inches    |
|      | 8122         | 1.640 inches   |
|      | Net Weight   | 3 ounces       |
|      |              |                |

500 MHz Forced Air

|    |                   |                                       |                             | Maxim                      | um Rat | ings                       |                          |        | Typic                        | al Opera                   | tion   |                          |
|----|-------------------|---------------------------------------|-----------------------------|----------------------------|--------|----------------------------|--------------------------|--------|------------------------------|----------------------------|--------|--------------------------|
|    | iss of<br>eration | Type of<br>Service                    | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Diss.  | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) |        | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) |        | Outpu<br>Power<br>(watts |
| С  |                   | Frequency Power<br>ier and Oscillator | 2200                        | 0.250                      | 105    | 5.0                        | -                        | 1000*  | 200                          | 0.30                       | 5.0    | 165                      |
| AB | Linear<br>Amplif  | Radio-Frequency<br>ier                | 2200                        | 0.300                      | 150    | 8.0                        | -                        | 1500*  | ° 250                        | 0.210                      | 0.3    | 170                      |
|    |                   |                                       |                             |                            | *      | n grid c                   | ircuit at                | 470 MH | z                            |                            | **30 M | Hz                       |

8321/4CX350A and 8322/4CX350F

Max. Height Max. Diameter Net Weight

These tubes are externally identical to the 4CX250B but contain more rugged internal construction. These compact radial beam tetrodes have plate dissipation ratings of 350 watts. These tubes are intended primarily for Class-AB<sub>1</sub> linear service having high transconductance and allowing full output with extremely low drive requirements. The 4CX350A and 4CX350F differ only in heater voltages. PLATE DISSIPATION 350 watts

FREQUENCY FOR MAXIMUM RATINGS COOLING

# CHARACTERISTICS Base Special, breechblock Socket Eimac SK-600 Series Max, Seal Temp. 250 °C Max, Anode-Core Temp, 250 °C Max, Height 2.46 inches Net Weight 4 ounces

Cathode: Oxide-coated, unipotential Heater: 4CX350A 4CX350F Voltage 6.0 26.5 volts Current 2.9 to 3.6 0.66 to 0.81 amps Capacitances (Grounded Cathode): Input 22.2 to 26.2 pf Output 5.0 to 6.0 pf Feed-Through 0.05 pf

|     |         |                                      |                             | Maxir                     | num Ra                    | tings                      |                          |                             | Typic                        | al Operat                  | tion                      |                            |
|-----|---------|--------------------------------------|-----------------------------|---------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|---------------------------|----------------------------|
|     | eration | Type of<br>Service                   | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| ABı |         | Frequency Power<br>ier and Modulator | 2000                        | 0.4                       | 350                       | 8                          | -                        | 2000                        | 400                          | 0.54*                      | 0                         | 600*                       |
| ABı |         | Frequency Linear<br>Amplifier—SSB    | 2000                        | 0.4                       | 350                       | 8                          |                          | 2000                        | 400                          | 0.27                       | 0                         | 300                        |
|     |         |                                      | 1                           |                           |                           |                            |                          |                             |                              |                            | *Two                      | tubes                      |





**4CX600B/F** The 4CX600B/F is a ceramic and metal, air-cooled radial-bean tetrode designed for use in wideband amplifiers, particularly distributed amplifiers. The mechanical and electrical features of this tube are compatible with wideband amplifier circuit requirements.

PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS COOLING

# CHARACTERISTICS Base Special Max. Seal Temp. 250 °C Max. Height 2.5 inches Max. Diameter 3.0 inches Net Weight 7 ounces

Cathode: Oxide-coated, unipotential Heater: 4CX600B 4CX600F Voltage 6.0 26.5 volts Current 4.3 0.93 amperes Capacitar.ces (Grounded Filament): Input 42 to 48 pf Output 5.0 to 6.0 pf Feed-Through 0.20 pf

| radial-beam<br>particularly.       |                                       |                             | Maxim                      | um Rat | ings |       |                             | Typic | al Opera | tion |                            |
|------------------------------------|---------------------------------------|-----------------------------|----------------------------|--------|------|-------|-----------------------------|-------|----------|------|----------------------------|
| compatible                         | Class of Type of<br>Operation Service | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Diss.  |      | Diss. | Plate<br>Voltage<br>(volts) |       |          |      | Output<br>Power<br>(watts) |
| 600 watts<br>800 MHz<br>Forced Air | AB Broadband Linear<br>Amplifier      | 3000                        | 0.600                      | 600    | 15   | 3.0   | 2500                        | 275   | 0.585    | 1.0  | 1000                       |



## 4CX600J

Current

Inout

Capacitances

Outpput Feed-Through

A highly linear beam tetrode for amplifier service. Low input capacitance and high voltage gain provide an ideal amplifier for use with a solid state driver. 3rd and 5th order IMD products -31DB or better when operated as below.

PLATE DISSIPATION 600 watts (max.) COOLING Forced Air CHARACTERISTICS Cathode: Oxide-coated, unip Heater. 6.0 Voltage

50.0

6.3

| otential | Base Special   | 9-pin-B8-236 |
|----------|----------------|--------------|
|          | Socket         | Special      |
| volts    | Max. Seal Temp | o. 250 °C    |
| amperes  | Max. Anode Co. |              |
|          | Temp.          | 250 °C       |
| pf       | Max. Height    | 2.70 inches  |
| pf       | Max. Diameter  | 2.08 inches  |
| pf(max)  | Net Weight     | 7.7 ounces   |
|          |                |              |

|   |                             | Maxim                      | um Rat | ings |     |                             | Typic | al Opera                   | tion |     |
|---|-----------------------------|----------------------------|--------|------|-----|-----------------------------|-------|----------------------------|------|-----|
| Class of Type of<br>Operation Service               | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Diss.  |      |     | Plate<br>Voltage<br>(volts) |       | Plate<br>Current<br>(amps) |      |     |
| AB <sub>1</sub> Radio-Frequency<br>Linear Amplifier | 3000                        | 0.6                        | 600    | 15   | 1.0 | 2000                        | 350   | .487                       | -    | 550 |

Note: Use a bypassed cathode resistor of approximately 11 ohms.



F. 8122

4



# 8168/4CX1000A

COOLING

COOLING

This high-power ceramic-metal tetrode is an excellent choice for appli-cations where class-AB; operation is desired. It is capable of delivering more than 1500 watts plate output power per tube in audio or r-f service without requiring grid driving power. It is recommended for use in new

PLATE DISSIPATION 1000 w FREQUENCY FOR MAXIMUM RATINGS Forced

#### CHARACTERISTICS

Cathode: Oxide-coated, unipotential Cathode; Oxide-coated, unipotential Heater: Voltage 6.0 volts Current 8.1 to 9.9 amperes Capacitances (Grounded Cathode): Input 77 to 90 pf Output 11 to 13 pf Feed-Through 0.02 pf

| SILED. IT IS CAPADLE OF DELIVERING  |                       |                                       |                             |                           |                           |                            |                          |                             |                              |                            |       |                            |
|---|-----------------------|---------------------------------------|-----------------------------|---------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|-------|----------------------------|
| er per tube in audio or r-f service<br>t is recommended for use in new  | Class of<br>Operation | Type of<br>Service                    | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Power | Output<br>Power<br>(watts) |
| 1000 watts<br>GS 110 MHz  |                       | Frequency Power<br>lier and Modulator | 3000                        | 1.0                       | 1000                      | 12                         | 0                        | 3000                        | 325                          | 1.75*                      | 0     | 3260 *                     |
| Forced Air<br>RISTICS   |                       | Frequency Linear<br>Amplifier—SSB     | 3000                        | 1.0                       | 1000                      | 12                         | 0                        | 3000                        | 325                          | .875                       | 0     | 1630                       |
| Base Special, breechblock<br>Socket Eimac SK-800 series<br>Max, Seal Temp, 250 °C<br>Max, Anode-Core Temp,<br>250 °C<br>Max, Height 4.8 inches<br>Max, Diameter 3.37 inches<br>Net Weight 27 ounces |                       |                                       |                             |                           |                           |                            |                          |                             |                              |                            | *Two  | tubes.                     |

Maximum Ratinos

**Typical Operation** 



## 8352/4CX1000K

This high-power ceramic-metal tetrode is electrically identical to the 4CX1000A, but gives improved performance at UHF due to its solid-ring screen terminal. This terminal surface improves isolation between input and output circuits to a marked degree and insures stable UHF operation as a class-AB<sub>1</sub> amplifier. PLATE DISSIPATION 1000 watts

250 °C 4.75 inches 3.36 inches 28 ounces

110 MHz

Socket SK-820 Max. Seal Temp. 250 °C Max. Anode Core Temp. 250 °C

Max. Height Max. Diameter Net Weight

#### CHARACTERISTICS Base

Cathode: Oxide-coated, unipotential Voltage 6.0 volts Current 8.1 to 9.9 amperes Capacitances (Grounded Cathode): Input 84 pf Output 12 pf Feed-Through 0.02 pf

| ves isolation between   |                    |  |                             | Maxin                      | num Ra                    | tings                      |                          |                             | Typic                        | al Operat                  | tion                      |                            |
|---|--------------------|--|-----------------------------|----------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|---------------------------|----------------------------|
| d insures stable UHF<br>1000 watts                            | Class of<br>Operat |  | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| Forced Air<br>S   |                    | dio-Frequency Linea<br>wer Amplifier – SSB |                             | 1.0                        | 1000                      | 12                         | 0                        | 2500                        | 325                          | 0.885                      | 0                         | 1300                       |
| Special, ring and<br>breechblock<br>SK-820<br>al Temp. 250 °C |                    |  |                             |                            |                           |                            |                          |                             |                              |                            |                           |                            |



# 4CX1500A

The 4CX1500A is a compact, high power ceramic and metal tetrode. It incorporates rugged internal construction features. A feature of this tube is the sturdy mesh cathode which allows it to meet de-manding vibration and shock requirements. The 4CX1500A is use-ful up to 110 MHz and is recommended for use as a RF linear amplifier, a Class AB audio amplifier, a Class C power amplifier, plate modulated amplifier or a pulse modulator. PLATE DISSIPATION 1500 watts

FREQUENCY FOR MAXIMUM RATINGS COOLING

#### CHARACTER

N ٨

Filament: Thoriated tungsten Voltage 5.0 volts Current 38 to 4.3 amperes Capacitances (Grounded Filament): Input 68.0 to 78.0 pf Output 10.5 to 14.5 pf Feed-Through 0.4 pf (max)

| ISTICS   | Forced Air                     |
|--|--------------------------------|
| lase<br>Socket<br>Max. Seal Temp.<br>Max. Envelope | Breechlock<br>SK-831<br>250 °C |
| Temp.<br>Max. Anode Temp<br>Max. Anode Core        | 250 °C<br>250 °C               |
| Temp.<br>Max. Height 4.<br>Max. Diameter 3.        |                                |

|   |   | Maxim   | um Rat   | ings   |   |   | Typic   | al Opera   | tion  |  |
|---|---|---|--|--|---|---|---|--|---|--|
| s of Type of<br>ration Service                  | Plate<br>Voltage<br>(volts)   | Plate<br>Current<br>(amps)  | Plate<br>Diss.<br>(watts)  | Screen<br>Diss.<br>(watts)   | Grid<br>Diss.<br>(watts)  | Plate<br>Voltage<br>(volts)   | Screen<br>Voltage<br>(volts)  | Plate<br>Current<br>(amps)   | Drive<br>Power<br>(watts)   | Output<br>Power<br>(watts)   |
| Telegraphy                                      | 5000  | 1.0   | 1500   | 75   | 25  | 4500  | 500   | 0.9  | 9.0   | 3200   |
| Telephony                                       | 3500  | 0.8   | 1000   | 75   | 25  | 3200  | 500   | 0.8  | 10  | 1900   |
| Linear Amplifier                                | 4000  | 1.0   | 1500   | 75   | 25  | 3800  | 500   | 1.33*  | -   | 3200   |
| Pulse Modulator, Pulse<br>Length 100m sec. max. | 5000  | 6.0 pk  | 1500   | 75   | 25  | 5000  | 1500  | 6.0 pk   | -   | 24,000<br>pk   |
|   | ration Sérvice<br>Telegraphy<br>Telephony<br>Linear Amplifier<br>Pulse Modulator, Pulse | ration Service Voltage<br>(volts)<br>Telegraphy 5000<br>Telephony 3500<br>Linear Amplifier 4000<br>Pulse Modulator, Pulse | Voltage         Voltage         Current<br>(volts)           Telegraphy         5000         1.0           Telephony         3500         0.8           Linear Amplifier         4000         1.0           Pulse Modulator, Pulse         1.0 | ation         Service         Voltage Current Diss.<br>(volts)         Output           Telegraphy         5000         1.0         1500           Telephony         3500         0.8         1000           Linear Amplifier         4000         1.0         1500           Pulse Modulator, Pulse         5000         1.0         1500 | Voltage Current Diss.         Diss.           (volts)         (amps)         (watts)           Telegraphy         5000         1.0         1500         75           Telephony         3500         0.8         1000         75           Linear Amplifier         4000         1.0         1500         75           Pulse Modulator, Pulse         5000         1.0         1500         75 | Voltage Current Diss.         Diss. <thdis< th="">         Diss.         <thdiss.< th=""></thdiss.<></thdis<> | Voltage Current Diss.         Diss.         Diss.         Voltage (volts)           Telegraphy         5000         1.0         1500         75         25         4500           Telephony         3500         0.8         1000         75         25         3200           Linear Amplifier         4000         1.0         1500         75         25         3800           Pulse Modulator, Pulse | Voltage         Current         Diss.         Diss.         Voltage         Vo | Voltage         Current         Diss.         Diss.         Voltage         Voltage         Current<br>(volts)         Diss.         Diss.         Voltage         Voltage         Current<br>(volts)         Current<br>(volts)         Diss.         Voltage         Voltage         Current<br>(volts)         Current<br>(volts)         Voltage         Voltage         Voltage         Current<br>(volts)         Current<br>(volts)         Voltage         Voltage         Voltage         Current<br>(volts)         Current<br>(volts)         Voltage         Voltage <td>Valtage         Vultage         Current         Diss.         Diss.         Diss.         Voltage         Vultage         Current         Power<br/>(volts)         Voltage         Current         Power<br/>(volts)         Vultage         Vultage         Vultage</td> | Valtage         Vultage         Current         Diss.         Diss.         Diss.         Voltage         Vultage         Current         Power<br>(volts)         Voltage         Current         Power<br>(volts)         Vultage         Vultage         Vultage |

**8660/4CX1500B** The 4CX1500B is a ceramic-metal, forced-air-cooled, radial-beam tetrode with a rated plate dissipation of 1500 watts. It is a low-voltage, high-current tube specifically designed for exceptionally low intermodulation distortion and low grid interception. The low distortion characteristics make the tube especially suitable for RF and AF linear amplifier service.

1500 watts Forced Air

#### CHARACTERISTICS

| Cathode: Oxide-coa | ited, unipotential |
|--------------------|--------------------|
| Heater:            | 1212               |
| Voltage            | 6.0 volts          |
| Current            | 11 amperes         |
| Capacitances (Grou | inded Cathode);    |
| Input              | 88 pf(max)         |
| Output             | 12.8 pf (max)      |
| Feed Through       | 0.3 pf(max)        |

PLATE DISSIPATION

COOLING

C

| Special      |
|--------------|
| D-800 Series |
| p. 250 °C    |
| re           |
| 250 °C       |
| 4.8 inches   |
| 3.37 inches  |
| 27 ounces    |
|              |

|                                       |                             | Typical Operation          |       |    |                          |      |     |                            |     |                           |
|---------------------------------------|-----------------------------|----------------------------|-------|----|--------------------------|------|-----|----------------------------|-----|---------------------------|
| Class of Type of<br>Operation Service | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Diss. |    | Grid<br>Diss.<br>(watts) |      |     | Plate<br>Current<br>(amps) |     | Output<br>Power<br>(watts |
| AB <sub>2</sub> RF Linear Amplifier   | 3000                        | 0,900                      | 1500  | 12 | 1.0                      | 2500 | 225 | 0.720                      | 1.5 | 900                       |
| AB1 AF Amplifier or<br>Modulator      | 3000                        | 0.900                      | 1500  | 12 | 1.0                      | 2500 | 325 | 1.69*                      | -   | 2258*                     |

\*Two tubes

#### EXTERNAL ANODE # FORCED-AIR COOLED



#### 8169/4CX3000A

The 4CX3000A is a new ceramic-metal tetrode designed especially for class-AB, linear amplifier service. In such service, the intermodulation distortion products produced by the 4CX3000A are of very low level, typically 32 to 44 db below PEP level, depending on operating condi-tions. The ample grid and screen dissipation ratings also make the 4CX3000A attractive for use as a class-C amplifier. The 4CX3000A is first choice for modern, new equipment design.

PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS COOLING

#### CHARACTERISTICS

Filament: Thoriated tunasten Voltage 9.0 volts Current 43.5 amperes Capacitances (Grounded Filament): Input 140 pf Output 14.5 pf 1 Feed-Through 1.4 pf (max) 1.4 pf (max)

Base Special, ring and breechblock breechblock Max. Seal Temp. 250 °C Max. Anode Core Temp. 250 °C Max. Height 7.90 inches Nax. Diameter 4.63 inches Net Weight 5.5 pounds

3000 watts

150 MHz

Forced Air

|     |                                    |                    |                             | Maxin                      | um Ra                     | tings                      |                          |                             | Typic                        | al Operat                  | tion                     |        |
|-----|------------------------------------|--------------------|-----------------------------|----------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|--------------------------|--------|
|     | ss of Type of<br>eration Service   | Type of<br>Service | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts | Power  |
| ABı | Audio-Frequenc<br>Amplifier and Mo |                    | 6000                        | 2.0                        | 3500                      | 175                        | 50                       | 5000                        | 850                          | 3.6*                       | 0                        | 11,400 |
| AB1 | Radio-Frequency<br>Power Amplifier |                    | 6000                        | 2.0                        | 3500                      | 175                        | 50                       | 5000                        | 850                          | 1.65                       | 0                        | 5300   |
| C   | Radio-Frequency<br>Amplifier and O |                    | 7000                        | 2.0                        | 3000                      | 175                        | 50                       | 7000                        | 500                          | 1,9                        | 41                       | 11,000 |
| С   | Plate-Modulated<br>Power Amplifier |                    | 5000                        | 1.4                        | 2000                      | 175                        | 50                       | 5000                        | 500                          | 1.4                        | 31                       | 5750   |
|     |                                    |                    |                             |                            |                           |                            |                          |                             |                              |                            | *Two                     | tubes. |

# 8170 Ernar 40x5000A

## 8170/4CX5000A

This high-power ceramic and metal tetrode features high class-ABi output power at audio and radio frequencies. It is also an excellent choice for AM or FM commercial service where high-efficiency class-C operation is desired. Its modern and straight-forward design makes it preferred for use in new equipments. 5000 watts

PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS COOLING

#### CHARACTERISTICS

Filament: Thoriated tungsten Voltage 7.5 volts Current 73 to 78 amperes Capacitances (Grounded Filament): Input 108 to 122 pf Output 18.0 to 23.0 pf Feed-Through 1.0 pf

Base Special, concentric Socket Eimac SK-300A Max, Seal Temp. 250 °C Max, Anode-Core Temp. Max, Diameter 4, 393 inches Net Weight 9.55 pounds

30 MHz Forced Air

|   |                    |                                       |                            | Maxin                     | num Ra                     | tings                    |                             |                              | Typic                      | al Opera                  | tion                       |         |
|---|--------------------|---------------------------------------|----------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|---------------------------|----------------------------|---------|
| Amplif<br>AB <sub>1</sub> Radio-<br>Power | Type of<br>Service | Plate<br>Voltage<br>(volts)           | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss,<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |         |
| ABı                                       |                    | Frequency Power<br>ier and Modulator  | 7500                       | 4.0                       | 6000                       | 250                      | 75                          | 7000                         | 1250                       | 3.65*                     | 0                          | 17,500* |
| AB1                                       |                    | Frequency Linear<br>Amplifier—SSB     | 7500                       | 4.0                       | 6000                       | 250                      | 75                          | 7500                         | 1250                       | 1.9                       | 0                          | 10,000  |
| С   |                    | Frequency Power<br>ier and Oscillator |                            | 3.0                       | 5000                       | 250                      | 75                          | 7500                         | 500                        | 2.8                       | 150                        | 16,000  |
| С   |                    | Modulated R-F<br>Amplifier            | 5 500                      | 2.5                       | 3500                       | 250                      | 75                          | 5000                         | 500                        | 1.4                       | 25                         | 5800    |
|   |                    |                                       |                            |                           |                            |                          |                             |                              |                            |                           | *Two                       | tubes.  |



# 4CX5000J

COOLING

Filament: Thori Voltage Current

The 4CX5000J is recommended for use in linear amplifier service where low levels of intermodulation distortion are required, and where the mechanical environment includes shock and vibration as in transportable equipment. PLATE DISSIPAT

| ATION  |                      | 5000 watts                                    |
|--|----------------------|---|
|  |                      | Forced Air                                    |
| CHARACTE                                       | RISTICS              |   |
| ated tungsten mesh<br>7.5 volts<br>100 amperes | Base<br>Socket       | Coaxial<br>Eimac SK-300<br>or SK-300A         |
|  | Max. Envelo<br>Temp. | ope 250 °C                                    |
|  |                      | 250 °C<br>t 9.125 inches<br>eter 4.938 inches |

|   | Maximum Ratings             |                            |       |       |    |      | Typical Operation |         |                           |                            |  |
|---|-----------------------------|----------------------------|-------|-------|----|------|-------------------|---------|---------------------------|----------------------------|--|
| Class of Type of<br>Operation Service   | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Diss. | Diss. |    |      |                   | Current | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |  |
| AB1 Radio-Frequency<br>Linear Amplifier | 7500                        | 4.0                        | 5000  | 250   | 75 | 4050 | 800               | 1.61    | -                         | 3750                       |  |



# 8170W/4CX5000R

A ruggedized version of the 4CX5000A power tetrode, the 4CX5000R incorporates a sturdy mesh cathode construction. Electrically identical to the "A" version, it is an excellent choice for high power applications in severe environments. Ρ 5000 watts

| PLATE DISS | IPATI | ON      |            |
|------------|-------|---------|------------|
| FREQUENCY  | FOR   | MAXIMUM | RATINGS    |
| COOLING    |       |         |            |
|            |       | OIL DA  | ATTRIATION |

#### CHARACTERISTICS

Filament: Thoriated tugsten Voltage 7.5 volts Current 73 to 78 amperes Capacitances (Grounded Filament): Input 108 to 122 pf Output 18.0 to 23.0 pf Feed-Through 1.0 pf

HSTICS Base Special, concentric Socket Eimac SK-300A Max, Seal Temp. 250 °C Max. Anode-Core Temp. Max. Diameter 4,938 inches Net Weight 9.5 pounds

30 MHz

Forced Air

|                 |   |                             | Maxin                      | num Rat                   | tings                      |                          |                             | Typic                        | tion                       |                           |                            |
|-----------------|---|-----------------------------|----------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|---------------------------|----------------------------|
|                 | ss of Type of<br>eration Service                  | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| AB <sub>1</sub> | Audio-Frequency Power<br>Amplifier and Modulator  | 7500                        | 4.0                        | 6000                      | 250                        | 75                       | 7000                        | 1250                         | 3.65*                      | 0                         | 17,5004                    |
| AB <sub>1</sub> | Radio-Frequency Linear<br>Power Amplifier—SSB     | 7500                        | 4.0                        | 6000                      | 250                        | 75                       | 7500                        | 1250                         | 1.9                        | 0                         | 10,000                     |
| С               | Radio-Frequency Power<br>Amplifier and Oscillator | 7500                        | 3.0                        | 5000                      | 250                        | 75                       | 7500                        | 500                          | 2.8                        | 150                       | 16,000                     |
| С               | Plate-Modulated RF<br>Power Amplifier             | 5000                        | 2.5                        | 3500                      | 250                        | 75                       | 5000                        | 500                          | 1.4                        | 25                        | 5800                       |
|                 |   |                             |                            |                           |                            |                          |                             |                              |                            | *Two                      | tubes.                     |

#### EXTERNAL ANODE . FORCED-AIR COOLED



## 8171/4CX10,000D

This Eimac tetrode is electrically identical to the 4CX5000A except for its plate dissipation rating and is intended for use where th extra plate dissipation is a necessity. It may be used at maximu ratings through 30 MHz and at slightly reduced ratings throug the FM broadcast band.

#### PLATE DISSIPATION 10,000 wat FREQUENCY FOR MAXIMUM RATINGS 30 MH Forced A

Max. Height Max. Diameter Net Weight

# CHARACTERISTICS Base Special, concentr Socket Eimac SK-300 Max. Seal Temp. 250 ° Max. Anode-Core Temp. 250 °

Filament: Thoriated tungsten Voltage 7.5 volts Current 73 to 78 amperes Capacitances (Grounded Filament): Input 115 pf Output 21 pf Feed-through 1.0 pf

| use where the<br>ed at maximum<br>ratings through              |                 | ss of<br>eration | Type of<br>Service                    | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) |
|--|-----------------|------------------|---------------------------------------|-----------------------------|---------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|---------------------------|
| 10,000 watts   | AB <sub>1</sub> |                  | Frequency Power<br>ier and Modulator  | 7500                        | 4.00                      | 12,000                    | 250                        | 75                       | 7500                        | 1500                         | 6.66*                     |
| 30 MHz<br>Forced Air   | ABı             |                  | Frequency Linear<br>wer Amplifier     | 7500                        | 4.00                      | 12,000                    | 250                        | 75                       | 7500                        | 1500                         | 3.33                      |
|  | С               |                  | Aodulated r-f<br>er Amplifier         | 5000                        | 2.5                       | 6650                      | 250                        | 75                       | 5000                        | 500                          | 1.4                       |
| ecial, concentric<br>Eimac SK-300A<br>mp. 250 °C<br>Core Temp. | C               |                  | Frequency Power<br>ier and Oscillator | 7500                        | 3.0                       | 10,000                    | 250                        | 75                       | 7500                        | 500                          | 2.8                       |
| 250 °C<br>9.13 inches<br>7.05 inches<br>12.2 pounds            |                 |                  |                                       |                             |                           |                           |                            |                          |                             |                              |                           |

Maximum Ratings

**Typical Operation** 

Drive Output Power Power (watts) (watts)

0 31,900\*

0 15,950

25 5800

150 16 000 \*Two tubes.

8281 ACX15.000A



COOLING

## 8281/4CX15,000A

A versatile addition to the Eimac line of ceramic-metal power tetrodes, the 4CX15.000A is similar to the 4CX10.000D but features higher plate voltage and current and greater plate dissipation. These increased capa-bilities allow it to operate at full ratings through the FM broadcast band. The 4CX15.000A is recommended for use in new equipment design. PLATE DISSIPATION 15,000 watts 110 MHz

FREQUENCY FOR MAXIMUM RATINGS COOLING

#### CHARACTERISTICS

Filament: Thoriated fungsten Voltage 5.3 volts Current 152 to 163 ampress Capacitances: Grounded Filament): Input 148.5 to 161.5 pf Output 22.0 to 27.0 pf Feed-Through 2.0 pf

Base Special, concentric Socket Eimac SK-300A Max. Seal Temp. 250 °C Max. Anode Core Temp. 250 °C 250 °C Max. Height 9.44 inches Max. Diameter 7.58 inches Net Weight 12.8 pounds

Forced Air

|                       |                   |                                      |                             | Maximum Ratings Typ        |                           |                            |                          |                             |                              | cal Operation              |                           |                            |  |
|-----------------------|-------------------|--------------------------------------|-----------------------------|----------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|---------------------------|----------------------------|--|
| Class of<br>Operation |                   | Type of<br>Service                   | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |  |
| C                     |                   | Frequency Power<br>er and Oscillator | 10,000                      | 5.0                        | 15,000                    | 450                        | 200                      | 10,000                      | 750                          | 4.55                       | 220                       | 36,500                     |  |
| C                     |                   | fodulated rf<br>Amplifier            | 8,000                       | 4.0                        | 10,000                    | 450                        | 200                      | 8,000                       | 750                          | 3.65                       | 150                       | 23,500                     |  |
| AB <sub>1</sub>       | Audio-<br>Amplifi | Frequency Power<br>er or Modulator   | 10,000                      | 6.0                        | 15,000                    | 450                        | 200                      | 10,000                      | 1500                         | 8.5*                       | 0                         | 57,000                     |  |
|                       |                   |                                      |                             |                            |                           |                            |                          |                             |                              |                            | *Two                      | tubes.                     |  |



## 4CX15,000J

COOLING

COOLING

The 4CX15,000 is recommended for use in linear amplifier service where low levels of intermodulation distortion are required, and where the mechanical environment includes shock and vibration as in transportable equipment. PLATE DISSIPATION

> Ma Ma Ma Ma Nel

15.000 watts Forced Air

#### CHARACTERISTICS Bas

Filament: Thoriated tungsten mesh Voltage 7.5 volts Current 153 amperes

| x. Height 9.375 inches<br>x. Diameter 7.580 inches  | nus                              |  |
|---|----------------------------------|--|
| emp. 250 °C<br>x. Anode Core<br>emp. 250 °C<br>x. Height 9.375 inches<br>x. Diameter 7.580 inches | se<br>sket E                     | imac SK-300.                           |
| emp. 250 °C<br>x. Height 9.375 inches<br>x. Diameter 7.580 inches                                 | emp.                             | 250 °C                                 |
|   | emp.<br>x. Height<br>x. Diameter | 250 °C<br>9.375 inches<br>7.580 inches |

Forced Ai

|                       |                        | Maxi                        | Maxim   | num Ratings |     |       | Typical Operation |                              |         |       |                            |
|-----------------------|------------------------|-----------------------------|---------|-------------|-----|-------|-------------------|------------------------------|---------|-------|----------------------------|
| Class of<br>Operation | Type of<br>Service     | Plate<br>Voltage<br>(volts) | Current | Diss.       |     | Diss. | Voltage           | Screen<br>Voltage<br>(volts) | Current | Power | Output<br>Power<br>(watts) |
|                       | Frequency<br>Amplifier | 10,000                      | 6.0     | 15,000      | 450 | 200   | 7500              | 1250                         | 2.83    | -     | 13,000                     |



# 8349/4CX35,000C

Eimac's largest, forced-air cooled power tetrode has a plate dissipation rating of 35 kilowatts and is usable to 20,000 plate volts in Class-C and Class-AB amplifier service. A single 4CX35,000C will deliver over 100 kilowatts of CW power as a Class-C power amplifier or oscillator.

#### PLATE DISSIPATION 35,000 watts

#### CHARACTERISTICS Filament: Thor

| Filament: Thoriated | tungsten        | Base Special, con | icentric rings |
|---------------------|-----------------|-------------------|----------------|
| Voltage             | 10.0 volts      | Socket Ei         | mac SK-1500    |
| Current             | 300 amperes     | Max. Seal Temp.   | 250 °C         |
| Capacitances (Group | nded Filament): | Max, Anode Core   | Temp.          |
| Input               | 465 pf          |                   | 250 °C         |
| Output              | 55 pf           | Max, Height       | 17.0 inches    |
| Feed Through        | 2.45 pf         | Max. Diameter     | 9.75 inches    |
| 9                   |                 | Net Weight        | 50 pounds      |

|                                       |   | -                           | Maxir                      | num Ra                    | tings                      |                          | al Opera                    | ation                        |                            |                           |                            |
|---------------------------------------|---|-----------------------------|----------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|---------------------------|----------------------------|
| Class of Type of<br>Operation Service |   | Plate<br>Voltage<br>(volts) | Piate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| ABı                                   | Audio-Frequency Power<br>Amplifier and Modulator  |                             | 15.0                       | 35,000                    | 1750                       | 500                      | 12,000                      | 1500                         | 9.2*                       | 0                         | 70,000*                    |
| AB <sub>1</sub>                       | Radio-Frequency Linear<br>Power Amplifier —SSB    | 20,000                      | 15.0                       | 35,000                    | 1750                       | 500                      | 15,000                      | 1500                         | 5.7                        | 0                         | 55,000                     |
| С                                     | Radio-Frequency Power<br>Amplifier and Oscillator | 20,000                      | 15.0                       | 35,000                    | 1750                       | 500                      | 19,000                      | 750                          | 6.97                       | 258                       | 110,000                    |
| С                                     | Plate-Modulated rf<br>Power Amplifier             | 14,000                      | 15.0                       | 23,000                    | 1750                       | 500                      | 12,000                      | 750                          | 5.40                       | 125                       | 55,000                     |

\*Two tubes.

#### EXTERNAL ANODE S FORCED-AIR COOLED



## 4X500A

This medium-power external-anode tetrode finds wide acceptance in FM broadcast service. The instant-heating filament of thoriated tung-sten and the overall compactness are but two of the 4X500A's bonus features. Maximum ratings apply to 120  $\,$  MHz-

| PLATE DISSIPATION             | 500 watts            |
|-------------------------------|----------------------|
| FREQUENCY FOR MAXIMUM RATINGS | 120 MHz - class-C CV |
|                               | 220 MHz - class-B TV |
| COOLING                       | Forced Ai            |

# CHARACTERISTICS Base 4-pm. Socket Eimac SK-90u Max, Anode-Core Temp. 175 °C 176 mp. 175 °C

Filament: Thoriated tungsten Voltage 5.0 volts Current 12.2 to 13.7 ampres Capacitances (Grounded Cathode): Input 10.6 to 14.4 pf Output 4.9 to 6.9 pf Feed-Through 0.1 pf

|     |  |                             | Maxin       | mum Ra                    | tings                      |                          | Typical Operation           |                              |                           |                           |                           |  |
|-----|--|-----------------------------|-------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|---------------------------|---------------------------|---------------------------|--|
|     | eration Service  | Plate<br>Voltage<br>(volts) | age Current | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts |  |
| Вту | Radio-Frequency Linea<br>Amplifier — TV Visua<br>Service |                             | 0.350       | 500                       | 30                         | 10                       | 2400                        | 500                          | 0.400*                    | 25*                       | 600*                      |  |
| C   | Radio-Frequency Powe<br>Amplifier and Oscillato          |                             | 0.350       | 500                       | 30                         | 10                       | 4000                        | 500                          | 0.315                     | 5                         | 835                       |  |

\*Peak synchronizing level.

#### EXTERNAL ANODE . WATER COOLED

Max. Seal Temp. 175 °C Max. Height 4.750 inches Max. Diameter 2.625 inches Net Weight 1.7 pounds

800 watts 800 MHz Liquid



## 4CW800B and 4CW800F

The 4CW800B/F is a ceramic-metal, liquid-cooled radial-beam tetrode. Its low lead-inductance, low input and output capacitance and small size make it ideal for use in distributed amplifiers for which it was especially designed. Rugged construction, unitized electrode structure and direct mounting to the chassis make the tube suitable for severe shock and vibration environments.

| PLATE DISS           | PATI | ON      |         |
|----------------------|------|---------|---------|
| FREQUENCY<br>COOLING | FOR  | MAXIMUM | RATINGS |

#### CHARACTERISTICS

| Cathode: Oxide coa<br>Heater: 4CW800 |                  | Base<br>Socket  | Special<br>Special |
|--------------------------------------|------------------|-----------------|--------------------|
| Voltage 6.0                          |                  | Max. Seal Temp. |                    |
| Current 4.7                          | 1.25 amperes     | Max. Base Temp. |                    |
| Capacitances (Grou                   | inded Filament); | Max, Height     | 3.0 inches         |
| Input                                | 48 pf (max)      | Max. Diameter   | 3.0 inches         |
| Output                               | 6.0 pf (max)     | Net Weight      | 7.0 ounces         |
| Feed-Through                         | 0.15 pf          |                 |                    |

|                                       |                             | Maximum Ratings            |       |    |       |                             | Typical Operation            |         |       |       |  |  |
|---------------------------------------|-----------------------------|----------------------------|-------|----|-------|-----------------------------|------------------------------|---------|-------|-------|--|--|
| Class of Type of<br>Operation Service | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Diss. |    | Diss. | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Current | Power | Power |  |  |
| AB1 Broadband Linear<br>Amplifier     | 3000                        | 0.600                      | 800   | 15 | 3.0   | 1500                        | 275                          | 0.580   | 0.12  | 590   |  |  |

# 4CW2000A

## 8244/4CW2000A

This recent addition to the Eimac line is electrically identical to the popular 4CX1000A except for its plate-dissipation rating which is 2000 watts. It is intended for use where water cooling is preferred or where higher anode-dissipation capability is required. PLATE DISSIPATION 2000 watts

FREQUENCY FOR MAXIMUM RATINGS

Water and Forced Air CHARACTERISTICS

Cathode: Oxide-coated, unipotential Cathode: Oxide-coated, unpotential Heater: Voltage 6.0 volts Current 8.1 to 9.0 amperes Capacitances (Grounded Cathode): Input 77 to 90 pf Output 11 to 13 pf Feed-Through 0.02 pf

COOLING

Base Special, breechblock Socket Eimac SK-800 series Max, Seal Temp. 250 °C Max, Height 5.540 inches Max, Diameter 2.660 inches Net Weight 1.7 pounds

110 MHz

30 MHz

|   |                             | Maxin                     | num Ra                    | tings                      |                          | Typical Operation           |                              |                            |                           |                           |  |
|---|-----------------------------|---------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|---------------------------|---------------------------|--|
| Class of Type of<br>Operation Service                         | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts |  |
| AB1 Audio-Frequency Power<br>Amplifier and Modulator          | 3000                        | 1.0                       | 2000                      | 12                         | 0                        | 3000                        | 325                          | 1.75*                      | 0                         | 3360*                     |  |
| AB <sub>1</sub> Radio-Frequency Linear<br>Power Amplifier—SSB | 3000                        | 1.0                       | 2000                      | 12                         | 0                        | 3000                        | 325                          | 0.875                      | 0                         | 1630                      |  |



## 4CW10,000A

Electrically identical to the 4CX5000A except for its plate dissipation rating, the 4CW10,000A is intended for use where water cooling is preferred or where the extra plate dissipation is a necessity. It may be used at maximum ratings through 30 MHz and at slightly reduced ratings through the FM broadcast band.

