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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
5. Carburizing 4-400A filaments—Salt Lake City
6. Aging racks—San Carlos
7. Measuring tube linearity—San Carlos
8. Rotary exhaust furnaces—San Carlos
9. Curve plotter in development laboratory—San Carlos
**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:

<table>
<thead>
<tr>
<th>NUMBER OF ELECTRODES</th>
<th>DESCRIPTION</th>
<th>PLATE DISSIPATION</th>
<th>AMPLIFICATION FACTOR</th>
<th>VERSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3CX100A5</td>
<td>100</td>
<td>1-0 to 10</td>
<td>Distinguishes tubes which, although alike as to number of electrodes and plate dissipation, are not necessarily interchangeable physically or electrically.</td>
</tr>
<tr>
<td>3</td>
<td>Triode</td>
<td></td>
<td>1-11 to 20</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Ceram</td>
<td></td>
<td>3-21 to 30</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Conven</td>
<td></td>
<td>4-31 to 50</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Conv-Air</td>
<td></td>
<td>5-51 to 100</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Convection</td>
<td></td>
<td>6-101 to 200</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Conduction</td>
<td></td>
<td>7-201 to 500</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Radiat</td>
<td></td>
<td>8-501 to 100</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>R</td>
<td></td>
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<tr>
<td>3</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*In older types, the dash, as in the case of the 4-250A, carries the meaning of "R" given above.*
This group of Eimac Power Grid Tubes are recommended for direct replacement only, and not for new equipment design.

<table>
<thead>
<tr>
<th>DIODES AND RECTIFIERS</th>
<th>TRIODES</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERNAL ANODE</td>
<td>INTERNAL ANODE</td>
</tr>
<tr>
<td>2-25A</td>
<td>25T</td>
</tr>
<tr>
<td>2-50A</td>
<td>35T</td>
</tr>
<tr>
<td>8020/100R</td>
<td>35TG</td>
</tr>
<tr>
<td>2-150D</td>
<td>826</td>
</tr>
<tr>
<td>EXTERNAL ANODE</td>
<td>75TH</td>
</tr>
<tr>
<td>2X1000A</td>
<td>75TL</td>
</tr>
<tr>
<td>MERCURY VAPOR</td>
<td>100TH</td>
</tr>
<tr>
<td>RX21A</td>
<td>152TH</td>
</tr>
<tr>
<td>2X3000F</td>
<td>152TL</td>
</tr>
<tr>
<td></td>
<td>592</td>
</tr>
</tbody>
</table>

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 ±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: 1000 volts
- D-C CURRENT: 0.001 ampere
- PLATE DISSIPATION: 0.1 watt

**CHARACTERISTICS**
- Cathode: Oxide-coated, unipotential
- Heater
  - Voltage: 5.0 volts
  - Current: 0.31 to 0.39 ampere
- Max. Seal Temp.: 175 °C
- Length: 1.813 inches
- Diameter: 0.563 inches
- Net Weight: 0.2 ounce

**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**
- PEAK INVERSE: 800 volts
- PLATE CURRENT: 0.125 amperes
- PLATE DISSIPATION: 100 watts

**CHARACTERISTICS**
- Cathode: Oxide-coated, unipotential
- Heater
  - Voltage: 6.3 volts
  - Current: 0.9 to 1.0 ampere
- Capacitance (C pk): 3.1 to 3.8 pf
- Base: Coaxial
- Socket: Special
- Max. Seal Temp.: 250 °C
- Max. Anode-Cath Temp.: 250 °C
- Length: 2.75 inches
- Diameter: 1.265 inches
- Net Weight: 2.9 ounces
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

The 2C39WA is essentially the same as the 2C39A with a plate dissipation rating of 100 watts, designed for use primarily as a planar triode for replacement to those of the 3CX100A5. It is recommended for replacement in equipment calling for this type.

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

The 7211 is a planar triode featuring one third more cathode area 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

The 7815/3CPN10A5 is a ceramic-metal UHF, planar triode designed primarily for 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 anode and seal temperatures below the specified limits.

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

---

### CHARACTERISTICS

| **2C39A** | **Cathode**: Oxide-coated, unipotential  
**Heater**: Voltage: 6.3 volts  
Current: 0.95 to 1.10 amperes  
**Capacitances**: Grid-Cathode: 5.60 to 7.60 pf  
Grid-Plate: 1.86 to 2.16 pf  
Plate-Cathode: 0.035 pf  
**Maximum Ratings** | **Typical Operation** |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class of Operation</strong></td>
<td><strong>Type of Service</strong></td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier</td>
</tr>
<tr>
<td>C</td>
<td>Plate Modulated Radio-Frequency Amplifier or Oscillator</td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Oscillator</td>
</tr>
</tbody>
</table>

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| **2C39WA** | **Cathode**: Oxide-coated, unipotential  
**Heater**: Voltage: 6.3 volts  
Current: 0.95 to 1.10 amperes  
**Capacitances**: Grid-Cathode: 8.0 pf  
Grid-Plate: 2.5 pf  
Plate-Cathode: 0.06 pf  
**Maximum Ratings** | **Typical Operation** |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class of Operation</strong></td>
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</tr>
<tr>
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<td>Radio-Frequency Power Amplifier</td>
</tr>
<tr>
<td>C</td>
<td>Plate Modulated Radio-Frequency Amplifier or Oscillator</td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Oscillator</td>
</tr>
</tbody>
</table>

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| **7211** | **Cathode**: Oxide-coated, unipotential  
**Heater**: Voltage: 6.3 volts  
Current: 1.0 amperes  
**Capacitances**: Grid-Cathode: 8.0 pf  
Grid-Plate: 2.5 pf  
Plate-Cathode: 0.06 pf  
**Maximum Ratings** | **Typical Operation** |
<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td><strong>Class of Operation</strong></td>
<td><strong>Type of Service</strong></td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier</td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier</td>
</tr>
</tbody>
</table>

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| **7815/3CPN10A5** | **Cathode**: Oxide-coated, unipotential  
**Heater**: Voltage: 6.0 volts  
Current: 0.90 to 1.00 amperes  
**Capacitances**: Grid-Cathode: 5.60 to 7.60 pf  
Grid-Plate: 1.86 to 2.16 pf  
Plate-Cathode: 0.035 pf  
**Maximum Ratings** | **Typical Operation** |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class of Operation</strong></td>
<td><strong>Type of Service</strong></td>
</tr>
<tr>
<td>C</td>
<td>Plate-Pulsed Power Oscillator—3000 MHz</td>
</tr>
<tr>
<td>C</td>
<td>Grid Pulsed Amplifier—1100 MHz</td>
</tr>
</tbody>
</table>
**TRIODES**

### 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 connection and conduction to a suitable heat sink.

**PLATE DISSIPATION**

FREQUENCY FOR MAXIMUM RATING 3000 MHz COOLING Conduction and Convection

### 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 assures 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**

FREQUENCY FOR MAXIMUM RATING 2500 MHz COOLING Forced Air

### 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**

FREQUENCY FOR MAXIMUM RATING 2500 MHz COOLING Forced Air

### 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 tube ratings are applicable to 70,000 feet altitude making the 3CX100A5 especially suitable for airborne applications.