PLATE DISSIPATION 12,000 watts FREQUENCY FOR MAXIMUM RATINGS COOLING Water and Forced Air

# CHARACTERISTICS Base Special, concentric Socket Eimac SK-300A Max, Seal Temp. 250 °C Max, Height 11.44 inches Max, Diameter 4.66 inches Net Weight 7.5 pounds

Filament: Thoriated tungsten Voltage 7.5 volts Current 7.3 to 78 amperes Capacitances (Grounded Filament): Input 108 to 122 pt Output 18 to 23 pf Feed-Through 1.0 pf

|                 |   |      | Maximum Ratings |                           |                            |                          |            |            | al Operat                  | tion                      |                            |
|-----------------|---|------|-----------------|---------------------------|----------------------------|--------------------------|------------|------------|----------------------------|---------------------------|----------------------------|
|                 | s of Type of<br>ration Service                    |      | Voltage Current | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | s. Voltage | ge Voltage | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| AB <sub>1</sub> | Audio-Frequency Power<br>Amplifier and Modulator  |      | 4.00            | 12,000                    | 250                        | 75                       | 7500       | 1500       | 6.66*                      | 0                         | 31,900                     |
| AB <sub>1</sub> | Radio-Frequency Linear<br>Power Amplifier         | 7500 | 4.00            | 12,000                    | 250                        | 75                       | 7500       | 1500       | 3.33                       | 0                         | 15,950                     |
| С               | Plate-Modulated r-f<br>Power Amplifier            | 5000 | 2.5             | 6650                      | 250                        | 75                       | 5000       | 500        | 2.4                        | 120                       | 8500                       |
| С               | Radio-Frequency Power<br>Amplifier and Oscillator | 7500 | 3.0             | 10,000                    | 250                        | 75                       | 7500       | 500        | 2.8                        | 150                       | 16,000                     |
|                 |   |      |                 |                           |                            |                          |            |            |                            | +7                        |                            |

\*Two tubes.



# 4CW25,000A

The 4CW25,000A is a liquid-cooled, general purpose tetrode with the same basic characteristics as the air-cooled 4CX15,000A. It is recommended for regulator, and pulse modulator service.

| PLATE DISSIPATION  | 25,000 watts         |
|--|----------------------|
| FREQUENCY FOR MAXIMUM RATING   | S 110 MHz            |
| COOLING  | Water and Forced Air |
| CHARACTE   | RISTICS              |
| 2010 CONTRACTOR AND SHORE AND CONTRACTOR AND |                      |

Filament: Thoriated tungsten Voltage 6.3 volts Current 160 amperes Capacitances (Grounded Filament): Input 155 pf Output 24 pf Feed.-Through Less than 2.0 pf

| 131103                       |                           |
|------------------------------|---------------------------|
| Base<br>Socket Ei            | Coaxial<br>mac SK-300.    |
| Max. Envelope                | or SK-300A                |
| Temp.                        | 250 °C                    |
| Max. Height<br>Max. Diameter | 12.6 inches<br>4.6 inches |
| Net Weight                   | 13.5 pounds               |

| Class of Type of<br>Operation Service   |  | Maxim  | um Rat   | ings   |  |  | Typic   | al Opera   | tion  |  |
|---|--|--|--|--|--|--|---|--|---|--|
|   |  | Plate<br>Current<br>(amps)   | Plate<br>Diss.<br>(watts)  | Screen<br>Diss.<br>(watts)   | Grid<br>Diss.<br>(watts)   | Plate<br>Voltage<br>(volts)  | Screen<br>Voltage<br>(volts)  | Plate<br>Current<br>(amps)   | Drive<br>Power<br>(watts)   | Output<br>Power<br>(watts)   |
| dio Frequency Power<br>aplifier         | 10,000   | 5.0  | 25,000   | 450  | 200  | 9000   | 750   | 4.55   | 220   | 32,000   |
| idio-Frequency<br>oplifier or Modulator | 10,000   | 6.0  | 25,000   | 450  | 200  | 7500   | 1500  | 8.8  | -   | 41,600   |
| gulator, or Pulse<br>odulator           | 20,000   | 55.0   | 25,000   | 450  | 200  |  | -1  |  | -   |  |
| dio-Frequency<br>near Amplifier         | 10.000   | 6.0  | 25,000   | 450  | 200  | 7500   | 1500  | 4.4  |   | 20,800   |
|   | on Service<br>dio Frequency Power<br>plifier<br>dio Frequency<br>plifier or Modulator<br>gulator, or Pulse<br>dulator<br>dio Frequency | Service         Voltage<br>(volts)           dio Frequency Power<br>plifier         10,000           dio Frequency<br>plifier or Modulator         10,000           gulator, or Pulse<br>divilator         20,000           dio Frequency         20,000 | f Type of Plate Plate Voltage Current (volts) (amps)<br>dio-Frequency Power 10,000 5.0<br>dio-Frequency power 10,000 6.0<br>gulator, or Pulse<br>dio-Frequency<br>dio-Frequency 20,000 55.0<br>dio-Frequency | f Type of Service Plate Plate Plate Voltage Current Diss. (volts) (amps) (watts) dio-Frequency Power 10,000 5.0 25,000 dio-Frequency pliffer or Modulator 20,000 55.0 25,000 diulator 20,000 55.0 25,000 dio-Frequency diator 20,000 55.0 25,000 diator 20,000 diator 20,000 55.0 25,000 diator 20,000 55.0 25,000 diator 20,000 diator 20,0000 diator 2 | on         Service         Voltage Current Diss. (volts) (amps) (watts) (watts)           dio-Frequency Power pilifier         10,000         5.0         25,000         450           dio-Frequency polifier or Modulator gulator, or Pulse divalator         10,000         6.0         25,000         450           dio-Frequency of the service | fon         Type of<br>Service         Plate<br>Voltage         Plate<br>Current         Plate<br>Diss.         Plate<br>Diss.         Creat<br>Diss.         Grid<br>Diss.           dio-Frequency Power<br>Iplifier         10,000         5.0         25,000         450         200           dio-Frequency<br>Iplifier or Modulator         10,000         6.0         25,000         450         200           gulator, or Pulse<br>diolator         20,000         55.0         25,000         450         200           dio-Frequency         0000         55.0         25,000         450         200 | f         Type of<br>Service         Plate<br>Voltage<br>(volts)         Plate<br>Current         Plate<br>Diss.         Diss.         Plate<br>Diss.         Plate<br>Voltage<br>(volts)           dio-Frequency Power<br>Iplifier         10,000         5.0         25,000         450         200         9000           dio-Frequency<br>Iplifier or Modulator         10,000         6.0         25,000         450         200         7500           gulator, or Pulse<br>diulator         20,000         55.0         25,000         450         200         —           dio-Frequency         0.000         55.0         25,000         450         200         — | f         Type of<br>Service         Plate<br>Voltage         Plate<br>Current         Diss.<br>Diss.         Orist<br>Diss.         Plate<br>Diss.         Screen<br>Diss.         Screen<br>Diss.         Plat | f         Type of<br>Service         Plate<br>Voltage<br>(volts)         Plate<br>Current<br>(volts)         Plate<br>Diss.<br>(watts)         Screen<br>Diss.<br>(watts)         Plate<br>Diss.<br>(watts)         Plate<br>Diss.<br>(watts)         Plate<br>Diss.<br>(volts)         Screen<br>Diss.<br>(volts)         Plate<br>Diss.<br>(volts)         Plate<br>Diss.<br>(volts)         Screen<br>Diss.<br>(volts)         Plate<br>Diss.<br>(volts)         Screen<br>Diss.<br>(volts)         Plate<br>Diss.<br>(volts)         Screen<br>Diss.<br>(volts)         Plate<br>Diss.<br>(volts)         Screen<br>Diss.<br>(volts)     < | fon         Type of<br>Service         Plate<br>Voltage         Plate<br>Current         Plate<br>Diss.         Diss.         Oiss.         Voltage<br>Voltage         Voltage<br>Current         Drive<br>Power<br>(volts)           dio-Frequency Power<br>Iplifier         10,000         5.0         25,000         450         200         9000         750         4.55         220           dio-Frequency<br>Iplifier or Modulator         10,000         6.0         25,000         450         200         7500         1500         8.8            gulator, or Pulse<br>diolator         20,000         55.0         25,000         450         200           - |



**4CW50,000E**\* The 4CW50,000E is a ceramic-metal, liquid-cooled power tetrode intended for use at the 50 to 100 kW output power level. It is recommended for use as a Class C RF amplifier or oscillator, a Class AB RF linear amplifier, or a Class AB push-pull AF amplifier or modulator. The tube is also useful as a plate and screene mod-ulated Class C RF amplifier. 50,000 watts

#### PLATE DISSIPATION

FREQUENCY FOR MAXIMUM RATINGS COOLING

#### CHARACTERISTICS Base Socket

Filament: Thoriated tungsten mesh Voltage 12 volts Current 220 amperes Capacitances (Grounded Filament): Input 340 pf Output 53 pf Feed-Through 0.7 pf Input Output Feed-Through

Liquid Special SK-2050 Coolant Coolant Jacket SK-2000 Series Max. Seal Temp. 250 °C Max. Height 13.0 inches Max. Diameter 7.75 inches Net Weight 35 pounds

110 MHz

Liquid

| Class of Type of<br>Operation Service |                                       |                             | Maximum Ratings            |        |                           |                          | Typical Operation           |                              |                            |                           |                            |
|---------------------------------------|---------------------------------------|-----------------------------|----------------------------|--------|---------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|---------------------------|----------------------------|
|                                       |                                       | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) |        | Screen<br>Diss<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| С                                     | RF Power Amplifier<br>or Oscillator   | 17,500                      | 12                         | 50.00  | 1500                      | 400                      | 15.000                      | 1500                         | 12                         | 250                       | 140,000                    |
| С                                     | Plate-Modulated RF<br>Power Amplifier | 15,000                      | 12                         | 33,300 | 1500                      | 400                      | 14,000                      | 750                          | 9.9                        | 700                       | 110,000                    |
| AB1                                   | AF Amplifier or<br>Modulator          | 17,500                      | 12                         | 50,00  | 1500                      | 400                      |                             | -                            | -                          |                           | -                          |
| AB <sub>1</sub>                       | RF Linear Amplifier                   | 17,500                      | 12                         | 50,00  | 1500                      | 400                      |                             | -                            | -                          |                           | -                          |

\* Shown with SK-2050 water jacket.



### 4CW100,000D

COOLING

The 4CW100,000D is a ceramic-metal, liquid-cooled power tetrode intended for use at the 100 to 200 kW output power level. It is recommended for use as a Class C RF amplifier or oscillator, a Class AB push pull AF amplifier or a Class AB push-pull AF amplifier or modulator. The 4CW100,000D is also useful as a plate and screen modulated Class C RF amplifier and in pulse modulator-regulator service.

PLATE DISSIPATION 100,000 watts FREQUENCY FOR MAXIMUM RATINGS 30 MHz

#### CHARACTERISTICS

 Filament: Thoriated tungsten
 Base
 Special

 Voltage
 10.0 volts
 Socket
 SK-1500 or 1510

 Current
 310 amps (max)
 Max. Seal Temp.
 250 °C

 Capacitances (Grounded Filament):
 Max. Height
 18.0 inches

 Input
 470 pf
 Max. Diameter
 8.0 inches

 Output
 60 pf (max)
 Net Weight
 60 pounds

 Feed-Through
 3.2 pf
 Feed
 State

|                             | Maximum Ratings  |  |  |  |  | Typical Operation   |  |  |  |
|-----------------------------|--|--|--|--|--|---|--|--|--|
| Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps)                                 | Plate<br>Diss.<br>(watts)  | Screen<br>Diss.<br>(watts)   | Grid<br>Diss.<br>(watts)   | Plate<br>Voltage<br>(volts)  | Screen<br>Voltage<br>(volts)  | Plate<br>Current<br>(amps)   | Drive<br>Power<br>(watts)  | Output<br>Power<br>(kW)  |
| 20,000                      | 15.0   | 100,000  | 1750   | 500  | 17,000   | 750   | 9.8  | 1020   | 137.5  |
| 17,500                      | 15.0   | 66,500   | 1750   | 500  | 16,000   | 750   | 10.0   | 870  | 138.5  |
| 20,000                      | 15.0   | 100,000  | 1750   | 500  | 18,000   | 1500  | 20*  | -  | 246.4  |
| 20,000                      | 15.0   | 100,000  | 1750   | 500  | 18,000   | 1500  | 10.0   | -  | 123.2  |
| 40,000                      |  | 100,000  | 1750   | 500  | 38.000   | 1500  | 112  | -  | 3600   |
|                             | Voltage<br>(volts)<br>20,000<br>17,500<br>20,000<br>20,000 | Plate         Plate         Plate           Voltage         Current         (volts)         (amps)           20.000         15.0         17,500         15.0           20,000         15.0         20,000         15.0 | Plate         Plate <th< td=""><td>Plate         Plate         Plate         Plate         Screen           Voltage         Current         Diss.         Diss.         Diss.           (volts)         (amps)         (watts)         (watts)           20.000         15.0         100.000         1750           17.500         15.0         66,500         1750           20.000         15.0         100,000         1750           20.000         15.0         100,000         1750</td><td>Plate         Plate         Plate         Screen         Grid           Voltage         Current         Diss.         Diss.         Diss.         Diss.           20,000         15.0         100,000         1750         500           17,500         15.0         66,500         1750         500           20,000         15.0         100,000         1750         500           20,000         15.0         100,000         1750         500</td><td>Plate         Plate         Plate         Screen         Grid         Vlate           Voltage         Current         Diss.         Diss.         Diss.         Voltage           (volts)         (amps)         (watts)         (watts)         (watts)         (volts)           20,000         15.0         100,000         1750         500         17,000           17,500         15.0         66,500         1750         500         16,000           20,000         15.0         100,000         1750         500         18,000           20,000         15.0         100,000         1750         500         18,000</td><td>Plate         Plate         Plate         Screen         Grid         Plate         Screen           Voltage         Current         Diss.         Diss.         Diss.         Diss.         Voltage         Voltage</td><td>Plate         Plate         Plate         Screen         Grid         Plate         Screen         Plate         Voltage         Voltage</td><td>Plate         Plate         Plate         Screen         Grid         Plate         Screen         Plate         Drive           Voltage         Current         Diss.         Diss.         Diss.         Diss.         Voltage         Voltage         Current         Power           20,000         15.0         100,000         1750         500         17,000         750         9.8         1020           17,500         15.0         66,500         1750         500         16,000         750         10.0         870           20,000         15.0         100,000         1750         500         18,000         1500         20*        </td></th<> | Plate         Plate         Plate         Plate         Screen           Voltage         Current         Diss.         Diss.         Diss.           (volts)         (amps)         (watts)         (watts)           20.000         15.0         100.000         1750           17.500         15.0         66,500         1750           20.000         15.0         100,000         1750           20.000         15.0         100,000         1750 | Plate         Plate         Plate         Screen         Grid           Voltage         Current         Diss.         Diss.         Diss.         Diss.           20,000         15.0         100,000         1750         500           17,500         15.0         66,500         1750         500           20,000         15.0         100,000         1750         500           20,000         15.0         100,000         1750         500 | Plate         Plate         Plate         Screen         Grid         Vlate           Voltage         Current         Diss.         Diss.         Diss.         Voltage           (volts)         (amps)         (watts)         (watts)         (watts)         (volts)           20,000         15.0         100,000         1750         500         17,000           17,500         15.0         66,500         1750         500         16,000           20,000         15.0         100,000         1750         500         18,000           20,000         15.0         100,000         1750         500         18,000 | Plate         Plate         Plate         Screen         Grid         Plate         Screen           Voltage         Current         Diss.         Diss.         Diss.         Diss.         Voltage         Voltage | Plate         Plate         Plate         Screen         Grid         Plate         Screen         Plate         Voltage         Voltage | Plate         Plate         Plate         Screen         Grid         Plate         Screen         Plate         Drive           Voltage         Current         Diss.         Diss.         Diss.         Diss.         Voltage         Voltage         Current         Power           20,000         15.0         100,000         1750         500         17,000         750         9.8         1020           17,500         15.0         66,500         1750         500         16,000         750         10.0         870           20,000         15.0         100,000         1750         500         18,000         1500         20* |



# 4CW100,000E\*

The 4CW100,000E is a ceramic metal, liquid-cooled power tetrade intended for use at the 100 to 250 kW CW, and 300 to 500 kW pulse output power level. Its low grid-to-plate capacitance and high transconductance makes the tube ideal for broadband grid drive operation. The 4CW100,000E is also useful in pulse mod-ulator-regulator service.

| PLATE DISSIPATI  | ON  | 1   | 00,000 watts  |
|--|---|---|---------------|
| COOLING  |   | Liquid a  | nd Forced Air |
|  | CHARACTER   | RISTICS   |               |
| Filament: Thoriate<br>Voltage<br>Current<br>Capacitances:<br>Input<br>Output<br>Feed-Through | d tungsten<br>16 volts<br>230 amps (max)<br>400 pf<br>60 pf<br>0.9 pf | Base<br>Socket S<br>Jacket<br>Max. Seal Tem<br>Max. Height<br>Max. Diameter<br>Net Weight | 14.5 inches   |

|                       |  |        | Maxim                      | um Rat | ings                       |                          | Typical Operation           |      |    |   |                            |
|-----------------------|--|--------|----------------------------|--------|----------------------------|--------------------------|-----------------------------|------|----|---|----------------------------|
| Class of<br>Operation |  |        | Plate<br>Current<br>(amps) | Diss.  | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) |      |    |   | Output<br>Power<br>(watts) |
|                       | Frequency Pulse<br>Amplifier or<br>tor | 30,000 | _                          | 100.00 | 0 1700                     | 500                      | 25,000                      | 2500 | 68 | - |                            |

35

1

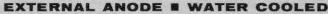
С

С

**RF** Power Amplifier

Plate-Modulated RF Power Amplifier

or Oscillator



### 4CW250,000A and 4CW250,000V \*

The 4CW250,000A and 4CW250,000V are identical ceramic-metal, water-cooled power tetrodes except that the 4CW250,000V contains an integral ion vacuum pump which may be used to check the tube's vacuum condition during storage or to restore the vacuum of a tube which has been damaged by overheating in service. The tubes are intended for use in the 250 to 500 kW output power range. Class of Type of Operation Service

PLATE DISSIPATION 250,000 watts

FREQUENCY FOR MAXIMUM RATINGS COOLING

#### CHARACTERISTIC Base

Filament: Thoriated tungsten Voltage 12:0 volts Current 640 amperes Capacitances (Grounded Filament): Input 775 pf Output 130 pf Feed-Through 6.0 pf

\* Shown with SK-1720 water jacket.

| 0030           | Special     |
|----------------|-------------|
| Socket         | Special     |
| Max. Seal Temp | 200 °C      |
| Max. Height    | 29.5 inches |
| Max, Diameter  | 13 inches   |
| Net Weight     | 100 pounds  |

| CS        |                   | 1 |
|-----------|-------------------|---|
|           | Special           | L |
| Seal Temp | Special<br>200 °C | P |
| leight    | 29.5 inches       | L |
| Diameter  | 13 inches         |   |
| eight     | 100 pounds        |   |

| CS                             | Special    | AB | AF Amplifier<br>or Modulator |
|--------------------------------|------------|----|------------------------------|
| eal Temp<br>leight<br>liameter | Special    | AB | RF Linear Am                 |
| eight                          | 100 pounds |    |                              |
|                                |            |    |                              |

50 MHz

Liquid

B RF Linear Amplifier

| 17,500 | 30 | <b>*</b> 167,000 3500 | 1500 | 14,000 | 800  | 29.0 | 2320 | 285,00 |
|--------|----|-----------------------|------|--------|------|------|------|--------|
| 20,000 | 40 | 250,000 3500          | 1500 | 20,000 | 1800 | 46.  | -    | 660,00 |
| 20,000 | 40 | 250,000 3500          | 1500 | 20,000 | 1800 | 23 . |      | 330,00 |

Corresponds to 250,000 watts at 100 per cent sine wave modulation.