**PLATE DISSIPATION**

FREQUENCY FOR MAXIMUM RATING 3000 MHz COOLING Forced Air

### CHARACTERISTICS

**Cathode:** Oxide-coated, unipotential

**Heater:**
- **Voltage:** 6.3 volts
- **Current:** 1.3 amperes

**Capacitances:**
- **Grid-Cathode:** 8.0 pf
- **Grid-Plate:** 2.25 pf
- **Plate-Cathode:** 0.06 pf

**Base**
- **Maximum Seal Temp.:** 250°C
- **Maximum Anode Temp.:** 250°C

**Maximum Height:** 2.276 inches

**Maximum Diameter:** 1.155 inches

**Net Weight:** 1.6 ounces

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Pulse Ratings</th>
<th>Typical Pulse Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage (volts)</td>
<td>Plate Current (amps)</td>
</tr>
<tr>
<td>C</td>
<td>Plate-Pulsed Power Oscillator—3000 MHz</td>
<td>3500</td>
<td>5.0</td>
</tr>
<tr>
<td>C</td>
<td>Grid-Pulsed Amplifier—1100 MHz</td>
<td>2000</td>
<td>5.0</td>
</tr>
</tbody>
</table>

### CHARACTERISTICS

**Cathode:** Oxide-coated, unipotential

**Heater:**
- **Voltage:** 6.0 volts
- **Current:** 0.9 to 1.05 amperes

**Capacitances:**
- **Grid-Cathode:** 5.6 to 7.0 pf
- **Grid-Plate:** 1.95 to 2.15 pf
- **Plate-Cathode:** 0.035 pf

**Base**
- **Maximum Seal Temp.:** 250°C
- **Maximum Anode-Core Temp.:** 250°C

**Maximum Height:** 2.761 inches

**Maximum Diameter:** 1.244 inches

**Net Weight:** 2.5 ounces

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Pulse Ratings</th>
<th>Typical Pulse Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage (volts)</td>
<td>Plate Current (amps)</td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier—500 MHz</td>
<td>1000</td>
<td>0.125</td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier—2500 MHz</td>
<td>1000</td>
<td>0.125</td>
</tr>
<tr>
<td>C</td>
<td>Plate-Modulated Radio-Frequency Power Amplifier or Oscillator—500 MHz</td>
<td>600</td>
<td>0.100</td>
</tr>
</tbody>
</table>

### CHARACTERISTICS

**Cathode:** Oxide-coated, unipotential

**Heater:**
- **Voltage:** 26.5 volts
- **Current:** 0.2 to 0.24 amperes

**Capacitances:**
- **Grid-Cathode:** 5.6 to 7.0 pf
- **Grid-Plate:** 1.95 to 2.15 pf
- **Plate-Cathode:** 0.035 pf

**Base**
- **Maximum Seal Temp.:** 250°C
- **Maximum Anode-Core Temp.:** 250°C

**Maximum Height:** 2.701 inches

**Maximum Diameter:** 1.244 inches

**Net Weight:** 2.5 ounces

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Pulse Ratings</th>
<th>Typical Pulse Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage (volts)</td>
<td>Plate Current (amps)</td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier—500 MHz</td>
<td>1000</td>
<td>0.125</td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier—2500 MHz</td>
<td>1000</td>
<td>0.125</td>
</tr>
<tr>
<td>C</td>
<td>Plate-Modulated Radio-Frequency Power Amplifier or Oscillator—500 MHz</td>
<td>600</td>
<td>0.100</td>
</tr>
</tbody>
</table>

### CHARACTERISTICS

**Cathode:** Oxide-coated, unipotential

**Heater:**
- **Voltage:** 6.0 volts
- **Current:** 0.90 to 1.05 amperes

**Capacitances:**
- **Grid-Cathode:** 5.6 to 7.0 pf
- **Grid-Plate:** 1.86 to 2.15 pf
- **Plate-Cathode:** 0.035 pf

**Base**
- **Maximum Seal Temp.:** 250°C
- **Maximum Anode-Core Temp.:** 250°C

**Maximum Height:** 2.701 inches

**Maximum Diameter:** 1.244 inches

**Net Weight:** 2.5 ounces

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Pulse Ratings</th>
<th>Typical Pulse Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage (volts)</td>
<td>Plate Current (amps)</td>
</tr>
<tr>
<td>C</td>
<td>Plate-Pulsed Power Oscillator—3000 MHz</td>
<td>3500</td>
<td>3.0</td>
</tr>
<tr>
<td>C</td>
<td>Grid-Pulsed Amplifier—1100 MHz</td>
<td>2000</td>
<td>3.0</td>
</tr>
</tbody>
</table>
TRIODES

**7855**
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 frequency-stable operation.

**PLATE DISSIPATION**
- **FREQUENCY FOR MAXIMUM RATINGS**
  - **2500 MHz**
  - **COOLING**
  - **Forced Air**

**CHARACTERISTICS**
- **Cathode:** Oxide-coated, unipotential
- **Heater Voltage:** 6.0 volts
- **Current:** 1.0 amperes
- **Capacitances:**
  - Grid-Cathode: 6.3 pf
  - Grid-Plate: 2.5 pf
  - Plate-Cathode: 0.06 pf
- **典型 Pulse Operation**
  - **Maximum Ratings**
    - **Plate Voltage**: 2500 volts
    - **Plate Current**: 10.0 amperes
    - **Grid-Plate**: 2.0 amperes
    - **Plate Current**: 900 watts
    - **Drive Power**: 6.0 watts
- **Nominal Operation**
  - **Maximum Ratings**
    - **Plate Voltage**: 2500 volts
    - **Plate Current**: 10.0 amperes
    - **Grid-Plate**: 2.0 amperes

**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.

**PLATE DISSIPATION**
- **FREQUENCY FOR MAXIMUM RATINGS**
  - **3 GHz**
  - **COOLING**
  - **Forced Air**

**CHARACTERISTICS**
- **Cathode:** Oxide-coated, unipotential
- **Heater Voltage:** 6.3 volts
- **Current:** 1.3 amperes
- **Capacitances:**
  - Grid-Cathode: 8.0 pf
  - Grid-Plate: 3.1 pf
  - Plate-Cathode: 0.05 pf
- **典型 Pulse Operation**
  - **Maximum Ratings**
    - **Plate Voltage**: 2500 volts
    - **Plate Current**: 10.0 amperes
    - **Grid-Plate**: 2.0 amperes
    - **Plate Current**: 900 watts
    - **Drive Power**: 6.0 watts
- **Nominal Operation**
  - **Maximum Ratings**
    - **Plate Voltage**: 2500 volts
    - **Plate Current**: 10.0 amperes
    - **Grid-Plate**: 2.0 amperes

**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**
- **FREQUENCY FOR MAXIMUM RATINGS**
  - **3 GHz**
  - **COOLING**
  - **Forced Air**

**CHARACTERISTICS**
- **Cathode:** Oxide-coated, unipotential
- **Heater Voltage:** 6.3 volts
- **Current:** 1.3 amperes
- **Capacitances:**
  - Grid-Cathode: 8.0 pf
  - Grid-Plate: 1.05 pf
  - Plate-Cathode: 0.05 pf
- **典型 Pulse Operation**
  - **Maximum Ratings**
    - **Plate Voltage**: 2500 volts
    - **Plate Current**: 10.0 amperes
    - **Grid-Plate**: 2.0 amperes
    - **Plate Current**: 900 watts
    - **Drive Power**: 6.0 watts
- **Nominal Operation**
  - **Maximum Ratings**
    - **Plate Voltage**: 2500 volts
    - **Plate Current**: 10.0 amperes
    - **Grid-Plate**: 2.0 amperes

**8745**
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.

**PLATE DISSIPATION**
- **FREQUENCY FOR MAXIMUM RATINGS**
  - **2500 MHz**
  - **COOLING**
  - **Forced Air**

**CHARACTERISTICS**
- **Cathode:** Oxide-coated, unipotential
- **Heater Voltage:** 6.0 volts
- **Capacitances:**
  - Grid-Cathode: 0.90 to 1.05 amperes
  - Grid-Plate: 1.65 to 2.25 pf
  - Plate-Cathode: 0.015 pf
- **典型 Pulse Operation**
  - **Maximum Pulse Ratings**
    - **Plate Voltage**: 3750 volts
    - **Plate Current**: 3.0 amperes
    - **Grid-Plate**: 2.0 amperes
    - **Plate Voltage**: 3500 volts
    - **Plate Current**: 3.500 amperes
    - **Duty Output Power**: 1.600 pk
- **Nominal Operation**
  - **Maximum Pulse Ratings**
    - **Plate Voltage**: 3750 volts
    - **Plate Current**: 3.0 amperes
    - **Grid-Plate**: 2.0 amperes
    - **Plate Voltage**: 3500 volts
    - **Plate Current**: 3.50 amperes
    - **Duty Output Power**: 1.580 pk
**TRIODES**