Typical Operation

Plate Screen Plate Drive Output Voltage Voltage Current Power Power (volts) (volts) (amps) (watts) (watts)

32.5 3000 460.00



### 8249/4W300B

A general-purpose radial-beam tetrode with electrical characteristics similar to those of the Emac 4X250B, this water-cooled version is intended for use where reserve anode dissipation is desired or where the use of water is a convenience. Maximum ratings apply to frequencies as high as 500 MHz. PLATE DISSIPATION 300 watts

| FREQUENCY FO       | OR MAXIMUM RATI                      | NGS                         | 500 MHz                       |
|--------------------|--------------------------------------|-----------------------------|-------------------------------|
| COOLING            |                                      | Water                       | and Forced Air                |
|                    | CHARACTE                             | RISTICS                     |                               |
|                    | -coated, unipotential                | Base                        | 9-pin, special                |
| Heater:<br>Voltage | 6.0 volts                            | Max, Seal Ten               | c SK-600 series<br>np. 175 °C |
| Current            | 2.3 to 2.9 amperes                   | Max. Height                 | 3.407 inches                  |
|                    | rounded Cathode):<br>14.2 to 17.2 pf | Max. Diameter<br>Net Weight | r 2.126 inches<br>6 ounces    |

Cathode: Oxide-coated, unipotential Heater: Voltage 6.0 volts Current 2.3 to 2.9 amperes Capacitances (Grounded Cathode): Input 14.2 to 17.2 pf Output 4.0 to 5.0 pf Feed-Through 0.06 pf

|                 |   |                             | Maxin                     | num Ra                    | tings                      |                          | Typical Operation           |                              |                           |                           |                       |  |  |
|-----------------|---|-----------------------------|---------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|---------------------------|---------------------------|-----------------------|--|--|
|                 | ss of Type of<br>eration Service                  | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Drive<br>Power<br>(watts) | Outp<br>Powe<br>(watt |  |  |
| AB <sub>1</sub> | Audio-Frequency Power<br>Amplifier and Modulator  |                             | 0.250                     | 300                       | 12                         | -                        | 2000                        | 350                          | 0.500*                    | 0                         | 600                   |  |  |
| ABı             | Radio-Frequency Linear<br>Power Amplifier—SSB     | 2000                        | 0.250                     | 300                       | 12                         | -                        | 2000                        | 350                          | 0.250                     | 0                         | 300                   |  |  |
| С               | Radio-Frequency Power<br>Amplifier and Oscillator |                             | 0.250                     | 300                       | 12                         | 2                        | 2000                        | 250                          | 0.250                     | 2.9                       | 390                   |  |  |
| C               | Plate-Modulated R-F<br>Power Amplifier            | 1500                        | 0.200                     | 200                       | 12                         | 2                        | 1500                        | 250                          | 0.200                     | 1.7                       | 235                   |  |  |
|                 |   |                             |                           | 1.4                       |                            |                          |                             |                              |                           | *Two                      | tubes.                |  |  |

Maximum Ratings

Plate Plate Plate Screen Grid Voltage Current Diss. Diss. Diss (volts) (amps) (watts) (watts) (watts)

20,000 40 250,000 3500 1500 19,000 800



4: 4CV15004

**8173/4W20,000A** The 8173/4W20.000A is a high-power, water-cooled, power tetrode which will operate efficiently as a power amplifier at frequencies up to 250 MHz. A single 8173/4W20.000A operating as a tele vision visual RF amplifier will deliver a synchronizing power output of 26 kW at 216 MHz with 5 MHz bandwidth. The coaxial con-struction of the tube is ideal for cavity circuits.

PLATE DISSIPATION 20,000 watts FREQUENCY FOR MAXIMUM RATINGS COOLING Water and Forced Air

#### **CHARACTERISTICS**

| athode: Unipote | ntial thoriated | Capacitances (Gr | ounded Grid): |
|-----------------|-----------------|------------------|---------------|
| tungsten heate  | d by electron   |                  | 87 pf (max)   |
| bombardment.    |                 | Output           |               |
| DC Voltage      | 1500 volts      | Feed-Through     |               |
| DC Current      | 1.9 amperes     | Base Speci       |               |
| lament: Thorial | ted tungsten    | Max. Seal Tem    | p. 150 °C     |
| Voltage         | 10 volts        | Max. Height      | 15 inches     |
| Current         | 25 amperes      | Max. Diameter    | 5.03 inches   |
|                 |                 | Net Weight       | 7.6 pounds    |

|   |                             | Maxim                      | um Rat | ings                       | Typical Operation        |      |      |                            |     |                         |
|---|-----------------------------|----------------------------|--------|----------------------------|--------------------------|------|------|----------------------------|-----|-------------------------|
| Class of Type of<br>Operation Service   | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Diss.  | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) |      |      | Plate<br>Current<br>(amps) |     | Outpu<br>Powe<br>(watts |
| C RF Power Amplifier                    | 8000                        | 15                         | 20,000 | 200                        | 60                       | 7000 | 1200 | 3.4                        | 830 | 13,00                   |
| B Linear Amplifier<br>Television Visual | 8000                        | 15                         | 20,000 | 200                        | 60                       | 7000 | 1200 | 6.0                        | 500 | 26,00                   |

#### EXTERNAL ANODE . VAPOR COOLED

220 MHz

1500 watts

Vapor and Forced Air

30 MHz

# 4CV1500B

Ca

Fi

The 4CV1500B is a ceramic metal, vapor and forced air cooled radial beam tetrode with a rated maximum plate dissipation of 1500 watts. It is a low-voltage, high current tube specifically de signed for exceptionally low intermodulation distortion and low grid interception. The low distortion characteristics make the 4CV1500B especially suitable for RF and AF linear amplifier service.

PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS COOLING

#### CHARACTERISTICS

| Cathode: Oxide coa | ited, unipotential | Base<br>Socket | Special       |
|--------------------|--------------------|----------------|---------------|
|                    | C O                |                | SK-800 Series |
| Voltage            | 6.0 volts          | Max. Seal Tem  |               |
| Current            | 11.0 amps (max)    | Max, Height    | 5.35 inches   |
| Capacitances (Gro) | unded Cathode):    | Max. Diameter  |               |
| Input              | 88 pf              | Net Weight     | 27 ounces     |
| Output             | 12.8 pf            |                |               |
| Feed Through       | 0.03 pf            |                |               |

|                                       |                             | Maxim                      | um Rat | tings                      |                          | Typical Operation |                              |         |     |      |  |
|---------------------------------------|-----------------------------|----------------------------|--------|----------------------------|--------------------------|-------------------|------------------------------|---------|-----|------|--|
| Class of Type of<br>Operation Service | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Diss.  | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) |                   | Screen<br>Voltage<br>(volts) | Current |     | Powe |  |
| AB RF Linear Amplifier                | 3000                        | 0.900                      | 1500   | 12                         | 1.0                      | 2900              | 225                          | 0.710   | 1.5 | 1100 |  |
| AB1 AF Amplifier<br>or Modulator      | 3000                        | 0.900                      | 1500   | 12                         | 1.0                      | 2900              | 325                          | 1.69    |     | 2774 |  |

#### EXTERNAL ANODE . VAPOR COOLED

### 4CV8000A

This vapor-cooled version of Eimac's 4CX3000A offers a conservative plate dissipation rating of 8000 watts. It is recommended for Class-AB audio and radio-frequency applications as well as Class-C rf amplifier service A pair of these tubes will deliver over 14 kilowatts of audio frequency output with low distortion in Class-AB, service.

PLATE DISSIPATION 8000 watts 150 MHz

FREQUENCY FOR MAXIMUM RATINGS COOLING Vapor and Forced Air

CHARACTERISTICS

Base

Special, ring and

Socket Eimac SK-1490 Max. Seal Temp. 250 °C Max. Aeight 7,983 inches Net Weight 7,016 inches

Filament: Thonated tungsten Voltage 10.0 volts Current 43.5 to 48.5 amperes Capacitances (Grounded Filament): Input 120 to 140 pf Output 10.5 to 14.5 pf Feed-Through 1.4 pf

|                 |                  |                                       |                             | Maxir                      | num Ra                    | tings                      |                          | Typical Operation           |                              |                            |                           |                            |  |  |
|-----------------|------------------|---------------------------------------|-----------------------------|----------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|---------------------------|----------------------------|--|--|
|                 | ss of<br>eration |                                       | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |  |  |
| AB <sub>1</sub> |                  | Frequency Power<br>ier and Modulator  | 6000                        | 2.0                        | 8000                      | 175                        | 50                       | 6000                        | 850                          | 4.0*                       | 0                         | 14,500*                    |  |  |
| AB <sub>1</sub> |                  | Frequency Linear<br>Amplifier—SSB     | 6000                        | 2.0                        | 8000                      | 175                        | 50                       | 6000                        | 850                          | 2.0                        | 0                         | 7,250                      |  |  |
| С               |                  | Frequency Power<br>ier and Oscillator | 7000                        | 2.0                        | 8000                      | 175                        | 50                       | 7000                        | 500                          | 1.9                        | 47                        | 11,000                     |  |  |
| С               |                  | Modulated rf<br>Amplifier             | 5000                        | 1.4                        | 5500                      | 175                        | 50                       | 5000                        | 400                          | 1.35                       | 42                        | 5,500                      |  |  |
|                 | Power            | Amplifier                             | 5000                        | 1.4                        | 5500                      | 1/5                        | 50                       | _ 5000                      | 400                          | 1.35                       | 42<br>*Two                |                            |  |  |

# 4CV20.000A

COOLING

A vapor-cooled version of the popular 4CX5000A, the 4CV20,000A has a plate dissipation rating of 20 kilowatts. Two of these tubes in a push-pull, Class-AB; amplifier will produce 35 kilowatts output. A full complement of vapor cooling accessories is available for this and all other Eimac vapor-cooled tube types.

20,000 watts PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS 30 MHz

Vapor and Forced Air CHARACTERISTICS

Filament: Thoriated tungsten Voltage 7.5 volts Current 73 to 78 amperes Capacitances Grounded Filament): Input 108 to 122 pf Output 18.0 to 23.0 pf Feed-Through 1.0 pf

Base Special, concentric Socket Eimac SK-310 Max, Seal Temp. 250 °C Max, Height 9,125 inches Max, Diameter 7,75 inches Net Weight 21 pounds

|                 |   |      | Maxin                      | num Rat                   | lings                      |                          | Typical Operation           |                              |                            |                           |                            |  |  |
|-----------------|---|------|----------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|---------------------------|----------------------------|--|--|
|                 | eration Service Voltage C<br>(volts) (a           |      | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |  |  |
| AB              | Audio-Frequency Power<br>Amplifier and Modulator  | 7500 | 4.0                        | 20,000                    | 250                        | _                        | 7500                        | 1500                         | 8.0*                       | 0                         | 35,000*                    |  |  |
| AB <sub>1</sub> | Radio-Frequency Linear<br>Power Amplifier—SSB     | 7500 | 4.0                        | 20,000                    | 250                        |                          | 7500                        | 1500                         | 4.0                        | 0                         | 17,500                     |  |  |
| С               | Radio-Frequency Power<br>Amplifier and Oscillator |      | 3.0                        | 20,000                    | 250                        | 75                       | 7500                        | 500                          | 3.0                        | 155                       | 17,000                     |  |  |
| С               | Plate-Modulated rf<br>Power Amplifier             | 5000 | 2.5                        | 13,500                    | 250                        | 75                       | 5000                        | 500                          | 2.2                        | 77                        | 7.750                      |  |  |
|                 |   |      |                            |                           |                            |                          |                             |                              |                            | *Two                      | tubes.                     |  |  |



# 4CV35,000A

Recommended for use as a modulator, oscillator or amplifier, the 4CV35,000A is usable to 110 megacycles. With a plate voltage of 10 kV in Class-C service, the tube is capable of over 35 kilowatts output power. The plate dissipation of 35 kilowatts allows use of the 4CV35,000A in low efficiency Class-AB<sub>1</sub> circuits.

PLATE DISSIPATION 35,00 FREQUENCY FOR MAXIMUM RATINGS 1 COOLING Vapor and For CHARACTER

Filament: Thoriated tungsten Voltage 6.3 volts Current 152 to 168 amperes Capacitances (Grounded Filament) Input 158 to 172 pf Output 22:0 to 27.0 pf Feed-Through 2.0 pf

| ISTICS  |                           |  |                     |
|---|---------------------------|--|---------------------|
| Base<br>Socket<br>Max. Seal<br>Max. Heigl<br>Max. Diam<br>Net Weigh | Temp.<br>t 9.1<br>eter 7. | oncentr<br>c SK-3<br>250<br>25 inch<br>88 inch<br>4 poun | 10<br>C<br>es<br>es |

|    |   |                             | Maxin                      | num Ra                    | tings                      |                          |                             | Typic                        | al Opera                   | tion                      |                            |
|----|---|-----------------------------|----------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|---------------------------|----------------------------|
|    | ss of Type of<br>eration Service                  | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| C  | Radio-Frequency Power<br>Amplifier and Oscillator | 10,000                      | 5.0                        | 35,000                    | 450                        | 200                      | 10,000                      | 750                          | 4.8                        | 225                       | 38,000                     |
| С  | Plate-Modulated rf<br>Power Amplifier             | 7500                        | 4.0                        | 23,000                    | 450                        | 200                      | 7500                        | 750                          | 3.65                       | 150                       | 23,500                     |
| AB | Audio-Frequency Power<br>Amplifier or Modulator   | 10,000                      | 6.0                        | 35,000                    | 450                        | 200                      | 10,000                      | 1500                         | 10.7*                      | 0                         | 66,000                     |
|    |   |                             |                            |                           |                            |                          |                             |                              |                            | *Two                      | lihes                      |



# 4CV50,000E \*

COOLING

Voltage Current Capacitances:

Feed-Through

\* Shown with BR-700 boiler.

Input Output

The 4CV50,000E is a ceramic-metal, vapor-cooled tetrode intended for use at the 50 to 100 kW output power level. It is recommended for use as a Class C RF amplifier or oscillator, a Class AB RF linear amplifier or a Class AB push-pull AF amplifier or modulator. The 4CV50,000E can also be used as a plate and screen modulated Class C RF amplifier. PLATE DISSIPATION

340 pf

53 pf 0.7 pf

50.000 watts Vapor and Forced Air

#### CHARACTERISTICS Base Special Socket SK-2000 Series Filament: Thoriated tungsten mesh

12 volts 220 amperes Boiler BR-700 Max. Seal Temp. 250 °C Max. Anode Flange Temp. 200 °C Max. Height 13.0 inches Net Weight 35 pounds

|   |                             | Maxim                      | um Rat                    | ings                       |                          |                             | Typic                        | al Opera                   | tion                      |                            |
|---|-----------------------------|----------------------------|---------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|---------------------------|----------------------------|
| Class of Type of<br>Operation Service   | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Plate<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Drive<br>Power<br>(watts) | Output<br>Power<br>(watts) |
| C RF Power Amplifier<br>or Oscillator   | 17,500                      | 12                         | 50,000                    | 1500                       | 400                      | 15,000                      | 1500                         | 12                         | 250                       | 140,000                    |
| C Plate Modulated RF<br>Power Amplifier | 15.000                      | 12                         | 33,300                    | 1500                       | 400                      | 14,000                      | 750                          | 9.9                        | 700                       | 110,000                    |
| AB1 AF Amplifier<br>or Modulator        | 17.500                      | 12                         | 50,000                    | 1500                       | 400                      | -                           | _                            | -                          | -                         | -                          |
| AB <sub>1</sub> RF Linear Amplifier     | 17,500                      | 12                         | 50,000                    | 1500                       | 400                      |                             |                              |                            | -                         |                            |
|   |                             |                            | CONTRACTOR OF             |                            |                          | A                           |                              |                            | _                         |                            |

#### EXTERNAL ANODE . VAPOR COOLED



### 4CV75,000A \*

The 4CV75,000A is a vapor phase cooled tetrode with basic characteristics the same as the 4CV100,000C. It is intended for use with the compact, upright, boiler, Eimac BR-320. This combination results in low capacitance of anode and boiler to ground. PLATE DISSIPATION

75,000 watts FREQUENCY FOR MAXIMUM RATINGS 30 MHz COOLING Vapor Phase and Forced Air

### CHARACTERISTICS

Filament: Thoriated tungsten Voltage 10.0 volts Current 300 amperes Capacitances (Grounded Filament): Input 440 pf Output 55 pf Feed-Through 2.3 pf

Base Socket Base Coaxial Socket Eimac SK-1500 or SK-1510 Max. Envelope Max. Envelope Temp. 250 °C Max. Height (In BR. 320 Boiler) 19.3 inches Max. Diameter (Of BR-320 Boiler) 9.4 inches Net Weight 60 pounds

Coaxial

|   |                             | Maxin                      | num Rat | tings                      |                          |                    | Typi                         | cal Opera | ation |         |
|---|-----------------------------|----------------------------|---------|----------------------------|--------------------------|--------------------|------------------------------|-----------|-------|---------|
| Class of Type of<br>Operation Service                     | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Diss.   | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) |                    | Screen<br>Voltage<br>(volts) | Current   |       | Power   |
| C Power Amplifier<br>(CW) Radio-Frequency                 | 15,000                      | 15.0                       | 75,000  | 1750                       | 500                      | 15,000             | 1500                         | 11.8      | 120   | 140,000 |
| C Radio-Frequency<br>Power Amplifier<br>(Plate-Modulated) | 12,500                      | 15.0                       | 50,000  |                            |                          | 11,000<br>Conditio | 750<br>n)                    | 9.1       | 1000  | 82,000  |
| AB1 Audio Frequency<br>Amplifier or Modulator             | 15,000                      | 15.0                       | 75,000  | 1750                       | 500<br>(Two              | 11,000<br>Tubes)   | 1500                         | 18.8      | -     | 129,000 |

\* Shown with BR-320 boiler.



# 8351/4CV100,000C

The largest of Eimac's power grid tubes, the 4CV100,000C is finding wide acceptance in application where a very high power rugged tetrode is desired. Vapor cooling allows a conservative plate dissipation rating of 100 kilowatts.

#### PLATE DISSIPATION

100,000 watts FREQUENCY FOR MAXIMUM RATINGS COOLING Vapor and Forced Air

### CHARACTERISTICS

Filament: Thoriated tungsten Voltage 10.0 volts Current 300 amperes Capacitances (Grounded Filament): Input 430 uufd Output 45 uufd Feed-Through 2.3 uufd

Base Special concentric rings Socket Eimac SK-1510 Max. Seal Temp. 250 °C Max. Height 17.0 inches Max. Diameter 10.0 inches Net Weight 95 pounds

30 MHz

30

|                 |                    |                                     |                             | Maxin                      | num Rat | ings                       |                          | Typical Operation           |                              |                            |      |         |  |  |
|-----------------|--------------------|-------------------------------------|-----------------------------|----------------------------|---------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|------|---------|--|--|
|                 | ss of<br>eration   | Type of<br>Service                  | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Diss.   | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) |      | Power   |  |  |
| AB <sub>1</sub> |                    | requency Power<br>er and Modulator  | 20,000                      | 15.0                       | 100,000 | 1750                       | 500                      | 18.000                      | 1500                         | 20.0                       | 0    | 246,400 |  |  |
| AB <sub>1</sub> |                    | requency Linear<br>Amplifier—SSB    | 20,000                      | 15.0                       | 100,000 | 1750                       | 500                      | 18,000                      | 1500                         | 10.0                       | 0    | 123,200 |  |  |
| С               | Radio-F<br>Amplifi | requency Power<br>er and Oscillator | 20,000                      | 15.0                       | 100,000 | 1750                       | 500                      | 17,500                      | 1500                         | 11.8                       | 125  | 168,000 |  |  |
| С               |                    | Andulated rf<br>Amplifier           | 17,500                      | 15.0                       | 66,500  | 1750                       | 500                      | 16,000                      | 750                          | 12.0                       | 1260 | 138,500 |  |  |



401250.000A

### 4CV100,000E\*

The 4CV100,000E is a ceramic-metal, vapor-cooled power tetrode intended for use at the 100 to 250 kW CW, and 300 to 500 kW pulse output power level. Its low grid-to-plate capacitance and high transconductance make the tube ideal for broadband grid drive operation. The 4CV100,000E is also useful in pulse mod-ulator and regulator service.

PLATE DISSIPATION 100,000 watts Vapor and Forced Air CHARACTERISTICS Base Special Socket SK-2000 Series Boiler BR-800 Max. Seal Temp. 250 °C Max. Height 14.5 inches Net Weight 38 pounds

# Filament: Thoriated tungsten Voltage 16 volts Current 230 amperes Capacitances (Grounded Cathode): Input 400 pf Output 60 pf Feed-Through 0.9 pf

° Shown with BR-800 boiler.

COOLING

|                             | Maxim                       | num Rat   | ings  | Typical Operation   |   |  |  |   |  |
|-----------------------------|-----------------------------|---|---|---|---|--|--|---|--|
| Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps)  | Diss.   | Diss.   | Grid<br>Diss.<br>(watts)  |   | Screen<br>Voltage<br>(volts)   | Plate<br>Current<br>(amps)   |   | Output<br>Power<br>(watts)   |
|                             | _                           | 100,000   | 0 1700  | 500   | 25,000*   | 2500   | 68   |   | **   |
|                             | Voltage<br>(volts)<br>Pulse | Plate Plate<br>Voltage Current<br>(volts) (amps)<br>Pulse | Plate Plate Plate Voltage Current Diss.<br>(volts) (amps) (watts) | Plate Plate Plate Screen<br>Voltage Current Diss. Diss.<br>(volts) (amps) (watts) (watts) | Plate Plate Plate Screen Grid<br>Voltage Current Diss. Diss. Diss.<br>(volts) (amps) (watts) (watts) (watts)<br>r | Plate Plate Plate Screen Grid Plate<br>Voltage Current Diss. Diss. Diss. Voltage<br>(volts) (amps) (watts) (watts) (watts) (volts) | Plate Plate Plate Screen Grid<br>Voltage Current Diss. Diss. Diss. Voltage Voltage<br>(volts) (amps) (watts) (watts) (watts) (volts)<br>r. | Plate Plate Plate Screen Grid<br>Voltage Current Diss. Diss. Diss. Voltage Voltage Current<br>(volts) (amps) (watts) (watts) (watts) (volts) (volts) (amps)<br>Pulse<br>r | Plate Plate Plate Screen Grid<br>Voltage Current Diss. Diss. Diss. Voltage Voltage Current Power<br>(volts) (amps) (watts) (watts) (watts) (volts) (volts) (amps) (watts)<br>r |

# 4CV250,000A and 4CV250,000V

The 4CV250,000A and V are ceramic-metal, vapor-cooled p tetrodes. The tubes are recommended for use as a Class ( amplifier or oscillator, a Class AB RF linear amplifier or ( AB push-pull AF amplifier or modulator.

PLATE DISSIPATION 250,000 FREQUENCY FOR MAXIMUM RATINGS COOLING Vapor and V

#### **CHARACTERISTICS**

| Filament: Thoriate | d tungsten      | Base                    | Special                     |
|--------------------|-----------------|-------------------------|-----------------------------|
| Voltage            | 12 volts        | Socket                  | BR-605 Boiler               |
| Current            | 660 amperes     | Max. Seal Te            |                             |
| Capacitances (Grou | inded Cathode); | Max. Anode              |                             |
| Input              | 800 pf(max)     | Temp.                   | 130 °C                      |
| Output             | 136 pf (max)    | Max. Height             | 28.02 inches                |
| Feed-Through       | 8.0 pf          | Max. Dia.<br>Net Weight | 15.062 inches<br>180 pounds |

4CV250,000V is supplied with a Vacion pump.

|  | 1          | Maximu  | m Rat                    | ings                       |                          | Typical Operation           |                              |                            |        |                            |  |
|--|------------|---------|--------------------------|----------------------------|--------------------------|-----------------------------|------------------------------|----------------------------|--------|----------------------------|--|
| Class of Type of<br>Operation Service                | Voltage Cu | urrent  | Plate<br>Diss.<br>watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss,<br>(watts) | Plate<br>Voltage<br>(volts) | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) |        | Output<br>Power<br>(watts) |  |
| C RF Power Amplifier<br>or Oscillator                | 20,000     | 40 2    | 50,000                   | 3500                       | 1500                     | 19.000                      | 800                          | 32.5                       | 3000   | 460,000                    |  |
| C Plate-Modulated RF<br>Power Amplifier              | 17,500     | 30 1    | 67,000                   | 3500                       | 1500                     | 14,000                      | 800                          | 29.0                       | 2320   | 285,000                    |  |
| AB AF Amplifier<br>or Modulator                      | 20.000     | 40 2    | 50,000                   | 3500                       | 1500                     | 20,000                      | 1800                         | <b>4</b> <sup>*</sup> *    | -      | 660,000                    |  |
| AB RF Linear Amplifier                               | 20,000     | 40 2    | 50,000                   | 3500                       | 1500                     | 20,000                      | 1800                         | 23                         |        | 330,000                    |  |
| <ul> <li>Pulse Modulator<br/>or Regulator</li> </ul> | 40,000     | - 2     | 50,000                   | 3500                       | 1500                     | -                           | 2500                         |                            |        | -                          |  |
| ** Two tubes.  | *(         | Corresp | onds to                  | 250.0                      | 00 watt                  | s at 100                    | per cent                     | sine wa                    | ve mod | ulation                    |  |

# PENTODES

# ....

# 4E27A/5-125B

A general purpose compact pentode cooled by radiation and convection and with maximum ratings applicable to 75 MHz. No forced air cooling is required in most installations. P

| PLATE DISS                                  | IPATION  |             | 125 watts     |
|---|--|-------------|---------------|
| FREQUENCY                                   | FOR MAXIMUM RATIN  | GS          | 75 MHz        |
| COOLING                                     |  | Radiation a | nd Forced Air |
|   | CHARACTE   | RISTICS     |               |
| Voltage<br>Current<br>Capacitances<br>Input | oriated tungsten<br>5.0 volts<br>7.0 to 8.0 amperes<br>(Grounded Filament):<br>8.7 to 12.3 pf<br>3.5 to 5.9 pf<br>ugh 0.1 pf |             | 6.188 inches  |

|                 |   |                             | N                         | laximu                    | m Rating                  | gs                         |                          |      | Typi                         | al Opera                  | ation                     |                          |
|-----------------|---|-----------------------------|---------------------------|---------------------------|---------------------------|----------------------------|--------------------------|------|------------------------------|---------------------------|---------------------------|--------------------------|
| Clas<br>Ope     | s of Type of<br>ration Service                                    | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Plate<br>Diss.<br>(watts) | Supp.<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Grid<br>Diss.<br>(watts) |      | Screen<br>Voltage<br>(volts) | Plate<br>Current<br>(amp) | Drive<br>Power<br>(watts) | Outpu<br>Power<br>(watts |
| AB <sub>1</sub> | Audio-Freq, Power<br>Amp, and Modulator                           | 4000                        | 0.200                     | 125                       | 20                        | 20                         | -                        | 2500 | 500                          | 0.220*                    | 0                         | 300*                     |
| AB-             | Audio-Freq. Power<br>Amp. and Modulator                           | 4000                        | 0.200                     | 125                       | 20                        | 20                         | 5                        | 2500 | 500                          | 0.250*                    | 0.2*                      | 400*                     |
| С               | Radio-Freq. Power<br>Amp. and Oscillator<br>Zero Suppressor Volts | 4000                        | 0.200                     | 125                       | 20                        | 20                         | 5                        | 3000 | 500                          | 0.167                     | 1.9                       | 375                      |
| С               | Plate-Mod. Radio-<br>Freq. Amp. Zero<br>Suppressor Volts          | 2500                        | 0.160                     | 85                        | 20                        | 20                         | 5                        | 2500 | 500                          | 0.152                     | 2                         | 295                      |
| С               | Suppressor-Mod.<br>Radio-Freq. Amp.                               | 4000                        | 0.200                     | 125                       | 20                        | 20                         | 5                        | 3000 | 400                          | 0.060                     | 1.2                       | 75                       |
|                 |   |                             |                           |                           |                           |                            |                          |      |                              |                           | *Two                      | tubes.                   |



### 175A

COOLING

The 175A is a beam pentode which incorporates a unique vane-type suppressor grid. The suppressor grid terminates in the tube shell and is designed to operate at zero voltage. The base shell must be grounded to the chassis by means of suitable spring clips. PLATE DISSIPATION 400 watts

Forced Air CHARACTERISTICS

|                    | GHANACI      | CHISTIC   | 5   |
|--------------------|--------------|-----------|-----|
| Filament: Thoriate | ed tungsten  | Base      | 5-p |
| Voltage            | 5.0 volts    | Socket    | Joh |
| Current            | 14.5 amperes | Max. Heig | tht |
| Capacitances:      |              | Max. Dian |     |
| Input              | 15.1 pf      |           |     |
| Output             | 9.8 pf       |           |     |
| Feed-Through       |              |           |     |

Base 5-pin metal shell Socket Johnson 122-275 Max. Height 6.63 inches Max. Diameter 3.56 inches

Forced Air

|     |                                       |                    | Maximum Ratings |         |       |      |                            |       |                             | Typical Operation |       |       |       |  |
|-----|---------------------------------------|--------------------|-----------------|---------|-------|------|----------------------------|-------|-----------------------------|-------------------|-------|-------|-------|--|
|     | Class of Type of<br>Operation Service |                    | Voltage         | Current | Diss. | Diss | Screen<br>Diss.<br>(watts) | Diss. | Plate<br>Voltage<br>(volts) | Voltage           |       | Power | Power |  |
| С   | RF Am<br>Oscilla                      | plifier or<br>ator | 4000            | 0.350   | 400   | -    | 25                         | -     | 3000                        | 600               | 0.350 | 1.3   | 715   |  |
| ABI | Linear                                | RF Amplifier       | 4000            | 0.350   | 400   |      | 25                         | -     | 3000                        | 750               | 0.350 |       | 680   |  |



# 177WA

The 177WA beam pentode is a ruggedized version of the 177A with which it is directly interchangeable. The 177WA may be mounted in any position and will withstand high levels of shock and vibration. The tube incorporates a unique vane-type suppressor grid which permits high power output at relatively low plate voltages and provides excellent characteristics for use as a linear RF or audio amplifier. 75 watts

PLATE DISSIPATION COOLING CHARACTERISTICS

|  | CHARACI                                | CHISIICS                      |   |
|--|--|-------------------------------|---|
| Filament: Thoriate<br>Voltage<br>Current | d tungsten<br>6.0 volts<br>3.2 amperes | Base<br>Socket<br>Max. Height | 7-pin<br>Johnson 122-101<br>4.38 inches |
| Capacitances:<br>Input                   | 7.5 pf                                 | Max. Diame                    | ter 2.38 inches                         |
| Output<br>Feed Through                   | 4.2 pf                                 |                               |   |

|                                       |                     |         | Ma                         | aximum | Rating | s     |       |         | Typie   | cal Oper | ation |       |
|---------------------------------------|---------------------|---------|----------------------------|--------|--------|-------|-------|---------|---------|----------|-------|-------|
| Class of Type of<br>Operation Service |                     | Voltage | Plate<br>Current<br>(amps) | Diss.  | Diss.  | Diss. | Diss. | Voltage | Voltage | Current  | Power | Power |
| C RF An<br>Oscill                     | nplifier or<br>ator | 2000    | 0.150                      | 75     | -      | -     | _     | 1500    | 400     | 0.150    | 0.75  | 160   |
| AB Linea                              | r RF Amplifier      | 2000    | 0.175                      | 75     |        |       | -     | 1500    | 600     | 0.175    | -     | 140   |



### 5-500A

COOLING

The 5-500A is a compact, ruggedly constructed radial-beam power pentode with a maximum plate dissipation rating of 500 watts. It is intended for use as an amplifier, oscillator or modulator. The high plate-current rating, low grid-plate capacitance and low driv-ing power requirements permit maximum power capability to be combined with circuit simplicity and economic driver requirements. PLATE DISSIPATION 500 watts

| ING  |                    | Radiation | and | Forced | Air |  |
|------|--------------------|-----------|-----|--------|-----|--|
|      | CHARAC             | TERISTICS |     |        |     |  |
| innt | Theristed tupgeten | Base      |     | 5      | nin |  |

|   | CITANACIL   | -1101100  |  |
|---|---|---|--|
| Filament: Thoriat<br>Voltage<br>Current<br>Capacitances (Gro<br>Input<br>Output<br>Feed-Through | 10.0 volts<br>10.2 amperes<br>unded Cathode):<br>19.0 pf (max)<br>12.0 pf (max) | Base<br>Socket<br>Max. Seal Temp.<br>Max. Height<br>Max. Diameter<br>Net Weight | 5-pin<br>SK-410<br>200 °C<br>7.00 inches<br>3.56 inches<br>11 ounces |

|                 |                                     |      | Ma      | mumixe | Rating                    | s                          |       |           | Typi | cal Oper | ation |        |
|-----------------|-------------------------------------|------|---------|--------|---------------------------|----------------------------|-------|-----------|------|----------|-------|--------|
|                 | ss of Type of<br>ration Service     |      | Current |        | Supp.<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Diss. | Voltage V |      |          | Power |        |
| С               | RF Power Amplifier<br>or Oscillator | 4000 | 0.450   | 500    | -                         | 35                         | 12    | 3000      | 500  | 432      | 12    | 805    |
| AB <sub>1</sub> | RF Linear Amplifier                 | 4000 | 0.450   | 500    | -                         | 35                         | 12    | 3000      | 750  | 0.320    | -     | 612    |
| C               | Plate-Modulated RF<br>Amplifier     | 4000 | 0.340   | 330    | -                         | 35                         | 12    | 3100      | 470  | 0.260    | 6.0   | 580    |
| AB              | AF Power Amplifier<br>or Modulator  | 4000 | 0.450   | 500    |                           | 35                         | 12    | 3000      | 750  | 0.640    | •     | 1224   |
|                 |                                     | 1    |         |        |                           |                            |       |           |      |          | *Two  | tubes. |

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# PENTODES

# 8295/172

This tube is an air cooled, glass and metal beam pentode capable of high power gain and excellent efficiency at relatively low plat voltages. The tube is especially suited for low-distortion Class ABlinear RF amplifier service. PLATE DISSIPATION 1000 watt

| PLATE DISSIPAT   | ION   |  | 1000 watts   |
|--|---|--|--|
| COOLING  |   |  | Forced Air   |
|  | CHARACTE  | RISTICS  |  |
| Cathode: Oxide-co<br>Heater:<br>Voltage<br>Current<br>Capacitances:<br>Input<br>Output<br>Feed Through | ated, unipotential<br>6.0 volts<br>8.2 amperes<br>42 pf<br>21 pf<br>0.09 pf | Base<br>Socket<br>Max. Seal Temp<br>Max. Height<br>Max. Diameter<br>Net Weight | 7-pin<br>Eimac 184<br>175 °C<br>5.125 inches<br>4.032 inches<br>3.0 pounds |

|     |                                   | Maximum Ratings             |                            |       |       |       |       | Typical Operation           |         |         |       |       |  |
|-----|-----------------------------------|-----------------------------|----------------------------|-------|-------|-------|-------|-----------------------------|---------|---------|-------|-------|--|
|     | ass of Type of<br>eration Service | Plate<br>Voltage<br>(volts) | Plate<br>Current<br>(amps) | Diss. | Diss. | Diss. | Diss. | Plate<br>Voltage<br>(volts) | Voltage | Current | Power | Power |  |
| С   | RF Amplifier or<br>Oscillator     | 3000                        | 1.0                        | 1000  | _     | 30    | 5     | 2500                        | 500     | 0.840   | 2.1   | 1440  |  |
| AB, | Linear RF Amplifier               | 3000                        | 0.800                      | 1000  | -     | 30    | 5     | 2500                        | 500     | 0.800   | -     | 1260  |  |

### 8295A

The 8295A is an air-cooled, ceramic-metal beam pentode capable of high power gain and excellent efficiency at relatively low plate voltages. The tube is especially suited for low-distortion Class AB\_1 linear RF amplifier service.

| PLATE DISSIPAT                   | ION                      |                                | 1000 watts                 |     |           |
|----------------------------------|--------------------------|--------------------------------|----------------------------|-----|-----------|
| COOLING                          |                          |                                | Forced Air                 | C   | RF Ampl   |
|                                  | CHARACTE                 | RISTICS                        |                            |     | Oscillato |
| Cathode: Oxide-co<br>Heater:     |                          | Base<br>Socket                 | 7-pin<br>Eimac 184         | AB1 | Linear R  |
| Voltage<br>Current               | 6.0 volts<br>8.2 amperes | Max. Seal Temp.<br>Max. Height | 250 °C<br>5.125 inches     |     |           |
| Capacitances:<br>Input<br>Output | 42 pf<br>21 pf           | Max. Diameter<br>Net Weight    | 4.032 inches<br>3.0 pounds |     |           |
|                                  | 0.09 pf                  |                                |                            |     |           |
|                                  |                          |                                |                            |     |           |

|                                       |                               |      | Typical Operation |       |   |       |       |                             |         |       |       |       |
|---------------------------------------|-------------------------------|------|-------------------|-------|---|-------|-------|-----------------------------|---------|-------|-------|-------|
| Class of Type of<br>Operation Service |                               |      | Current           | Diss. |   | Diss. | Diss. | Plate<br>Voltage<br>(volts) | Voltage |       | Power | Power |
| С                                     | RF Amplifier or<br>Oscillator | 3000 | 1.0               | 1000  | _ | 30    | 5     | 2500                        | 500     | 0.840 | 2.1   | 1440  |
| AB <sub>1</sub>                       | Linear RF Amplifier           | 3000 | 0.800             | 1000  | - | 30    | 5     | 2500                        | 500     | 0.800 | _     | 1260  |