### UHF

**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 ceramic-metal pulse tube is designed for high-voltage, high-pulse 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

### 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

### 8757
The 8757 is a miniature, ceramic and metal planar triode designed primarily for CW amplifier and oscillator applications. 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

**254W**
The 254W is a radiation-cooled tube suitable for use as an RF power amplifier, frequency multiplier 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** 100 watts

**COOLING** Radiation

---

**CHARACTERISTICS**

**Cathode:** Arc-Resistant Oxide-coated, unipotential

**Heater:**
- **Voltage:** 6.3 volts
- **Current:** 1.3 amperes

**Capacitances:**
- **Grid-Cathode:** 9.3 pf
- **Grid-Plate:** 1.25 pf
- **Plate-Cathode:** 0.66 pf

**Typical Operation**
- **Plate Voltage:** 5.0 **150^* 1.5
- **Plate Current:** 5.0 **150^* 1.5
- **Output Power:** 700^*1.5

**Maximum Ratings**
- **Plate Voltage:** 10.000 **350^* 1.5
- **Plate Current:** 5.0 **150^* 1.5
- **Output Power:** 2000 pk

**CHARACTERISTICS**

**Cathode:** Oxide-coated, unipotential

**Heater:**
- **Voltage:** 6.0 volts
- **Current:** 0.7 amperes

**Capacitances:**
- **Grid-Cathode:** 7.0 pf
- **Grid-Plate:** 1.6 pf
- **Plate-Cathode:** 0.54 pf

**Typical Operation**
- **Plate Voltage:** 1.25 **350^* 1.5
- **Plate Current:** 5.0 **150^* 1.5
- **Output Power:** 60

**Maximum Ratings**
- **Plate Voltage:** 2500 **350^* 1.5
- **Plate Current:** 5.0 **150^* 1.5
- **Output Power:** 100

**CHARACTERISTICS**

**Cathode:** Oxide-coated, unipotential

**Heater:**
- **Voltage:** 6.3 volts
- **Current:** 1.3 amperes

**Capacitances:**
- **Grid-Cathode:** 9.5 pf
- **Grid-Plate:** 2.25 pf
- **Plate-Cathode:** 0.66 pf

**Typical Operation**
- **Plate Voltage:** 0.225 **350^* 1.5
- **Plate Current:** 4.0 **150^* 1.5
- **Output Power:** 400

**Maximum Ratings**
- **Plate Voltage:** 2500 **350^* 1.5
- **Plate Current:** 5.0 **150^* 1.5
- **Output Power:** 1900

**CHARACTERISTICS**

**Filament:** Thoriated tungsten

**Heater:**
- **Voltage:** 5.0 volts
- **Current:** 7.5 amperes

**Capacitances:**
- **Grid-Filament:** 3.4 pf
- **Grid-Plate:** 2.5 pf
- **Plate-Filament:** 0.43 pf

**Typical Operation**
- **Plate Voltage:** 0.225 **350^* 1.5
- **Plate Current:** 0.15 **350^* 1.5

**Maximum Ratings**
- **Plate Voltage:** 4000 **350^* 1.5
- **Plate Current:** 3000 **350^* 1.5
- **Output Power:** 400

**CHARACTERISTICS**

**Filament:** Jumbo 4-pin JETEC A4.29

**Heater:**
- **Voltage:** 5.0 volts
- **Current:** 7.5 amperes

**Capacitances:**
- **Grid-Filament:** 3.4 pf
- **Grid-Plate:** 2.5 pf
- **Plate-Filament:** 0.43 pf

**Typical Operation**
- **Plate Voltage:** 0.225 **350^* 1.5
- **Plate Current:** 0.15 **350^* 1.5

**Maximum Ratings**
- **Plate Voltage:** 4000 **350^* 1.5
- **Plate Current:** 3000 **350^* 1.5
- **Output Power:** 400
The 6580 is a 400-watt high-mu power triode designed especially for grounded grid RF amplifier service. Because of its high amplification factor and high piereance, 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** 350 watts

**GRID DISSIPATION** 20 watts

**COOLING** Radiation and Forced Air

---

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid Voltage (volts)</th>
<th>Grid Current (amps)</th>
<th>Grid Diss. (watts)</th>
<th>Drive Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>RF Power Amplifier Grounded Grid</td>
<td>4000</td>
<td>0.350</td>
<td>400</td>
<td>0.12</td>
<td>16</td>
<td>3850</td>
<td>0.350</td>
</tr>
<tr>
<td>B</td>
<td>Linear RF Amplifier, SSB, Suppressed Carrier, Grounded Grid</td>
<td>4000</td>
<td>0.350</td>
<td>400</td>
<td>0.12</td>
<td>18</td>
<td>3750</td>
<td>0.350</td>
</tr>
</tbody>
</table>

---

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 piereance, the 6569 will provide power gains as high as ten in grounded-grid amplifier applications. Because of internal shielding, neutralization is not required.

**PLATE DISSIPATION** 250 watts

**FREQUENCY FOR MAXIMUM RATINGS** 60 MHz

**COOLING** Forced Air

---

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid Voltage (volts)</th>
<th>Grid Current (amps)</th>
<th>Grid Diss. (watts)</th>
<th>Drive Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>RF Power Amplifier Grounded Grid</td>
<td>4000</td>
<td>0.300</td>
<td>250</td>
<td>0.12</td>
<td>16</td>
<td>3550</td>
<td>0.300</td>
</tr>
<tr>
<td>B</td>
<td>Linear RF Amplifier, SSB, Suppressed Carrier, Grounded Grid</td>
<td>4000</td>
<td>0.300</td>
<td>250</td>
<td>0.12</td>
<td>18</td>
<td>3450</td>
<td>0.300</td>
</tr>
</tbody>
</table>

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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 piereance, 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**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid Voltage (volts)</th>
<th>Grid Current (amps)</th>
<th>Grid Diss. (watts)</th>
<th>Drive Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>RF Power Amplifier Grounded Grid</td>
<td>4000</td>
<td>0.350</td>
<td>400</td>
<td>0.12</td>
<td>16</td>
<td>3600</td>
<td>0.350</td>
</tr>
<tr>
<td>B</td>
<td>Linear RF Amplifier, SSB, Suppressed Carrier, Grounded Grid</td>
<td>4000</td>
<td>0.350</td>
<td>400</td>
<td>0.12</td>
<td>18</td>
<td>3500</td>
<td>0.350</td>
</tr>
</tbody>
</table>

---

The Elmac 3-400Z is a new zero-bias triode intended for linear amplifier applications. This tube may be used as a Class B RF 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

**COOLING** Radiation and Forced Air

---

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid Voltage (volts)</th>
<th>Grid Current (amps)</th>
<th>Grid Diss. (watts)</th>
<th>Drive Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Audio-Frequency Power Amplifier</td>
<td>3000</td>
<td>0.400</td>
<td>400</td>
<td>0.20</td>
<td>175</td>
<td>270</td>
<td>0.400</td>
</tr>
<tr>
<td>B</td>
<td>Radio-Frequency Linear Power Amplifier—SSB Grounded-Grid</td>
<td>3000</td>
<td>0.400</td>
<td>400</td>
<td>0.20</td>
<td>175</td>
<td>270</td>
<td>0.400</td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier and Oscillator</td>
<td>4000</td>
<td>0.350</td>
<td>400</td>
<td>0.17</td>
<td>160</td>
<td>270</td>
<td>0.350</td>
</tr>
<tr>
<td>C</td>
<td>Plate-Modulated R-F Power Amplifier</td>
<td>3000</td>
<td>0.275</td>
<td>270</td>
<td>0.17</td>
<td>160</td>
<td>270</td>
<td>0.275</td>
</tr>
</tbody>
</table>
TRIODES

INTERNAL ANODE

**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 20 times can be obtained with the 3-500Z in a cathode-driven circuit.