Emor: 8295A

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AF 8295

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### 8432

The 8432 is a ceramic-metal beam pentode featuring compact construction. The tube is especially suited for low-distortion Class AB<sub>1</sub> linear RF amplifier use where a single tube will deliver over 1500 watts of useful power output. The tube also provides outstanding performance in Class AB<sub>2</sub> and Class B service. PLATE DISSIPATION 1000 watte

| PLATE DISSIPAT   | ION   |   | 1000 watts  |
|--|---|---|---|
| COOLING  |   |   | Forced Air  |
|  | CHARACTE  | RISTICS   |   |
| Cathode: Oxide-co<br>Heater:<br>Voltage<br>Current<br>Capacitances:<br>Input<br>Output<br>Feed-Through | ated, unipotential<br>6.0 volts<br>8.2 amperes<br>42 pf<br>20 pf<br>0.09 pf | Base<br>Socket<br>Max. Seal Temp.<br>Max. Height<br>Max. Diameter<br>Net Weight | 7-pin<br>Eimac 209A<br>250 °C<br>4.75 inches<br>3.53 inches<br>2.5 pounds |

|                 |                  |                    | Maximum Ratings |         |      |   |                            |       |                             | Typical Operation |                            |       |       |  |  |
|-----------------|------------------|--------------------|-----------------|---------|------|---|----------------------------|-------|-----------------------------|-------------------|----------------------------|-------|-------|--|--|
|                 | ss of<br>eration | Type of<br>Service |                 | Current |      |   | Screen<br>Diss.<br>(watts) | Diss. | Plate<br>Voltage<br>(volts) | Voltage           | Plate<br>Current<br>(amps) | Power | Power |  |  |
| AB <sub>1</sub> | Linear           | RF Amplifier       | 3000            | 0.800   | 1000 |   | 30                         | 5     | 2500                        | 500               | 0.780                      | -     | 1280  |  |  |
| С               | RF Am<br>Oscilla | plifier or<br>ator | 3000            | 1.0     | 1000 | _ | 30                         | 5     |                             | -                 | -                          | -     | _     |  |  |



### 5CX1500A

The 5CX1500A is a ceramic-metal power pentode designed to be used as a Class  $AB_1$  linear amplifier in audio or radio-frequency applications. Its low intermodulation distortion characteristics make it especially suitable for single sideband service.

| PLATE DISSIPAT  | ON  |   | 1500 watts                |
|---|---|---|---------------------------|
| FREQUENCY FOR   | MAXIMUM RATINGS   |   | 110 MHz                   |
| COOLING   |   |   | Forced Air                |
|   | CHARACTER   | ISTICS  |                           |
| Filament: Thoriat<br>Voltage<br>Current<br>Capacitances (Gro<br>Input<br>Output<br>Feed-Through | 5.0 volts<br>43 amperes (max)<br>unded Filament):<br>78 pf (max)<br>18.5 pf (max) | Base<br>Socket<br>Max. Seal Temp<br>Max. Anode Con<br>Temp.<br>Max. Height<br>Max. Diameter<br>Net Weight | e<br>250 °C<br>5.0 inches |

|                             | Typical Operation                          |   |  |   |  |   |   |  |   |  |
|-----------------------------|--|---|--|---|--|---|---|--|---|--|
| Plate<br>Voltage<br>(volts) |  |   | Diss.  | Diss.   | Diss.  | Voltage   | Voltage   |  | Power   |  |
| 5000                        | 1.0  | 1500  | 25   | 75  | 25   | 4000  | 500   | 0.800  | 6.5   | 2350   |
| 3500                        | 0.8  | 1000  | 25   | 75  | 25   | 3200  | 500   | 0.800  | 10  | 1958   |
| 4000                        | 1.0  | 1500  | 25   | 75  | 25   | 3800  | 500   | 1.33*  |   | 3220   |
| 4000                        | 1.0  | 1500  | 25   | 75  | 25   | 3000  | 500   | 0.690  | -   | 1785   |
|                             | Voltage<br>(volts)<br>5000<br>3500<br>4000 | Plate         Plate           Voltage         Current           (volts)         (amps)           5000         1.0           3500         0.8           4000         1.0 | Plate         Plate         Plate           Voltage Current         Diss.           (volts)         (amps)         (watts)           5000         1.0         1500           3500         0.8         1000           4000         1.0         1500 | Plate         Plate         Plate         Plate         Supp.           Voltage         Current         Diss.         Diss.         Diss.           (volts)         (amps)         (watts)         (watts)           5000         1.0         1500         25           3500         0.8         1000         25           4000         1.0         1500         25 | Voltage Current Diss.         Diss.         Diss.           (volts) (amps) (watts) (watts) (watts)           5000         1.0         1500         25         75           3500         0.8         1000         25         75           4000         1.0         1500         25         75 | Plate         Plate         Plate         Plate         Supp.         Screen         Grid           Voltage Current         Diss.         Diss. | Plate         Plate         Plate         Supp.         Screen         Grid         Plate         Voltage           Voltage         Current         Diss.         Diss.         Diss.         Diss.         Diss.         Voltage         Vol | Plate         Plate         Plate         Supp.         Screen         Grid         Plate         Screen           Voltage Current         Diss.         Diss.         Diss.         Diss.         Diss.         Voltage         Voltage | Plate         Plate         Supp.         Screen         Grid         Plate         Screen         Scren         Screen         Screen         < | Plate         Plate         Supp.         Screen         Grid         Plate         Screen         Plate         Drive           Voltage         Current         Diss.         Diss. <t< td=""></t<> |

\*Two tubes.

# PENTODES

### 5CX3000A

|     | The 5CX3000A is a ceramic-metal power pentode designed for<br>Class AB linear amplifier AF and RF applications. Its low inter-<br>modulation distortion characteristics make it especially suitable<br>for single sideband service. |    | ss of Type of<br>eration Service    |   |
|-----|---|----|-------------------------------------|---|
|     | PLATE DISSIPATION 3000 watts<br>FREQUENCY FOR MAXIMUM RATINGS 150 MHz<br>COOLING Forced Air   | C  | RF Power Amplifier<br>or Oscillator | + |
|     | CHARACTERISTICS   | AB | AF Amplifier or<br>Modulator        | T |
| No. | Filament: Thoriated tungsten Base Special<br>Voltage 9.0 volts Socket SK-1420 Series<br>Current 43.5 amperes (max) Max Seal Temp. 250 °C  | С  | RF Linear Amplifier                 | t |
| C.  | Capacitances (Grounded Filament): Max. Height 6.8 inches<br>Input 145 pf Max. Diameter 4.6 inches<br>Output 24 pf Net Weight 5.5 pounds<br>Feed-Through 0.60 pf   |    |                                     | - |

|    |                                       |      | M                          | aximum | Rating                    | Typical Operation          |       |                             |     |      |        |        |
|----|---------------------------------------|------|----------------------------|--------|---------------------------|----------------------------|-------|-----------------------------|-----|------|--------|--------|
|    | Class of Type of<br>Operation Service |      | Plate<br>Current<br>(amps) |        | Supp.<br>Diss.<br>(watts) | Screen<br>Diss.<br>(watts) | Diss. | Plate<br>Voitage<br>(volts) |     |      | Power  |        |
| С  | RF Power Amplifier<br>or Oscillator   | 7000 | 2.0                        | 4000   | 100                       | 175                        | 50    | 6800                        | 500 | 1.64 | 52     | 8500   |
| AB | AF Amplifier or<br>Modulator          | 7000 | 2.0                        | 4000   | 100                       | 175                        | 50    | 6000                        | 850 | 2.9* | _      | 11,000 |
| С  | RF Linear Amplifier                   | 7000 | 2.0                        | 4000   | 100                       | 175                        | 50    | 6000                        | 850 | 1.4  | _      | 5500   |
|    |                                       |      |                            |        |                           |                            |       | ,                           |     | 1    | *Two t | ubes.  |

HAANN

# 8576/264

| The 8576/264 is a ceramic-metal beam pentode with low input capacitance for its power-handling capability   | nce for its power-handling capability. The tube                           |                        |              |      | M                          | aximum | Rating | s                          |       |         | Typic                        | al Oper | ation |       |
|---|---|------------------------|--------------|------|----------------------------|--------|--------|----------------------------|-------|---------|------------------------------|---------|-------|-------|
| is especially suited for use in broadband linear an<br>will also provide outstanding performance in othe<br>amplifier applications.   | plifiers, but   | Class of<br>Operation  |              |      | Plate<br>Current<br>(amps) |        | Diss.  | Screen<br>Diss.<br>(watts) | Diss. | Voltage | Screen<br>Voltage<br>(volts) | Current | Power | Power |
| PLATE DISSIPATION<br>COOLING  | 3000 watts<br>Forced Air  | AB <sub>1</sub> Linear | RF Amplifier | 5000 | 2.0                        | 3000   | -      | 50                         |       | 5000    | 750                          | 1.06    | _     | 5300  |
| CHARACTERISTICS   |   |                        |              |      |                            |        |        |                            |       |         |                              |         |       |       |
| Cathode: Oxide-coated, unipotential Base<br>Heater: Socket Socket<br>Voltage 6.0 volts Max. Seal Temp.<br>Current 17 amperes Max. Height<br>Capacitances (Grounded Cathode): Max. Diameter<br>Input 57 pf<br>Output 33 pf<br>Feed-Through 0.16 pf | Special<br>Eimac 265A<br>250 °C<br>5.7 inches<br>4.4 inches<br>4.8 pounds |                        |              |      |                            |        |        |                            |       |         |                              |         |       |       |



### 290

The 290 is a ceramic-metal beam pentode with exceptionally low input capacitance for its power-handling capability. The tube is especially suited for use in broadband linear amplifiers, but will also provide outstanding performance in other Class AB<sub>1</sub> amplifier applications. PLATE DISSIPATION 5000 watts

COOLING Forced Air CHARACTERISTICS Cathode: Oxide-coated, unipotential Base Special 291A 250 °C 7.2 inches 5.5 inches .8 pounds Base Socket Max. Seal Temp. Max. Height Max. Diameter Net Weight Cathode: Oxide-coated, unipotentia Heater: Outrage 6.0 volts Current 17 amperes Capacitances (Grounded Cathode): Input 57 pf Output 33 pf Feed-Through 0.16 pf 5.5 m 4.8 pr

|                                       |          | Maximum Ratings |       |       |       |       |                             |         | Typical Operation |       |       |  |  |  |
|---------------------------------------|----------|-----------------|-------|-------|-------|-------|-----------------------------|---------|-------------------|-------|-------|--|--|--|
| Class of Type of<br>Operation Service | Voltage  | Current         | Diss. | Diss. | Diss. | Diss. | Plate<br>Voltage<br>(volts) | Voltage | Current           | Power | Power |  |  |  |
| AB <sub>1</sub> Linear RF Amplif      | ier 6000 | 2.0             | 5000  | -     | 50    | -     | 5000                        | 750     | 1.06              | -     | 5300  |  |  |  |

# POWER GRID TUBE HANDBOOK

A comprehensive book providing information on design, construction and operation of power grid tubes has been published by EIMAC, Division of Varian.

The 158-page book, "THE CARE AND FEEDING OF POWER GRID TUBES," discusses the types and uses of high power vacuum tubes from diodes to pentodes and includes special tubes such as zero-bias triodes and super power tetrodes.

In addition, cooling, emission, secondary emission, high frequency operation, limiting factors in tube design and operation are discussed in the book. Electron tube materials used in cathodes, grids, filaments, anodes and envelopes as well as construction methods are also explained.

Primarily written as a guide to the tube specifier and circuit designer, it is also useful to amateur radio enthusiasts and teachers.

The \$3.95 book is being distributed by Stacey's Scientific Book Center, 2575 Hanover Avenue, Palo Alto, California, and is available through your nearest Eimac Distributor.

# **PULSE MODULATORS**



# 6C21

A high-vacuum triode designed for pulse-modulator service and incorporating a pyrovac plate and a non-emitting grid. It is recommended for use where long-pulse requirements rule out the use of tubes employing oxide-coated cathodes.

MAXIMUM PLATE VOLTAGE **30 kilovolts** MAXIMUM PULSE PLATE CURRENT 15 amperes COOLING **Radiation and Forced Air** 

#### CHARACTERISTICS

| Filament: Thoriated<br>Voltage<br>Current                            | tungsten<br>8.2 volts<br>15.9 to 17.7 amperes                       |
|--|---|
| Capacitances:<br>Grid-Plate<br>Grid-Filament<br>Plate-Filament       | 3.0 to 5.6 pf<br>7.0 to 12.0 pf<br>2.0 pf                           |
|  | 50-watt jumbo 4-pin<br>nson Co. No. 123-211<br>r National Co. XM-50 |
| Maximum Seal Ten<br>Maximum Length<br>Maximum Diameter<br>Net Weight | ip. 225 °C<br>12.625 inches   |

#### MAXIMUM RATINGS

DC PLATE VOLTAGE PEAK PLATE CURRENT PLATE DISSIPATION GRID DISSIPATION 30 kilovolts 15 amperes 300 watts 50 watts

| IYPICAL             | OPERA | TION      |
|---------------------|-------|-----------|
| DC Plate Voltage    | 28    | kilovolts |
| Pulse Plate Voltage |       | kilovolts |
| Pulse Plate Current | 15    | amperes   |
| Peak Drive Power    | 7.5   | kilowatts |
| Peak Output Power   |       | kilowatts |
| Duty                | 0.2   | percent   |



# 8252 / 4PR60B

The Eimac 4PR60B is a high-vacuum, radial-beam tetrode intended for pulse modulator service in circuits employing resistive loads. The 4PR60B supersedes the 4PR60A and unilaterally replaces the 715C and 5D21. It is recommended for use in equipment of new design.

| MAXIMUM | PLATE VOLTA | GE        | 20     | kilovolts |
|---------|-------------|-----------|--------|-----------|
| MAXIMUM | PULSE PLATE | CURRENT   | 18     | amperes   |
| COOLING |             | Radiation | and Co | nvection  |

| Heater:<br>Volta<br>Curre |  | 1.95       | 26.0 volts<br>to 2.35 amperes   |
|---------------------------|--|------------|---|
| Inpu<br>Outp              | t.   | 35.0       | Cathode):<br>to 50.0 pf<br>to 11.0 pf<br>2.0 pf                                   |
| Maximum<br>Maximum        | Seal Ten<br>Envelope<br>Length<br>Diameter | np.<br>Tem | Co. No. 122-234<br>200 °C<br>p. 200 °C<br>6.0 inches<br>3.063 inches<br>12 ounces |

**CHARACTERISTICS** 

Cathodo: Oxido costod uninotontial

# MAXIMUM RATINGS

| DC PLATE VOLTAGE   | 20  | kilovolts |
|--------------------|-----|-----------|
| DC SCREEN VOLTAGE  | 1.5 | kilovolts |
| PEAK PLATE CURRENT | 18  | amperes   |
| PLATE DISSIPATION  | 60  | watts     |
| SCREEN DISSIPATION | 8   | watts     |
| GRID DISSIPATION   | 1   | watt      |
|                    |     |           |

MAXIMUM RATINGS

TYPICAL OPERATION

MAXIMUM RATINGS

#### TYPICAL OPERATION

| DC Plate Voltage    |   |
|---------------------|---|
| DC Screen Voltage   |   |
| Pulse Plate Voltage | 1 |
| Pulse Plate Current |   |
| Peak Drive Power    |   |
| Peak Output Power   |   |
| Duty                |   |
| Pulse Duration      |   |
|                     |   |
|                     |   |

DC PLATE VOLTAGE DC SCREEN VOLTAGE PEAK PLATE CURRENT PLATE DISSIPATION SCREEN DISSIPATION GRID DISSIPATION

DC Plate Voltage DC Screen Voltage Pulse Plate Voltage Pulse Plate Current

Peak Drive Power Peak Output Power

Duty Pulse Duration

M

# 20 kilovolts 1.25 kilovolts 18.75 kilovolts 18 amperes 552 watts 337 kilowatts 0.1 percent

20 kilovolts 1.5 kilovolts

18 amperes 60 watts

8 watts 1 watt

20 kilovolts 1.25 kilovolts 8.75 kilovolts 18 amperes 552 watts 337 kilowatts 0.1 percent 2 microsece

0.1 percent 2 microseconds

15 kilovolts 2 kilovolts 1 ampere

15 kilovolts 1 kilovolt

14 kilovolts

18



# 8252W/4PR60C The Eimac 4PR60C is a ruggedized version of the 4PR60B.

It is a high-vacuum, radial-beam tetrode intended for pulse modulator service in circuits employing resistive loads. The 4PR60C supersedes the 4PR60A and unilaterally replaces the 715C and 5D21. It is recommended for use in equipment of new design.

| MAXIMUM | PLATE VOLTAG | GE        | 20     | kilovolts |
|---------|--------------|-----------|--------|-----------|
| MAXIMUM | PULSE PLATE  | CURRENT   | 18     | amperes   |
| COOLING |              | Radiation | and Co | onvection |

| CHARACTERISTIC                  | S  |
|---------------------------------|----|
| thode: Oxide-coated, unipotenti | al |

Catt

|  | and the second sec |
|--|--|
| Heater :<br>Voltage<br>Current   | 26.0 volts<br>1.95 to 2.35 amperes   |
| Capacitances (Grou<br>Input<br>Output<br>Feed-through  | nded Cathode);<br>35.0 to 50.0 Pf<br>6.0 to 11.0 Pf<br>2.0 pf  |
| Socket E. F. Joh<br>Maximum Seal Ten<br>Maximum Envelope<br>Maximum Length<br>Maximum Diameter<br>Net Weight | Temp. 200 °C<br>6.0 inches   |

# 8187 / 4PR65A

A compact, high-vacuum, radial-beam tetrode incorporating a pyrovac plate and non-emitting grids, intended for pulsemodulator service.

It is recommended for use in new equipments whenever long pulse durations, high duty factors, or high voltages preclude the use of tubes employing oxide-coated cathodes.

MAXIMUM PLATE VOLTAGE 15 kilovolts MAXIMUM PULSE PLATE CURRENT 1 ampere COOLING **Radiation and Convection** 

| Filament: Thoriated | l tungsten         | - 1 |
|---------------------|--------------------|-----|
| Voltage             | 6.0 volts          |     |
| Current             | 3.2 to 3.8 amperes |     |
| Capacitances (Groun | nded Cathode):     |     |
| Input               | 6.0 to 8.3 pf      | - 1 |
| Output              | 1.9 to 2.6 pf      |     |
| Feed-through        | 0.12 pf            |     |
| Base                | 5-pin metal shell  |     |
| Socket              | National HX-29     |     |
|                     | or Johnson 122-101 |     |
| Maximum Base-Sea    | I Temp. 200 °C     |     |
| Max. Plate-Seal Ter |                    |     |
| Maximum Length      | 4.38 inches        |     |
| Maximum Diameter    |                    |     |
| Net Weight          | 3 ounces           |     |

| CHA | RA | CT | ERI | STI | CS |
|-----|----|----|-----|-----|----|
|     |    |    |     |     |    |

| oriated tungsten<br>6.0 volts<br>3.2 to 3.8 amperes  | DC PLATE VOLTAGE<br>DC SCREEN VOLTAGE<br>PEAK PLATE CURRENT<br>PLATE DISSIPATION   | 15 kilovo<br>2 kilovo<br>1 amper<br>65 watts   |
|--|--|--|
| (Grounded Cathode):<br>6.0 to 8.3 pf   | SCREEN DISSIPATION<br>GRID DISSIPATION   | 10 watts<br>5 watts  |
| 1.9 to 2.6 pf<br>ough 0.12 pf  | TYPICAL OPE  | RATION   |
| 5-pin metal shell<br>National HX-29<br>or Johnson 122-101<br>ise-Seal Temp. 200 °C<br>eal Temp. 225 °C<br>ngth 4.38 inches<br>ameter 2.38 inches | DC Plate Voltage<br>DC Screen Voltage<br>Pulse Plate Voltage<br>Pulse Plate Current<br>Peak Drive Power<br>Peak Output Power<br>Duty | 15 kilovo<br>1 kilovo<br>14 kilovo<br>1 amper<br>11 watts<br>14 kilowa<br>5.0 percer |

# 8247 / 4PR125A

A compact, high-vacuum, radial-beam tetrode incorporating a pyrovac plate and non-emitting grids, intended for pulsemodulator service.

It is recommended for use in new equipments whenever long pulse durations, high duty factors, or high voltages preclude the use of tubes employing oxide-coated cathodes.

MAXIMUM PLATE VOLTAGE 18 kilovolts MAXIMUM PULSE PLATE CURRENT 1.8 amperes COOLING **Radiation and Forced Air** 

#### CHARACTERISTICS Filament . Thoristed tungston

| DC |
|----|
|    |
| PE |
| PL |
| SC |
| GR |
| un |
|    |
|    |
| DC |
| DC |
| Pu |
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|    |
|    |

| ate Current<br>ve Power<br>tput Power | 1 ampere<br>11 watts<br>14 kilowatts<br>5,0 percent |
|---------------------------------------|---|
| AXIMUM F                              | RATINGS   |
| TE VOLTAGE                            | 18 kilovolts  |
| EEN VOLTAGE                           | 2 kilovolts   |
| LATE CURRENT                          |   |
| DISSIPATION                           | 125 watts   |
| DISSIPATION                           | 20 watts  |

| mouth on in         |                |
|---------------------|----------------|
| DC PLATE VOLTAGE    | 18 kilovolts   |
| DC SCREEN VOLTAGE   | 2 kilovolts    |
| PEAK PLATE CURRENT  | 1.8 amperes    |
| PLATE DISSIPATION   | 125 watts      |
| SCREEN DISSIPATION  | 20 watts       |
| GRID DISSIPATION    | 5 watts        |
| TYPICAL OPE         | ERATION        |
| DC Plate Voltage    | 18 kilovolts   |
| DC Screen Voltage   | 1 kilovolt     |
| Pulse Plate Voltage | 17 kilovolts   |
| Pulse Plate Current | 1.8 amperes    |
| Peak Drive Power    | 30 watts       |
| Peak Output Power   | 30.6 kilowatts |
| Duty                | 4.0 percent    |

# **PULSE MODULATORS**



# 8248/4PR250C

A 50-kilovolt tetrode for use in pulse-modulator and switch-tube applications. The 4PR250C has a 250-watt plate dissipation rating and is capable of supplying pulses of four amperes and nearly 50 kilovolts to a resistive load. It is recommended for use in new equipments.

MAXIMUM PLATE VOLTAGE 50 kilovolts MAXIMUM PULSE PLATE CURRENT 4 amperes COOLING **Radiation** and Forced Air

#### CHARACTERISTICS

| Filament: Thoriated<br>Voltage                   | 5.0 volts                                     |
|--|---|
| Current  | 13.5 to 14.7 amperes                          |
| Capacitances:<br>Input<br>Output<br>Feed-Through | 11 to 15 uufd<br>2.7 to 3.7 uufd<br>0.15 uufd |
| Socket   | Eimac SK-400                                  |
| Max. Plate-Seal Ter                              | np. 200 °C                                    |
| Max. Envelope Tem                                | p. 200 °C                                     |
| Max. Length                                      | 7.5 inches                                    |
| Max. Diameter                                    | 3.5 inches                                    |
| Net Weight                                       | 12.5 ounces                                   |

# MAXIMUM RATINGS DC PL/ DC SC PEAK I PLATE SCREEI

GRID

DC Screen Voltage Pulse Plate Voltage Pulse Plate Current

Peak Drive Power

Peak Output Power Duty

DC PLATE VOLTAGE DC SCREEN VOLTAGE PEAK PLATE CURRENT PLATE DISSIPATION SCREEN DISSIPATION GRID DISSIPATION

**DC** Plate Voltage

DC Screen Voltage Pulse Plate Voltage Pulse Plate Current

Peak Drive Power

Duty

Peak Output Power

GRID DISSIPATION

Peak Output Power

DC PLATE VOLTAGE DC SCREEN VOLTAGE PEAK PLATE CURRENT PLATE DISSIPATION

SCREEN DISSIPATION GRID DISSIPATION

Duty

| ALE VULIAGE   | 50  | kilovolt  |
|---------------|-----|-----------|
| REEN VOLTAGE  | 2   | kilovolts |
| PLATE CURRENT | 4   | amperes   |
| DISSIPATION   | 250 | watts     |
| N DISSIPATION | 25  | watts     |
| DISSIPATION   | 5   | watts     |
|               |     |           |

#### **TYPICAL OPERATION** DC Plate Voltage

MAXIMUM RATINGS

TYPICAL OPERATION

| 49.7 | kilovolts |
|------|-----------|
| 1    | kilovolt  |
| 48   | kilovolts |
| 4    | amperes   |
| 415  | watts     |
| 192  | kilowatts |
| 1.7  | percent   |

20 kilovolts 2.5 kilovolts 4 amperes 400 watts 35 watts 10 watts

20 kilovolts

1.5 kilovolts 19 kilovolts 4 amperes 40 watts

76 kilowatts 1.5 percent



# 8188/4PR400A

8189/4PR1000A

ing oxide-coated cathodes MAXIMUM PLATE VOLTAGE

COOLING

A compact, high-vacuum, radial-beam tetrode incorporating a pyrovac plate and non-emitting grids, intended for pulsemodulator service.

It is recommended for use in new equipments whenever long pulse lengths, high duty factors, or high voltages preclude the use of tubes employing oxide-coated cathodes.

| MAXIMUM | PLATE VOLTAGE       | 20 kilovolts   |
|---------|---------------------|----------------|
| MAXIMUM | PULSE PLATE CURRENT | 4 amperes      |
| COOLING | Radiation           | and Forced Air |

A compact, high-vacuum, radial-beam tetrode incorporating

a pyrovac plate and non-emitting grids, intended for pulse-

modulator service. This heavy duty pulse modulator is rec-

ommended for use in new equipments where high voltage,

high current, or high duty preclude the use of tubes employ-

**30 kilovolts** 

8 amperes

**Radiation and Forced Air** 

| Filament: Thoriated to<br>Voltage<br>Current 13  | ungsten<br>5.0 volts<br>1.5 to 14.7 amperes                      |
|--|--|
|  | ed Cathode):<br>1.7 to 14.5 uufd<br>1.2 to 5.6 uufd<br>0.17 uufd |
| Base<br>Socket<br>Max. Base-Seal Temp.<br>Max. Plate-Seal Temp<br>Maximum Length<br>Maximum Diameter<br>Net Weight |  |

CHARACTERISTICS

#### CHARACTERISTICS

| Filament: Thoriated   | tungsten             |
|---|----------------------|
| Voltage   | 7.5 volts            |
| Current   | 20.0 to 22.7 amperes |
| Capacitances (Ground  | ded Cathode):        |
| Input   | 23.8 to 32.4 uufd    |
| Output  | 6.8 to 9.4 uufd      |
| Feed-through  | 0.35 uufd            |
| Base<br>Socket<br>Max. Base-Seal Tem<br>Max. Plate-Seal Tem<br>Maximum Length<br>Maximum Diameter<br>Net Weight |                      |

#### CHARACTERISTICS

| Filament: Thoriated<br>Voltage | tungsten<br>7.5 volts |
|--------------------------------|-----------------------|
| Current                        | 20.0 to 22.7 amperes  |
| Capacitances (Grou             | nded Cathode):        |
| Input                          | 23.8 to 32.4 uufd     |
| Output                         | 6.8 to 9.4 uufd       |
| Feed-through                   | 0.35 uufd             |
| Base                           | 5-pin metal shell     |
| Socket                         | Eimac SK-500          |
| Max. Base-Seal Ter             |                       |
| Max. Plate-Seal Te             |                       |
| Maximum Length                 | 9.63 inches           |
| Maximum Diameter               |                       |
| Net Weight                     | 1.5 pounds            |

#### CHARACTERIST

F

C

| ilament: Thoriated tungsten      | PEAK F   |
|----------------------------------|----------|
| Voltage 7.5 volts                | PLATE    |
| Current 20 to 22.7 amperes       | SCREEN   |
| Capacitances (Grounded Cathode): | GRID D   |
| Input 23.8 to 32.4 pf            | TY       |
| Output 5.5 to 7.2 pf             | Capacit  |
| Feed-through 0.35 pf max.        | Plate    |
| Base 5-pin special               | Peak     |
| SocketSK-500                     | Scree    |
| Maximum Operating Temperatures:  | Peak     |
| Envelope Temperature 225 °C max. | Peak     |
| Seal Temperature 200 °C max.     | Resistiv |
| Maximum Height 9.625 inches      | Plate    |
| Maximum Diameter 5.250 inches    | Peak     |
| Vet Weight 1.5 pounds            | Scree    |
| Class of Operation Class "C"     | Peak     |
| ype of Service Pulse Modulator   | Peak     |

| MAXIMUM            | RATINGS       |  |
|--------------------|---------------|--|
| DC PLATE VOLTAGE   | 30 kilovolts  |  |
| DC SCREEN VOLTAGE  | 2.5 kilovolts |  |
| PEAK PLATE CURRENT | 6 8 amperes   |  |
| PLATE DISSIPATION  | 1000 watts    |  |
| SCREEN DISSIPATION |               |  |
|                    |               |  |

#### volts peres ts 75 watts 25 watts

| TYPICAL             | OPERATION   |
|---------------------|-------------|
| DC Plate Voltage    | 30 kilovo   |
| DC Screen Voltage   | 1.5 kilovo  |
| Pulse Plate Voltage | 29.4 kilovo |
| Pulse Plate Current | 8 ampei     |
| Peak Drive Power    | 900 watts   |
| Deah Outeut Dames   | 225 bilour  |

MAXIMUM RATINGS

TYPICAL OPERATION

| 30   | kilovolts |
|------|-----------|
| 1.5  | kilovolts |
| 29.4 | kilovolts |
| 8    | amperes   |
| 900  | watts     |
| 235  | kilowatts |
|      |           |

1.0 percent

30 kilovolts 2.5 kilovolts

8 amperes 1000 watts

75 watts 25 watts



III III

# 8189/4PR1000B

MAXIMUM PULSE PLATE CURRENT

The Eimac 4PR1000B is a ruggedized version of the 4PR1000A. A compact, high-vacuum, radial-beam tetrode i corporating a pyrovac plate and non-emitting grids, intende for pulse-modulator service. This heavy-duty pulse modulate is recommended for use in new equipments where high vol age, high current, or high duty preclude the use of tube employing oxide-coated cathodes.

MAXIMUM PLATE VOLTAGE 30 kilovoli MAXIMUM PULSE PLATE CURRENT 8 amperes COOLING **Radiation and Forced Air** 

|                  | CHANAC  | ILNIS1103   |
|------------------|---|---|
| he<br>in-        | Filament: Thoriated<br>Voltage<br>Current                 | d tungsten<br>7.5 volts<br>20.0 to 22.7 ampere                      |
| ed<br>tor<br>lt- | Capacitances (Grou<br>Input<br>Output<br>Feed-through     | nded Cathode):<br>23.8 to 32.4 uufd<br>6.8 to 9.4 uufd<br>0.35 uufd |
| ts               | Base<br>Socket<br>Max. Base-Seal Te<br>Max. Plate-Seal Te |   |

| etal shell<br>c SK-500<br>°C<br>rnches<br>pounds | DC Plate Voltage<br>DC Screen Voltage<br>Pulse Plate Voltage<br>Pulse Plate Current<br>Peak Drive Power<br>Peak Output Power<br>Duty | 30 kilovolts<br>1.5 kilovolts<br>29.4 kilovolts<br>8 amperes<br>900 watts<br>235 kilowatts<br>1.0 percent |
|--|--|---|
| ICS  | MAXIMUM F  |   |
| .5 volts<br>.7 amperes<br>de):                   | PLATE VOLTAGE<br>PEAK PLATE CURRENT<br>PLATE DISSIPATION<br>SCREEN DISSIPATION<br>GRID DISSIPATION                                   | 45 kilovolts<br>8 amperes<br>1000 watts<br>75 watts<br>25 watts   |

Plat Peal Scre Peal Peal

| INIUMIAN  | namas  |
|---|--|
| VOLTAGE   | 45 kilovolts   |
| PLATE CURRENT   | 6 8 amperes  |
| DISSIPATION   | 1000 watts   |
| N DISSIPATION   |  |
| DISSIPATION   | 25 watts   |
| PICAL OF  | ERATIONS   |
| tive Load   |  |
| e Voltage   | 37 kilovolts   |
| k Plate Current   | 5 amperes  |
| en Voltage  | 1000 volts   |
| k Drive Power   | 220 watts  |
| k Output Power  | 4.2 kilowatts  |
| ve Load   |  |
| e Voltage   | 17 kilovolts   |
| k Plate Current   | 7 amperes  |
| en Voltage  | 1500 volts   |
| k Drive Power   | 320 watts  |
| k Output Power  | 98 kilowatts   |
| CONTRACTOR OF A CONTRACTOR OF | A DATE OF DESCRIPTION OF A DATE OF A |



# 284

This tube is a premium quality pulse tetrode intended for use in pulse-modulator, pulsed-amplifier, and pulsed-oscillator service. This compact, high-vacuum, radial-beam tetrode is recommended for use in new equipments where high voltage, high current or high duty factor is encountered.

| PLATE DISSI | PATI | ON      |           | 1000      | watts  |
|-------------|------|---------|-----------|-----------|--------|
| FREQUENCY   | FOR  | MAXIMUM | RATINGS   | 30        | MHz    |
| COOLING     |      | F       | Radiation | and Force | ed Air |

# SOCKETS AND ACCESSORIES

These sockets and accessories are specifically designed for use with Eimac tubes. Choice of the proper socket insures longer tube life and better performance. All sockets incorporate low loss insulating materials. All metal parts are plated for corrosion protection. Tube contact surfaces are nonferrous spring alloy, silver plated for good rf conductivity and heat treated for positive contact and long life. Open construction permits adequate air flow for tube cooling.





SK-300A





SK-400

8

18



SK-410



SK-500



SK-510



SK-600



SK-406



SK-416



SK-506



SK-516



SK-606

|  | BYPASS CAPACITOR  |              |                 |                     |                      |             |  |
|--|---|--------------|-----------------|---------------------|----------------------|-------------|--|
| AIR-SYSTEM<br>SOCKET                             | TUBE  | CAP.<br>pF   | VOLTAGE<br>DCWV | ELEMENT<br>BYPASSED | GROUNDED<br>CONTACTS | CHIMNE      |  |
| SK-184   | 8295<br>8295A   | 2000<br>2500 | 1000<br>500     | screen<br>supp.     | none                 | C-184       |  |
| SK-184A  | 8295<br>8295A   | 2000         | 1000            | screen              | supp.                | C-184       |  |
| SK-209B  | 8432  | 2000         | 1000            | screen              | none                 | C-209       |  |
| SK-265A  | 264   | 2000         | 1000            | screen              | none                 | C-265       |  |
| SK-291A  | 290   | 2000         | 1000            | screen              | none                 | C-290       |  |
|  | 4CX5000A<br>4CX5000J<br>4CX5000R                                |              |                 |                     |                      | SK-306      |  |
| SK-300<br>SK-300A*                               | • 4CW10,000A<br>4CW25,000A none †                               |              |                 | none                | none                 |             |  |
|  | 4CX10,000D  |              |                 |                     |                      | SK-1306     |  |
|  | 4CX15,000A<br>4CX15,000J  |              |                 |                     |                      | SK-316      |  |
|  | low pressure drop<br>en bypass cap. ava                         |              |                 |                     |                      | and SK-300/ |  |
|  | 4CV35,000A  |              |                 |                     |                      |             |  |
|  | 4-125A<br>4D21A<br>4PR125A                                      |              |                 |                     |                      | none        |  |
| SK-400   | 4-250A<br>4-400A<br>4PR400A<br>175A<br>6775                     | none         |                 |                     | none                 | SK-406      |  |
|  | 4PR250C   |              |                 |                     |                      | none        |  |
|  | 5-500A  |              |                 |                     |                      | SK-426      |  |
|  | 6155  |              |                 |                     |                      | SK-406      |  |
|  | 3-400Z  |              |                 |                     |                      | SK-416      |  |
|  | 3-500Z<br>6156<br>7527  |              |                 |                     |                      | SK-406      |  |
| SK-410   | 4-125A<br>4D21A<br>4PR125A                                      | none         |                 |                     | none                 | none        |  |
|  | 4-250A<br>4-400A<br>4PR400A<br>175A<br>6775                     |              |                 |                     |                      | SK-406      |  |
|  | 4PR250C   | _            |                 |                     |                      | none        |  |
|  | 5-500A  |              | -               |                     |                      | SK-426      |  |
| SK-500   | 4-1000A<br>4PR1000A<br>4PR1000B<br>279<br>284<br>294            | none         |                 |                     | none                 | SK-506      |  |
| SK-510   | 3-1000Z<br>4-1000A<br>4PR1000A<br>4PR1000B<br>279<br>284<br>294 | none         |                 |                     | none                 | SK-506      |  |
| SK-600 4X150A<br>SK-602 4X150D<br>SK-611* 4X150R |   |              |                 |                     | none                 |             |  |
| SK-610   | 4X150S<br>4CX250B<br>4CX250F                                    | 2700         | 400             | Scroop              | cath.                | SK-606      |  |
| SK-612†  | 4CX250FG<br>4CX250FG<br>4CX250R<br>4CX350A<br>4CX350F<br>7609   |              | 400             | screen              | cath, gl,<br>& 1 htr |             |  |
|  | 4W300B  |              |                 |                     |                      | none        |  |

# SOCKETS AND ACCESSORIES

#### SK-604

This tube puller is designed for use in removing coaxial-base and  $9 \cdot pin$ -base tubes from their sockets without damage. The 4X150 series and 4CX250 series tubes may be removed with this puller. SK-604A has a bonderize finish, SK-604B is nickel-plated.