**PLATE DISSIPATION:** 500 watts
**FREQUENCY FOR MAXIMUM RATINGS:** 110 MHz
**COOLING:** Radiation and Forced Air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Voltage Current</td>
<td>Plate Drive Power</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(volts) (amps)</td>
<td>(watts)</td>
</tr>
<tr>
<td>B</td>
<td>RF Linear Amplifier, Grounded Grid</td>
<td>4000 0.400</td>
<td>500 20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3000 0.370</td>
<td>30 750</td>
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<tr>
<td>B</td>
<td>AF Amplifier or Modulator</td>
<td>4000 0.400</td>
<td>500 20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3000* 0.770</td>
<td>25 1420*</td>
</tr>
<tr>
<td>C</td>
<td>RF Power Amplifier or Oscillator</td>
<td>4000 0.350</td>
<td>500 20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3500 0.300</td>
<td>22 850</td>
</tr>
</tbody>
</table>

**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 or F amplifier in either the grid-driven 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

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Voltage Current</td>
<td>Plate Drive Power</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(volts) (amps)</td>
<td>(watts)</td>
</tr>
<tr>
<td>B</td>
<td>Audio-Frequency Power Amplifier and Modulator</td>
<td>3000 0.800</td>
<td>1000 50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3000 1.340*</td>
<td>42 2570*</td>
</tr>
<tr>
<td>B</td>
<td>Radio-Frequency Linear Power Amplifier, Grounded-Grid</td>
<td>3000 0.800</td>
<td>1000 50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3000 0.670</td>
<td>65 1360</td>
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<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier and Oscillator</td>
<td>6000 0.700</td>
<td>1000 50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6000 0.700</td>
<td>57 3300</td>
</tr>
<tr>
<td>C</td>
<td>Plate-Modulated R-F Power Amplifier</td>
<td>4500 0.550</td>
<td>670 20</td>
</tr>
</tbody>
</table>

**EXTERNAL ANODE ■ FORCED-AIR COOLED**

**8283/3CX1000A7**
The 3CX1000A7 zero-bias triode features ceramic-metal 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**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Voltage Current</td>
<td>Plate Drive Power</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(volts) (amps)</td>
<td>(watts)</td>
</tr>
<tr>
<td>B</td>
<td>Radio-Frequency Linear Power Amplifier, Grounded-Grid</td>
<td>2500 1.0</td>
<td>1000 45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2500 0.800</td>
<td>65 1250</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Voltage Current</td>
<td>Plate Drive Power</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(volts) (amps)</td>
<td>(watts)</td>
</tr>
<tr>
<td>B</td>
<td>Audio-Frequency Power Amplifier</td>
<td>6000 2.5</td>
<td>2500 150</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6000 3.0*</td>
<td>113* 13,000*</td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier, and Oscillator</td>
<td>6000 2.5</td>
<td>2500 150</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6000 2.08</td>
<td>136 10,000</td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier, Grounded-Grid 85 to 110 mc</td>
<td>4000 2.0</td>
<td>2500 150</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4000 1.85</td>
<td>1900 7500</td>
</tr>
<tr>
<td>C</td>
<td>Plate-Modulated Radio-Frequency Power Amplifier</td>
<td>5000 2.0</td>
<td>1670 150</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5000 1.25</td>
<td>115 5300</td>
</tr>
</tbody>
</table>

*Two tubes.
### 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.

**Characteristics**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid Voltage (volts)</th>
<th>Grid Current (amps)</th>
<th>Grid Diss. (watts)</th>
<th>Drive Voltage (volts)</th>
<th>Drive Current (amps)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Audio Frequency Power Amplifier</td>
<td>6000</td>
<td>2.5</td>
<td>2500</td>
<td>150</td>
<td>6000</td>
<td>3.0</td>
<td>135</td>
<td>130</td>
<td>13,000</td>
<td></td>
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<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier</td>
<td>6000</td>
<td>2.5</td>
<td>2500</td>
<td>150</td>
<td>6000</td>
<td>2.0</td>
<td>136</td>
<td>10,000</td>
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<td>C</td>
<td>Plate-Multifled Radio Frequency</td>
<td>5000</td>
<td>2.0</td>
<td>1670</td>
<td>150</td>
<td>5000</td>
<td>1.25</td>
<td>115</td>
<td>5300</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Two tubes.*

### 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.

**Characteristics**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid Voltage (volts)</th>
<th>Grid Current (amps)</th>
<th>Grid Diss. (watts)</th>
<th>Drive Voltage (volts)</th>
<th>Drive Current (amps)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>RF Industrial Oscillator</td>
<td>6000</td>
<td>2.5</td>
<td>2500</td>
<td>150</td>
<td>6000</td>
<td>2.0</td>
<td>136</td>
<td>10,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Two tubes.*

### 8238/3CX3000A1

This high-power compact triode was specifically designed to be used in class-AB 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.

**Characteristics**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid Voltage (volts)</th>
<th>Grid Current (amps)</th>
<th>Grid Diss. (watts)</th>
<th>Drive Voltage (volts)</th>
<th>Drive Current (amps)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB,</td>
<td>Audio Frequency Power Amplifier</td>
<td>6000</td>
<td>2.5</td>
<td>3000</td>
<td>—</td>
<td>6000</td>
<td>2.65</td>
<td>0</td>
<td>10,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Two tubes.*

### 8239/3CX3000F1

This low-mu high power triode is electrically identical 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-AB amplifier.

**Characteristics**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid Voltage (volts)</th>
<th>Grid Current (amps)</th>
<th>Grid Diss. (watts)</th>
<th>Drive Voltage (volts)</th>
<th>Drive Current (amps)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB,</td>
<td>Audio Frequency Power Amplifier</td>
<td>6000</td>
<td>2.5</td>
<td>3000</td>
<td>—</td>
<td>6000</td>
<td>2.65</td>
<td>0</td>
<td>10,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Two tubes.*
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, grounded-grid 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

**COOLING**
Forced Air

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

**COOLING**
Forced Air

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

**COOLING**
Forced Air

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

**COOLING**
Forced Air
TRIODES

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).

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plate Voltage</td>
<td>Plate Current (amps)</td>
<td>Plate Grid Power</td>
</tr>
<tr>
<td></td>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
</tr>
<tr>
<td></td>
<td>(amps)</td>
<td>(watts)</td>
<td>(watts)</td>
</tr>
<tr>
<td></td>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
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<tr>
<td></td>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
</tr>
<tr>
<td></td>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
</tr>
<tr>
<td></td>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
</tr>
</tbody>
</table>

**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.

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plate Voltage</td>
<td>Plate Current (amps)</td>
<td>Plate Grid Power</td>
</tr>
<tr>
<td></td>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
</tr>
<tr>
<td></td>
<td>(amps)</td>
<td>(watts)</td>
<td>(watts)</td>
</tr>
<tr>
<td></td>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
</tr>
<tr>
<td></td>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
</tr>
<tr>
<td></td>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
</tr>
</tbody>
</table>

**3CX10,000H3**

The 3CX10,000H3 is a small 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.

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plate Voltage</td>
<td>Plate Current</td>
<td>Drive Power</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(amps)</td>
<td>(watts)</td>
<td>(watts)</td>
<td></td>
</tr>
</tbody>
</table>

**8160 / 3CX10,000A7**

The Eimac 3CX10,000A7 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 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.

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plate Voltage</td>
<td>Plate Current</td>
<td>Drive Power</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(amps)</td>
<td>(watts)</td>
<td>(watts)</td>
<td></td>
</tr>
</tbody>
</table>
**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.