#### SK-605

These special pliers are designed for use in removing breechblock base tubes from their sockets without damage. The 4CX300 series and 4CX1000 series tubes may be removed with these pliers.





SK-636B

SK - 60

SK-606

SK-626

SK - 606

SK-606

SK-760

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SK-626

SK-620



SK-640



SK-650 SK-655

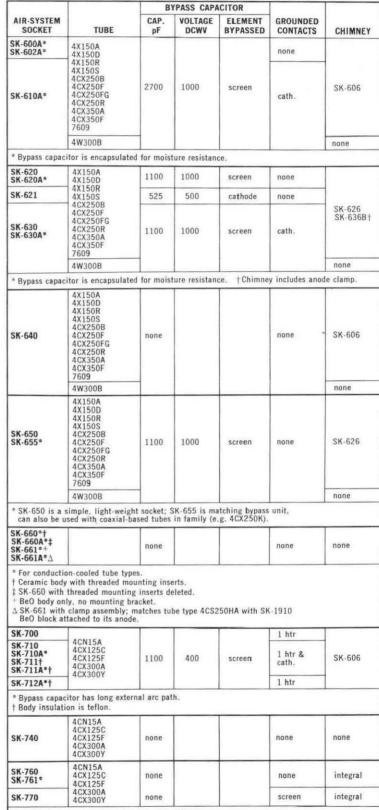
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SK-700



SK-740



\* SK-761 is a low-capacitance version of the SK-760.

# SOCKETS AND ACCESSORIES

|                                   | TUBE  | -                     | YPASS CAP                      | 1   |                      |                   |
|-----------------------------------|---|-----------------------|--------------------------------|---|----------------------|-------------------|
| AIR-SYSTEM<br>SOCKET              |   | CAP.<br>pF            | VOLTAGE<br>DCWV                | ELEMENT<br>BYPASSED   | GROUNDED<br>CONTACTS | CHIMNEY           |
| SK-800B                           | 4CX1000A  |                       |                                |   | none                 |                   |
| SK-810B<br>SK-890B*               | 4CX1500B<br>4CW2000A†   | 1500                  | 400                            | screen  | 1 htr & cath.        |                   |
| SK-820                            | 4CX1000K  | 500                   | 400                            | cathode   | screen               |                   |
| SK-830A                           | 4CX1000K  | 2500                  | 1000                           | screen  | cath.                | SK-806            |
| SK-831                            | 4CX1000K<br>4CX1500A  | 2500                  | 1000                           | screen  | none                 |                   |
| SK-840                            | 5CX1500A  | 2500                  | 1000                           | supp.   | screen               | -                 |
| SK-860<br>SK-870                  | 3CX1000A7   | none<br>none          |                                |   | none<br>gl           | SK-816            |
| * Screen bypass<br>† No chimney r | s capacitor isolated<br>equired.  | from scre             | een contacts.                  |   |                      |                   |
| SK-900                            | 4X500A  | *650                  | 700                            | screen  | попе                 | SK-906†           |
|                                   | l<br>capacitor is detach<br>udes anode clamp.                                 | abie.                 | 1                              | - Personal |                      | 1                 |
|                                   | 3CW10,000A3<br>3CW20,000A1<br>3CW20,000A3<br>3CW20,000A7                      |                       |                                |   |                      | none<br>req'd     |
| SK-1300                           | 3CX5000A3   | none                  |                                |   | попе                 | Y-463             |
|                                   | 3CW25,000A3<br>3CX10,000A1<br>3CX10,000A3<br>3CX10,000A7<br>3CX15,000A3       |                       |                                |   | none                 | SK-1306           |
|                                   | 3CX20,000A3   | -                     |                                |   |                      | none<br>available |
| SK-1310                           | 3CV30,000A1<br>3CV30,000A3  | none                  |                                |   | none                 | none<br>req'd     |
| SK-1400A                          | 4CX3000A  | 1800                  | 1000                           | screen  | none                 | SK-1406           |
| SK-1470                           | 40000000  | none                  |                                |   | screen               | 31-1400           |
| SK-1420*                          | 5CX3000A  | 1800                  | 1000                           | screen  | supp.                | SK-1426           |
| SK-1490†                          | 4CV8000A  | none                  |                                |   | none                 | none<br>req'd     |
|                                   | ce base arrangemen<br>flange included.  | nt.                   |                                |   |                      |                   |
| SK-1500*                          | 4CX35,000C  |                       |                                |   |                      |                   |
| SK-1510†<br>SK-1511‡              | 4CW100,000D<br>4CV100,000C  | none                  |                                |   | none                 | none              |
| † SK-1510 is a                    | nbly, to allow for ste<br>n SK-1500 with tub<br>& seating device for<br>6697A | e seating<br>tubes sh | device adde                    | d.  | 1                    |                   |
| SK-1606B                          | 6697A   | -                     | a september                    | ir distributor  |                      |                   |
| SK-1610                           | 6696A<br>6697A<br>7480  |                       | ent connecto                   |   |                      |                   |
| SK-1611                           | 6696A<br>6697A<br>7480  | Filam                 | ent connecto                   | r, large  |                      |                   |
| SK-1612                           |   | Grid                  | connector                      |   |                      |                   |
| SK-1620                           | - 6696A   | Anode                 | e water jacke                  | t   |                      |                   |
| SK-1625                           |   |                       |                                | or water jackel   | t                    |                   |
| SK-1626                           |   | Moun                  | ting plate for                 | r water jacket  |                      |                   |
| SK-1710                           | 4CV250,000A<br>4CV250,000V  | Filam                 | ent connecto                   | r (two require  | d)                   |                   |
| SK-1712                           | 4CW250,000V<br>4CW250,000A<br>4CW250,000V                                     | Contr                 | ol grid conn                   | ector   |                      |                   |
| SK-1720                           | 4CW250,000A/V   | Water                 | jacket                         |   |                      |                   |
| SK-1900                           | Y-398<br>Y-401  |                       |                                | , attaches to a<br>g applications   | anode of tube f      | or                |
| SK-1910                           | 4CS250HA  | BeO I<br>condu        | block, attach<br>iction coolin | es to anode o<br>g applications   | f tube for           |                   |
|                                   | 4CV50,000E  |                       |                                |   |                      |                   |



SK-800B







SK-806



SK-906



SK-1306

SK-1300



SK-1400A



SK-1500

SK-1406



CUSTOM SOCKET DESIGN

For special applications which require features different from these standard sockets, custom designed sockets are offered. These may be modifications of the standard sockets or completely new designs, manufactured to customer drawings or Eimac design. Common modifications include: contact spacing, mounting features, encapsulation of components, grounded contacts, by-pass capacitors, insulating materials, contact materials, and plating.

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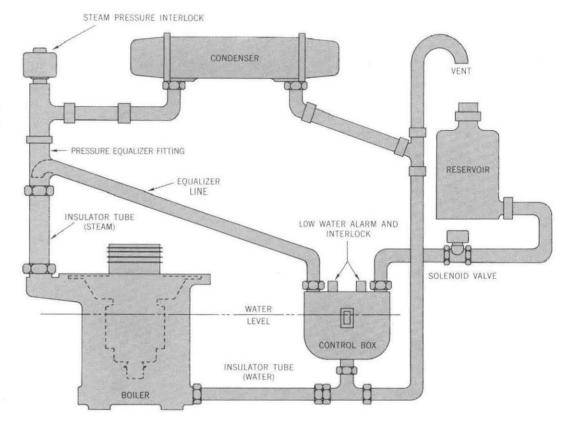
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# **VAPOR-PHASE COOLING ACCESSORIES**

In order to take the guess work - out of using vapor cooling, Eimac has developed a complete line of accessories to complement its series of vapor-cooled tubes. All the components labeled in the system at right are available from Eimac. For more information on how this cooling technique can improve the performance of your equipment, write for a free copy of Application Bulletin Number 11, "The Care and Feeding of Vapor-Phase Cooling." Also available from Eimac is application engineering assistance in planning vapor-cooled systems. Eimac representatives can put you in touch with the same people who produced the first completely integrated vapor-phase cooling packages.

SCHEMATIC OF TYPICAL EIMAC VAPOR COOLING INSTALLATION



| Tube                       |              | Maximum<br>Plate    |                                |                            |                             |                        | Steam Line <sup>4</sup>        |                     | Water Line <sup>4</sup>       |                     | Pressure             |
|----------------------------|--------------|---------------------|--------------------------------|----------------------------|-----------------------------|------------------------|--------------------------------|---------------------|-------------------------------|---------------------|----------------------|
| Type<br>Number             | Tube<br>Type | Dissipation<br>(kW) | Socket                         | Boiler <sup>1</sup>        | Control<br>Box <sup>2</sup> | Reservoir <sup>3</sup> | Pyrex Line                     | Pyrex-Cu<br>Adapter | Pyrex Line                    | Pyrex-Cu<br>Adapter | Equalizer<br>Fitting |
| 4CV8,000A                  | Tetrode      | 8                   | SK-1490                        | BR-101                     | CB-102                      | RE-100                 | 043028N                        | AF-100              | 043067N                       | AF-102              | AD-100               |
| 4CV20,000A                 | Tetrode      | 20                  | SK-310                         | BR-200                     | CB-202                      | RE-200                 | 043060N                        | AF-200              | 043068N                       | AF-202              | AD-200               |
| 3CV30,000A3                | Triode       | 30                  | SK-1310                        | BR-200                     | CB-202                      | RE-200                 | 043060N                        | AF-200              | 043068N                       | AF-202              | AD-200               |
| 4CV35,000A                 | Tetrode      | 35                  | SK-310                         | BR-200                     | CB-202                      | RE-200                 | 043060N                        | AF-200              | 043068N                       | AF-202              | AD-200               |
| 4CV50,000E                 | Tetrode      | 50                  | SK-2000                        | BR-700                     | -                           |                        | -                              |                     | 4                             |                     | -                    |
| 4CV75,000                  | Tetrode      | 75                  | SK-1500                        | BR-320                     | CB-202                      | RE-200                 |                                | -                   |                               | -                   | AD-300               |
| 7480                       | Triode       | 80                  | SK-1600<br>Series <sup>5</sup> | BR-400                     | CB-202                      | RE-200                 | 043033N                        | AF-300              | 043069N                       | AF-302              | AD-300               |
| 4CV100,000C                | Tetrode      | 100                 | SK-1510                        | BR-300<br>BR-310<br>BR-500 | CB-202<br>CB-202            | RE-200<br>RE-200       | 043033N<br>043033N<br>120mm OD | AF-300<br>AF-300    | 043069N<br>043068N<br>35mm OD | AF-302<br>AF-302    | AD-300               |
| 4CV100,000E                | Tetrode      | 100                 | SK-2000                        | BR-800                     | -                           | -                      | —                              | -                   | -                             | -                   |                      |
| 4CV250,000V<br>4CV250,000A | Tetrode      | 250                 | SK-1700<br>Series <sup>5</sup> | BR-605                     | CB-202                      | -                      | 5½" OD                         | -                   | 1 3⁄8 " OD                    | -                   | -                    |

One boiler per tube except BR-500 which accommodates two tubes. Solenoid Operated Valve #124281 and Pressure Interlock #124434 may be used in all system combinations. Capacities of the reservoirs are: RE-100 = 1 qt., RE-200 = 2 qt., RE-300 = 1 gal. 2

3

For multiple tube systems, these components are multiplied by the number of tubes used. Includes water-cooled filament and grid connections. 4.

Eimac will recommend condensers for specific system cooling requirements.

# **OTHER PRODUCTS**

Hole

# HEAT DISSIPATING CONNECTORS

Eimac HR Heat-Dissipating Connectors are used to make electrical connections to the plate and grid terminals of Eimac Tubes, and at the same time, provide efficient heat transfer from the tube element and glass seal to the air. These connectors are machined from solid dural rod and are supplied with the necessary set screws.



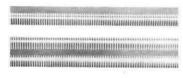
| TYPE* | Length   | Dia.   | Dia.  |
|-------|----------|--------|-------|
| HR-1  | 11/16″   | 1/2″   | .052″ |
| HR-2  | 11/16″   | 1/2″   | .062″ |
| HR-3  | 11/16"   | 1/2″   | .072″ |
| HR-4  | 7/8″     | 3/4″   | .102″ |
| HR-5  | 7/8″     | 3/4″   | .127″ |
| HR-6  | 7/8″     | 3/4″   | .367″ |
| HR-7  | 1-11/32" | 1-3/8″ | .127″ |
| HR-8  | 1-11/32″ | 1-3/8″ | .575″ |
| HR-9  | 4-11/32" | 1-3/8″ | .569″ |
| HR-10 | 1-11/32" | 1-3/8″ | .510″ |

### RECOMMENDED CONNECTORS FOR USE WITH EACH

|              | Plate | Grid       |             | Plate     | Grid      |
|--------------|-------|------------|-------------|-----------|-----------|
| TUBE         |       |            | TUBE        | Connector |           |
| 2-25A        | HR-1  | 1010408    | 25T         | HR-1      | ALC: NO   |
| 2-50A        | HR-3  |            | 35T         | HR-3      |           |
| 2-150D       | HR-6  |            | 35TG        | HR-3      | HR-3      |
| 2-240A       | HR-6  |            | 75TH-TL     | HR-3      | HR-2      |
| 2-450A       | HR-8  | 830100     | 100TH-TL    | HR-6      | HR-2      |
| 2-2000A      | HR-8  |            | VT127A      | HR-3      | HR-3      |
| 3-1000Z      | HR-8  |            | 250TH-TL    | HR-6      | HR-3      |
| 3C24         | HR-1  | HR-1       | 250R        | HR-6      |           |
| 4-65A        | HR-6  | 414-4143   | 304TH-TL    | HR-7      | HR-6      |
| 4D21/4-125A  | HR-6  | 100 (25:2) | 450TH-TL    | HR-8      | HR-8      |
| 5D22/4-250A  | HR-6  | 5:77E.K    | 592/3-200A3 | HR-10     | HR-5      |
| 4-400A       | HR-6  | Pira di    | 750TL       | HR-8      | HR-8      |
| 4-1000A      | HR-8  | 1(1-1(0)   | 866A        | HR-8      |           |
| 4E27A/5-125B | HR-5  | a + a > c  | 872A        | HR-8      | 200452    |
| 4PR60A       | HR-8  | P          | 1000T       | HR-9      | HR-9      |
| 6C21         | HR-8  | HR-8       | 1500T       | HR-8      | HR-8      |
| KY21A        | HR-3  | 11104(1)   | 2000T       | HR-8      | HR-8      |
| RX21A        | HR-3  | -141213    | 8020(100R)  | HR-8      | 102121212 |

\*For marking per MIL-STD-130B add prefix letter "M" to the part number for connectors HR-4 through HR-10. Note HR-1 through HR-3 are too small to permit marking.

# PREFORMED CONTACT FINGER STOCK



Eimac Preformed Finger Stock is a prepared strip of spring material slotted and formed into a series of fingers designed to make a sliding connections to tubes with coaxial terminals or to moving parts, such as long-line and cavity circuits or screen-room doors. Eimac finger stock is available in 9 different shapes and sizes, three of which incorporate "spooned" contact fingers. Standard stock is heat treated and silver plated. Also available without heat treating or plating.

| Туре     | Finger Radius<br>(inches)                                      | Finger Width<br>(inches) | Slot Width<br>(inches) | Slot Depth<br>(inches)   | Comments                            |
|----------|--|--------------------------|------------------------|--|-------------------------------------|
| CF-100   | 1/16   | 1/8                      | 0.040                  | 9/32   | spooned                             |
| CF-200   | 1/16   | 1/8                      | 0.040                  | 9/32   | double-edged                        |
| CF-300   | 13/64  | 1/8                      | 0.040                  | 19/32  | finger tip has reverse radius       |
| CF-400   | 13/64  | 1/8                      | 0.040                  | 35/64  | double-edged                        |
| CF-500   | 15/32  | 1/8                      | 0.040                  | 7/8  | finger tip has<br>reverse radius    |
| CF-600   | 15/32  | 1/8                      | 0.040                  | 29/32  | double-edged with reverse tip radii |
| CF-700   | 1/16   | 1/8                      | 0.040                  | 9/32   | spooned                             |
| CF-800   | 1/16   | 1/8                      | 0.040                  | 15/32  | spooned and bent                    |
| CF-900   | 0.030  | 1/16                     | 0.020                  | 15/64  | smallest fingers                    |
| on speci | ontact Finger Stock<br>al factory order in th<br>ished states: |                          | Slotted, fo            | d formed (Not heat<br>rmed, and heat trea<br>rmed, and plated (N | ted (Not plated)                    |



# **VACUUM SWITCHES**

Eimac Vacuum Switches are offered for pulse service or rf switching. For details inquire of Eimac Power Grid Division.

| Туре | Intended<br>Service      | Insulation | Current       | Peak<br>Test Voltage | DC<br>Coil     |
|------|--------------------------|------------|---------------|----------------------|----------------|
| VS-2 | RF                       | Glass      | 5a (30 MHz)   | 20 KV                | 12 V.<br>24 V. |
| VS-6 | Pulse                    | Glass      | 150a (Pulse)  | 22 KV                | 12 V.<br>24 V. |
| VS-8 | Medical<br>Defibrillator | Glass      | $\rightarrow$ | 15 KV                | 30 V.          |
| VS-9 | RF<br>General            | Ceramic    | 4a (16 MHz)   | 4 KV                 | 26.5 V.        |

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|  | Date  |  |  |  |
|--|---|--|--|--|
|  | Please send me further information on the following Eimac products:         |  |  |  |
|  | My application is   |  |  |  |
|  | Special requirements  |  |  |  |
| Fimao will be also to the state  | Name  |  |  |  |
| Eimac will be glad to furnish<br>additional information on the<br>products listed in this catalog. | Title or Position   |  |  |  |
| Simply note your product in-<br>erest on a reply card and mail.<br>Frompt response is assured.     | Company   |  |  |  |
|  | Address   |  |  |  |
|  |   | and .  |  |  |
|  | EIMAC division of varian 301 INDUSTRIAL WAY . SAN CARLOS, CALIFORNI         |  |  |  |
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|  | Special requirementsName  |  |  |  |
|  |   |  |  |  |
|  | Title or Position   |  |  |  |
|  | Company   |  |  |  |
|  | Address   | Comale   |  |  |
|  |   | Entra-   |  |  |
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|  | Date<br>Please send me further information on the following Eimac products: |  |  |  |
|  |   |  |  |  |
|  | My application is   |  |  |  |
|  | Special requirements  |  |  |  |
|  | Name  |  |  |  |
|  | Title or Position   |  |  |  |
|  | Company   |  |  |  |
|  | Address   | Eimac  |  |  |
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|  |   | and the second |  |  |

# **BUSINESS REPLY MAIL**

No postage stamp necessary if mailed in the United States

### POSTAGE WILL BE PAID BY-

EIMAC division of varian 301 INDUSTRIAL WAY SAN CARLOS, CALIFORNIA 94070

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# **BUSINESS REPLY MAIL**

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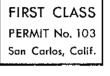
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