**Characteristics**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Base</th>
<th>Socket</th>
<th>Eimac</th>
<th>Coastal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Ratings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Voltage</td>
<td>Plate Current</td>
<td>Plate Diss.</td>
<td>Grid Plate</td>
<td>Plate-Filament</td>
<td></td>
</tr>
<tr>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
<td>(watts)</td>
<td>(watts)</td>
<td></td>
</tr>
<tr>
<td>15,000</td>
<td>6.0</td>
<td>15,000</td>
<td>500</td>
<td>15,000</td>
<td></td>
</tr>
<tr>
<td>Typical Operation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Voltage</td>
<td>Plate Current</td>
<td>Plate Diss.</td>
<td>Grid Plate</td>
<td>Plate-Filament</td>
<td></td>
</tr>
<tr>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
<td>(watts)</td>
<td>(watts)</td>
<td></td>
</tr>
<tr>
<td>10,000</td>
<td>4.3</td>
<td>75</td>
<td>33,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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.

**Characteristics**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Base</th>
<th>Socket</th>
<th>Eimac</th>
<th>Coastal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>Maximum Ratings</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Voltage</td>
<td>Plate Current</td>
<td>Plate Diss.</td>
<td>Grid Plate</td>
<td>Plate-Filament</td>
<td></td>
</tr>
<tr>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
<td>(watts)</td>
<td>(watts)</td>
<td></td>
</tr>
<tr>
<td>12,000</td>
<td>6.0</td>
<td>15,000</td>
<td>500</td>
<td>15,000</td>
<td></td>
</tr>
<tr>
<td>Typical Operation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Voltage</td>
<td>Plate Current</td>
<td>Plate Diss.</td>
<td>Grid Plate</td>
<td>Plate-Filament</td>
<td></td>
</tr>
<tr>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
<td>(watts)</td>
<td>(watts)</td>
<td></td>
</tr>
<tr>
<td>10,000</td>
<td>5.0</td>
<td>500</td>
<td>27,500</td>
<td></td>
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</tr>
</tbody>
</table>

**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.

**Characteristics**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Base</th>
<th>Socket</th>
<th>Eimac</th>
<th>Coastal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Ratings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Voltage</td>
<td>Plate Current</td>
<td>Plate Diss.</td>
<td>Grid Plate</td>
<td>Plate-Filament</td>
<td></td>
</tr>
<tr>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
<td>(watts)</td>
<td>(watts)</td>
<td></td>
</tr>
<tr>
<td>12,000</td>
<td>9.0</td>
<td>20,000</td>
<td>750</td>
<td>11,000</td>
<td></td>
</tr>
<tr>
<td>Typical Operation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Voltage</td>
<td>Plate Current</td>
<td>Plate Diss.</td>
<td>Grid Plate</td>
<td>Plate-Filament</td>
<td></td>
</tr>
<tr>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
<td>(watts)</td>
<td>(watts)</td>
<td></td>
</tr>
<tr>
<td>10,000</td>
<td>6.8</td>
<td>1620</td>
<td>60,000</td>
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</tr>
</tbody>
</table>

**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.

**Characteristics**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Base</th>
<th>Socket</th>
<th>Eimac</th>
<th>Coastal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Ratings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Voltage</td>
<td>Plate Current</td>
<td>Plate Diss.</td>
<td>Grid Plate</td>
<td>Plate-Filament</td>
<td></td>
</tr>
<tr>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
<td>(watts)</td>
<td>(watts)</td>
<td></td>
</tr>
<tr>
<td>12,000</td>
<td>9.0</td>
<td>20,000</td>
<td>750</td>
<td>11,000</td>
<td></td>
</tr>
<tr>
<td>Typical Operation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Voltage</td>
<td>Plate Current</td>
<td>Plate Diss.</td>
<td>Grid Plate</td>
<td>Plate-Filament</td>
<td></td>
</tr>
<tr>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
<td>(watts)</td>
<td>(watts)</td>
<td></td>
</tr>
<tr>
<td>10,000</td>
<td>6.0</td>
<td>215</td>
<td>40,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TRIODES

EXTERNAL ANODE II FORCED-AIR COOLED

6697A
This water-cooled version of the 3CX2500A 3 is for FREQUENCY FOR MAXIMUM RATINGS 75 MHz. and may be employed at maximum ratings through cooling medium or where additional plate-dissipation capability is required. It, too, is preferred.

PLATE DISSIPATION 35,000 watts
GRID DISSIPATION 750 watts
COOLING Forced Air

EXTERNAL ANODE II WATER COOLED

8240/3CW5000A1
The 3CW5000A1 is a water-cooled version of the 3CX3000A1 and is useful in audio service where no-serve 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 5000 watts
GRID DISSIPATION 50 watts
COOLING Water and Forced Air

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 5000 watts
GRID DISSIPATION 50 watts
COOLING Water and Forced Air

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

- CHARACTERISTICS -

<table>
<thead>
<tr>
<th>Filament: Thoriated tungsten</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5 volts</td>
<td>49 to 54 amperes</td>
<td>750 watts</td>
<td>16,000</td>
</tr>
<tr>
<td>7.5 volts</td>
<td>49 to 54 amperes</td>
<td>750 watts</td>
<td>16,000</td>
</tr>
<tr>
<td>7.5 volts</td>
<td>49 to 54 amperes</td>
<td>750 watts</td>
<td>10,000</td>
</tr>
</tbody>
</table>

*Two tubes.
8243/3CW5000F3

The 3CW5000F3 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 5,000 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

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>Audio-Frequency Power Amplifier and Modulator</td>
<td>6000</td>
<td>2.5</td>
</tr>
<tr>
<td>B</td>
<td>Audio-Frequency Power Amplifier and Modulator</td>
<td>6000</td>
<td>2.5</td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier and Oscillator</td>
<td>6000</td>
<td>2.5</td>
</tr>
<tr>
<td>C</td>
<td>Plate-Modulated Radio-Frequency Power Amplifier</td>
<td>5000</td>
<td>2.0</td>
</tr>
</tbody>
</table>

*Two holes.

3CW5000H3

The 3CW5000H3 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 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

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>RF Industrial Oscillator</td>
<td>6000</td>
<td>2.5</td>
</tr>
</tbody>
</table>

3CW10,000A3

The 3CW10,000A3 is a medium-mu water-cooled triode designed primarily for use in industrial radio-frequency heating service. Its water-cooled anode is conservatively rated at 10,000 watts of plate dissipation with low water flow and pressure drop. Input of 20,000 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

### CHARACTERISTICS

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>RF Industrial Oscillator</td>
<td>10,000</td>
<td>3.0</td>
</tr>
</tbody>
</table>

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 of plate dissipation with low water flow and pressure drop. Input of 20,000 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

### CHARACTERISTICS

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>RF Industrial Oscillator</td>
<td>10,000</td>
<td>3.0</td>
</tr>
</tbody>
</table>
### 3CW20,000A1

The Eimac 3CW20,000A1 is a ceramic-metal low-mu power triode intended for use as a linear amplifier in audio or 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. 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 watts

**GRID DISSIPATION**
- 100 watts

**COOLING**
- Water and Forced Air

### 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

### 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

### 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

### CHARACTERISTICS

**3CW20,000A1**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Power (watts)</td>
<td>Power (watts)</td>
</tr>
</tbody>
</table>

**3CW20,000A3**

<table>
<thead>
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<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td>Power (watts)</td>
<td>Power (watts)</td>
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**3CW20,000A7**

<table>
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<th>Maximum Ratings</th>
<th>Typical Operation</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Power (watts)</td>
<td>Power (watts)</td>
</tr>
</tbody>
</table>

**3CW20,000H3**

<table>
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<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
</table>
**TRIODES**

**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 Mhz with operation at slightly reduced ratings to 140 Mhz.

**PLATE DISSIPATION** 25,000 watts

**GRID DISSIPATION** 500 watts

**FREQUENCY FOR MAXIMUM RATING** 100 Mhz

**COOLING** Water and Forced Air

### 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 making this tube an excellent choice for severe applications.

**PLATE DISSIPATION** 30,000 watts

**FREQUENCY FOR MAXIMUM RATING** 90 Mhz

**COOLING** Water and Forced Air

### 3CW40,000H3

The 3CW40,000H3 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 RATING** 90 Mhz

**COOLING** Water and Forced Air

### 6696A

A rugged, all ceramic-metal, water-cooled triode, the 6696A is rated at 120 kilowatts input and 60 kilowatts plate dissipation to 90 Mhz. 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 RATING** 30 Mhz

**COOLING** Water and Forced Air

### CHARACTERISTICS

- **Filament:** Thoriated tungsten
- **Voltage:** 6.3 volts
- **Current:** 152 to 168 amperes
- **Capacitances (Grounded Filament):** Grid-Plate: 48 to 58.0 pf, Grid-Plate: 30.0 to 38.0 pf, Plate-Filament: 1.2 to 1.5 pf
- **Base:** Eimac SK-1000
- **Maximum Plate Rating:** 30,000 watts
- **Maximum Grid Rating:** 38 pf
- **Maximum Grid-Plate Rating:** 48 pf
- **Net Weight:** 12 pounds

### CHARACTERISTICS

- **Filament:** Thoriated tungsten
- **Voltage:** 10 volts
- **Current:** 172 amperes (max)
- **Capacitances:** Grid-Filament: 48 pf, Grid-Plate: 38 pf, Plate-Filament: 1.5 pf
- **Base:** Eimac SK-1000
- **Maximum Plate Rating:** 30,000 watts
- **Maximum Grid Rating:** 12 pounds
- **Maximum Grid-Plate Rating:** 38 pf
- **Maximum Grid-Plate Rating:** 48 pf
- **Net Weight:** 14 pounds

### CHARACTERISTICS

- **Filament:** Thoriated tungsten
- **Voltage:** 10 volts
- **Current:** 168 amperes (max)
- **Capacitances:** Grid-Filament: 75 pf, Grid-Plate: 48 pf, Plate-Filament: 2.6 pf
- **Base:** Eimac SK-1000
- **Maximum Plate Rating:** 30,000 watts
- **Maximum Grid Rating:** 500 watts
- **Maximum Grid-Plate Rating:** 48 pf
- **Maximum Grid-Plate Rating:** 75 pf
- **Net Weight:** 14 pounds

### CHARACTERISTICS

- **Filament:** Thoriated tungsten
- **Voltage:** 13 volts
- **Current:** 205 amperes
- **Capacitances (Grounded Filament):** Grid-Filament: 76 pf, Grid-Plate: 55 pf, Plate-Filament: 2.7 pf
- **Base:** Eimac SK-1000
- **Maximum Plate Rating:** 60,000 watts
- **Maximum Grid Rating:** 750 watts
- **Maximum Grid-Plate Rating:** 30 Mhz
- **Net Weight:** 20 pounds

### CHARACTERISTICS

- **Filament:** Thoriated tungsten
- **Voltage:** 16,000 volts
- **Current:** 11.0 amperes
- **Capacitances:** Grid-Filament: 76 pf, Grid-Plate: 55 pf, Plate-Filament: 2.7 pf
- **Base:** Eimac SK-1000
- **Maximum Plate Rating:** 16,000 volts
- **Maximum Grid Rating:** 760 watts
- **Maximum Grid-Plate Rating:** 30 Mhz
- **Net Weight:** 20 pounds

- **Class of Operation**: Typical Operation
- **Type of Service**: Typical Operation
- **Plate Voltage (volts)**
- **Plate Current (amps)**
- **Plate Diss. (watts)**
- **Grid Voltage (volts)**
- **Grid Current (amps)**
- **Grid Diss. (watts)**
- **Plate Voltage (volts)**
- **Plate Current (amps)**
- **Drive Power (watts)**
- **Output Power (watts)**

- **Class of Operation**: Typical Operation
- **Type of Service**: Typical Operation
- **Plate Voltage (volts)**
- **Plate Current (amps)**
- **Plate Diss. (watts)**
- **Grid Voltage (volts)**
- **Grid Current (amps)**
- **Grid Diss. (watts)**
- **Plate Voltage (volts)**
- **Plate Current (amps)**
- **Drive Power (watts)**
- **Output Power (watts)**

- **Class of Operation**: Typical Operation
- **Type of Service**: Typical Operation
- **Plate Voltage (volts)**
- **Plate Current (amps)**
- **Plate Diss. (watts)**
- **Grid Voltage (volts)**
- **Grid Current (amps)**
- **Grid Diss. (watts)**
- **Plate Voltage (volts)**
- **Plate Current (amps)**
- **Drive Power (watts)**
- **Output Power (watts)**

- **Class of Operation**: Typical Operation
- **Type of Service**: Typical Operation
- **Plate Voltage (volts)**
- **Plate Current (amps)**
- **Plate Diss. (watts)**
- **Grid Voltage (volts)**
- **Grid Current (amps)**
- **Grid Diss. (watts)**
- **Plate Voltage (volts)**
- **Plate Current (amps)**
- **Drive Power (watts)**
- **Output Power (watts)**

- **Class of Operation**: Typical Operation
- **Type of Service**: Typical Operation
- **Plate Voltage (volts)**
- **Plate Current (amps)**
- **Plate Diss. (watts)**
- **Grid Voltage (volts)**
- **Grid Current (amps)**
- **Grid Diss. (watts)**
- **Plate Voltage (volts)**
- **Plate Current (amps)**
- **Drive Power (watts)**
- **Output Power (watts)**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage (volts)</td>
<td>16,000</td>
</tr>
<tr>
<td>Plate Current (amps)</td>
<td>11.0</td>
</tr>
<tr>
<td>Plate Power (watts)</td>
<td>600</td>
</tr>
<tr>
<td>Grid Voltage (volts)</td>
<td>16,000</td>
</tr>
<tr>
<td>Grid Current (amps)</td>
<td>11.0</td>
</tr>
<tr>
<td>Grid Power (watts)</td>
<td>600</td>
</tr>
<tr>
<td>Drive Power (watts)</td>
<td>200</td>
</tr>
<tr>
<td>Output Power (watts)</td>
<td>400</td>
</tr>
</tbody>
</table>

*Two tubes.
### 3CV30,000A1

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

**PLATE DISSIPATION**
- 30,000 watts
  - Cooling: Vapor Phase and Air

**Characteristics**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage</th>
<th>Plate Current</th>
<th>Plate Diss.</th>
<th>Grid Voltage</th>
<th>Grid Current</th>
<th>Grid Diss.</th>
<th>Drive Power</th>
<th>Output Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB1</td>
<td>Audio Frequency Power Amplifier and Modulator</td>
<td>7000 volts</td>
<td>5.0 amps</td>
<td>30,000 watts</td>
<td>100 volts</td>
<td>1000 watts</td>
<td>7.0*</td>
<td>25,000 watts</td>
<td>10,000 watts</td>
</tr>
</tbody>
</table>

*Two 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, of 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

**Characteristics**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage</th>
<th>Plate Current</th>
<th>Plate Diss.</th>
<th>Grid Voltage</th>
<th>Grid Current</th>
<th>Grid Diss.</th>
<th>Drive Power</th>
<th>Output Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Radio-Frequency Industrial Oscillator</td>
<td>10,000 volts</td>
<td>6.0 amps</td>
<td>30,000 watts</td>
<td>1.0</td>
<td>10,000 volts</td>
<td>6.0</td>
<td>18,000 watts</td>
<td>42,000 watts</td>
</tr>
</tbody>
</table>

---

### 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
  - Cooling: Vapor and Forced Air

**Characteristics**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage</th>
<th>Plate Current</th>
<th>Plate Diss.</th>
<th>Grid Voltage</th>
<th>Grid Current</th>
<th>Grid Diss.</th>
<th>Drive Power</th>
<th>Output Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>RF Industrial Oscillator</td>
<td>10,000 volts</td>
<td>6.0 amps</td>
<td>30,000 watts</td>
<td>1.0</td>
<td>10,000 volts</td>
<td>6.0</td>
<td>365 watts</td>
<td>42,000 watts</td>
</tr>
</tbody>
</table>

---

### 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
  - Cooling: Vapor and Forced Air

**Characteristics**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage</th>
<th>Plate Current</th>
<th>Plate Diss.</th>
<th>Grid Voltage</th>
<th>Grid Current</th>
<th>Grid Diss.</th>
<th>Drive Power</th>
<th>Output Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Audio-Frequency Power Amplifier or Modulator</td>
<td>16,000 volts</td>
<td>11.0 amps</td>
<td>80,000 watts</td>
<td>750</td>
<td>12,000 volts</td>
<td>20.*</td>
<td>600 watts</td>
<td>150,000 watts</td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier or Oscillator</td>
<td>16,000 volts</td>
<td>11.0 amps</td>
<td>80,000 watts</td>
<td>750</td>
<td>15,000 volts</td>
<td>7.0</td>
<td>600 watts</td>
<td>150,000 watts</td>
</tr>
<tr>
<td>C</td>
<td>Plate-Modulated RF Power Amplifier</td>
<td>10,000 volts</td>
<td>8.5</td>
<td>53,000</td>
<td>750</td>
<td>10,000 volts</td>
<td>8.2</td>
<td>2089 watts</td>
<td>60,000 watts</td>
</tr>
</tbody>
</table>

*Two tubes
**Tetrodes**

**INTERNAL ANODE**

**8165/4-65A**
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**
150 MHz

**COOLING**
Connection and Radiation

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

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Ratings</td>
<td>Typical Operation</td>
</tr>
<tr>
<td>Plate Voltage volts</td>
<td>Plate Current amp</td>
</tr>
<tr>
<td>3000 / 0.150</td>
<td>65 / 30</td>
</tr>
<tr>
<td>3000 / 0.150</td>
<td>65 / 10</td>
</tr>
<tr>
<td>3000 / 0.150</td>
<td>65 / 10</td>
</tr>
<tr>
<td>3000 / 0.150</td>
<td>65 / 10</td>
</tr>
<tr>
<td>2500 / 0.120</td>
<td>45 / 10</td>
</tr>
</tbody>
</table>

*Two Tubes.*

**4D21/4-125A**
This 125-watt general-purpose power tetrode is usable at maximum ratings to 120 MHz. Its low interelectrode capacitances make it ideal for audio amplifier service but it is equally useful in audio applications.

**PLATE DISSIPATION**
125 watts

**FREQUENCY FOR MAXIMUM RATINGS**
120 MHz

**COOLING**
Radiation and Forced Air

**CHARACTERISTICS**
- **Filament**: Thoriated tungsten
- **Base**: 5-pin metal shell
- **Texas**: National XX920 to Johnson 122-725
- **Input**: 9.2 to 12.4 pf
- **Output**: 2.5 to 3.5 pf
- **Feed-Through**: 0.07 pf

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Ratings</td>
<td>Typical Operation</td>
</tr>
<tr>
<td>Plate Voltage volts</td>
<td>Plate Current amp</td>
</tr>
<tr>
<td>3000 / 0.125</td>
<td>125 / 20</td>
</tr>
<tr>
<td>3000 / 0.125</td>
<td>125 / 20</td>
</tr>
<tr>
<td>3000 / 0.125</td>
<td>125 / 20</td>
</tr>
<tr>
<td>3000 / 0.125</td>
<td>125 / 20</td>
</tr>
<tr>
<td>2500 / 0.200</td>
<td>85 / 20</td>
</tr>
</tbody>
</table>

*Two Tubes.*

**6155**
This 125-watt general-purpose power tetrode is usable at maximum ratings to 120 MHz. Its low interelectrode capacitances make it ideal for audio amplifier service but it is equally useful in audio applications.

**PLATE DISSIPATION**
125 watts

**FREQUENCY FOR MAXIMUM RATINGS**
120 MHz

**COOLING**
Forced Air

**CHARACTERISTICS**
- **Filament**: Thoriated tungsten
- **Base**: 5-pin metal shell
- **Texas**: National XX920 to Johnson 122-725
- **Input**: 9.2 to 12.4 pf
- **Output**: 2.5 to 3.5 pf
- **Feed-Through**: 0.07 pf

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Ratings</td>
<td>Typical Operation</td>
</tr>
<tr>
<td>Plate Voltage volts</td>
<td>Plate Current amp</td>
</tr>
<tr>
<td>3000 / 0.125</td>
<td>125 / 20</td>
</tr>
<tr>
<td>3000 / 0.125</td>
<td>125 / 20</td>
</tr>
<tr>
<td>3000 / 0.125</td>
<td>125 / 20</td>
</tr>
<tr>
<td>3000 / 0.125</td>
<td>125 / 20</td>
</tr>
<tr>
<td>2500 / 0.200</td>
<td>85 / 20</td>
</tr>
</tbody>
</table>

*Two Tubes.*

**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 per second

**COOLING**
Radiation and Forced Air

**CHARACTERISTICS**
- **Filament**: Thoriated tungsten
- **Base**: 5-pin metal shell
- **Texas**: National XX920 to Johnson 122-725
- **Input**: 9.2 to 12.4 pf
- **Output**: 2.5 to 3.5 pf
- **Feed-Through**: 0.07 pf

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Ratings</td>
<td>Typical Operation</td>
</tr>
<tr>
<td>Plate Voltage volts</td>
<td>Plate Current amp</td>
</tr>
<tr>
<td>4000 / 0.350</td>
<td>250 / 35</td>
</tr>
<tr>
<td>4000 / 0.350</td>
<td>250 / 35</td>
</tr>
<tr>
<td>4000 / 0.350</td>
<td>250 / 35</td>
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<td>4000 / 0.350</td>
<td>250 / 35</td>
</tr>
<tr>
<td>3200 / 0.275</td>
<td>165 / 35</td>
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</tbody>
</table>

*Two Tubes.*
INTERNAL ANODE

6156
The Eimac 6156 is a compact, ruggedly constructed power tetrode having a maximum plate dissipation rating of 250 watts. It is intended for use as an amplifier, oscillator or modulator.

PLATE DISSIPATION: 250 watts
FREQUENCY FOR MAXIMUM RATINGS: 110 MHz

COOLING: Radiation and Forced Air

CHARACTERISTICS
- Filament: Thoriated tungsten
- Voltage: 5.0 volts
- Current: 13.5 to 14.5 amperes
- Capacitance (Grounded Filament): 0.37 to 0.51 pf
- Output: 0.14 pf

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage (volts)</td>
<td>Plate Current (amps)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plate Voltage (volts)</td>
<td>Plate Current (amps)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Drive Voltage (volts)</td>
<td>Drive Current (amps)</td>
</tr>
<tr>
<td>AB: Audio-Frequency Power Amplifier and Modulator</td>
<td>4000</td>
<td>0.350</td>
<td>250</td>
</tr>
<tr>
<td>AB: Audio-Frequency Linear Power Amplifier - SSB</td>
<td>4000</td>
<td>0.350</td>
<td>250</td>
</tr>
<tr>
<td>AB: Audio-Frequency Power Amplifier and Modulator</td>
<td>4000</td>
<td>0.350</td>
<td>250</td>
</tr>
<tr>
<td>C: Radio-Frequency Power Amplifier and Oscillator</td>
<td>4000</td>
<td>0.350</td>
<td>250</td>
</tr>
<tr>
<td>C: Plate-Modulated R-F Power Amplifier</td>
<td>3200</td>
<td>0.275</td>
<td>165</td>
</tr>
</tbody>
</table>

*A: Two Tubes.

8438/4-400A
A 400 watt general purpose radial-beam tetrode, the 4-400A is ideal for any r-f 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

COOLING: Radiation and Forced Air

CHARACTERISTICS
- Filament: Thoriated tungsten
- Voltage: 5.0 volts
- Current: 13.5 to 14.5 amperes
- Capacitance (Grounded Filament): 4.2 to 6.5 pf
- Output: 0.17 pf

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage (volts)</td>
<td>Plate Current (amps)</td>
</tr>
<tr>
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<td></td>
<td>Plate Voltage (volts)</td>
<td>Plate Current (amps)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Screen Voltage (volts)</td>
<td>Screen Current (amps)</td>
</tr>
<tr>
<td>AB: Audio-Frequency Power Amplifier and Modulator</td>
<td>4000</td>
<td>0.350</td>
<td>400</td>
</tr>
<tr>
<td>AB: Audio-Frequency Linear Power Amplifier - SSB</td>
<td>4000</td>
<td>0.350</td>
<td>400</td>
</tr>
<tr>
<td>AB: Audio-Frequency Power Amplifier and Modulator</td>
<td>4000</td>
<td>0.350</td>
<td>400</td>
</tr>
<tr>
<td>C: Radio-Frequency Power Amplifier and Oscillator</td>
<td>4000</td>
<td>0.350</td>
<td>400</td>
</tr>
<tr>
<td>C: Plate-Modulated R-F Power Amplifier</td>
<td>3200</td>
<td>0.275</td>
<td>270</td>
</tr>
</tbody>
</table>

*A: Two Tubes.

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 RATINGS: 110 MHz

COOLING: Radiation and Forced Air

CHARACTERISTICS
- Filament: Thoriated tungsten
- Voltage: 5.0 volts
- Current: 14.5 amperes
- Capacitance (Grounded Filament): 12.5 pf
- Output: 4.7 pf
- Feed-Through: 0.12 pf

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage (volts)</td>
<td>Plate Current (amps)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plate Voltage (volts)</td>
<td>Plate Current (amps)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Drive Voltage (volts)</td>
<td>Drive Current (amps)</td>
</tr>
<tr>
<td>C: Radio-Frequency Power Amplifier and Oscillator</td>
<td>4000</td>
<td>0.350</td>
<td>400</td>
</tr>
<tr>
<td>AB: Audio-Frequency Power Amplifier and Modulator</td>
<td>4000</td>
<td>0.350</td>
<td>400</td>
</tr>
</tbody>
</table>

*A: Two tubes.

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

PLATE DISSIPATION: 400 watts
FREQUENCY FOR MAXIMUM RATINGS: 110 MHz

COOLING: Radiation and Forced Air

CHARACTERISTICS
- Filament: Thoriated tungsten
- Voltage: 5.0 volts
- Current: 14.5 amperes
- Capacitance (Grounded Filament): 17.5 pf
- Output: 4.5 pf
- Feed-Through: 0.12 pf

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage (volts)</td>
<td>Plate Current (amps)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plate Voltage (volts)</td>
<td>Plate Current (amps)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Screen Voltage (volts)</td>
<td>Screen Current (amps)</td>
</tr>
<tr>
<td>C: Radio-Frequency Power Amplifier and Oscillator (CW or FM)</td>
<td>4000</td>
<td>0.350</td>
<td>400</td>
</tr>
<tr>
<td>C: Plate Modulated Radio-Frequency Amplifier</td>
<td>3200</td>
<td>0.275</td>
<td>270</td>
</tr>
<tr>
<td>AB: Audio-Frequency Power Amplifier and Modulator</td>
<td>4000</td>
<td>0.350</td>
<td>400</td>
</tr>
</tbody>
</table>

*A: Two tubes.
**TETRODES**

**INTERNAL ANODE**

**8166 / 4-1000A**

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.

**PLATE DISSIPATION**

1000 watts

**FREQUENCY FOR MAXIMUM RATING**

110 MHz

**COOLING**

Radiation and Forced Air

**CHARACTERISTICS**

Filament: Thoriated tungsten

Volage: 7.5 volts

Current: 20.0 to 20.7 amperes

Capacitance: 3.5 pf

Max. Anode Core Temp: 950 °C

Max. ENTEP Temp: 225 °C

Max. Diameter: 0.945 inches

Net Weight: 2.5 ounces

**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 RATING**

500 MHz

**COOLING**

Convection or Conduction

**CHARACTERISTICS**

Cathode: Oxide-coated, unipotential

Volage: 6.0 volts

Current: 2.6 to 1.1 amperes

Capacitance: 1.5 pf

Max. Anode Core Temp: 250 °C

Max. Height: 2.5 inches

Net Weight: 2.5 ounces

**7843**

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

**PLATE DISSIPATION**

115 watts

**FREQUENCY FOR MAXIMUM RATING**

1200 MHz

**COOLING**

Conduction

**CHARACTERISTICS**

Cathode: Oxide-coated, unipotential

Volage: 26.5 volts

Current: 0.45 to 0.5 amperes

Capacitance: 0.56 pf

Max. Height: 1.085 inches

Max. Diameter: 1.085 inches

**8560A**

The 8560A is a conduction cooled, general purpose tetrode. 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.

**PLATE DISSIPATION**

See Note

**FREQUENCY FOR MAXIMUM RATING**

Conduction

**CHARACTERISTICS**

Cathode: Oxide-coated, unipotential

Volage: 6.0 volts

Current: 2.0 amperes

Capacitance: 5.3 pf

Max. Anode Core Temp: 250 °C

Max. Height: 2.445 inches

Max. Diameter: 1.630 inches

Net Weight: 8.5 ounces

This tube has a flat surface on the edge of the anode for contact to a suitable thermal conductor, usually a wafer of beryllium oxide. The dimension of the flat surface is $\frac{1}{8}'' \times \frac{1}{4}''$. Thermal design should ensure that for maximum expected anode dissipation, heat through the beryllium oxide wafer will be high enough to dissipate that power with no more than $225^\circ$ temperature at the interface between anode and beryllium oxide wafer.
TETRODES

EXTERNAL ANODE COMDURATION COOLED

4CS250H and 4CS250HA

The 4CS250H and 4CS250HA are conduction-coupled tetrodes having the basic electrical characteristics of the 4CX350A. These tubes are intended primarily for class AB, power service. They have high transconductance and produce full output with extremely low drive power.

PLATE DISSIPATION

COOLING

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater: Special 9-pin
Base: SX-600
Voltage: 6.0 volts
Current: 3.6 amps (max)
Max. Height: 2.4 inches
Capacities (Grounded Cathode): Net Weight: 4 ounces
Input: 26.2 pf (max)
Output: 6.0 pf (max)
Feed-Through: 0.05 pf

Typical Operation

Plate Voltage: 2500 volts
Plate Current: 0.300 amperes
Grid Diss. Power: 2.0 watts

Maximum Ratings

4CS250H

Plate Voltage: 3000 volts
Plate Current: 0.550 amperes
Grid Diss. Power: 3.0 watts

4CS250HA

Plate Voltage: 3000 volts
Plate Current: 0.550 amperes
Grid Diss. Power: 3.0 watts

EXTERNAL ANODE FORCED-AIR COOLED

4CX125C and 4CX125F

The 4CX125C is a horizontally-finned version of the 4CX300A and is intended for use where transverse air cooling is desired. It is also useful where anode power is dissipated by large resonant circuits. Its electrical characteristics are identical to those of the 4CX300A, with the exception of plate dissipation which is established at 115 watts with air cooling. It is ideally suited for applications where shock and/or vibration are experienced. The 4CX125F is an identical tube with a 190 volt heater.

PLATE DISSIPATION

COOLING FOR MAXIMUM RATINGS

50 MHz

FREQUENCY FOR MAXIMUM RATINGS

125 watts

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater: 4CX125C
Base: Special 9-pin
4CX125F
Base: Special 9-pin
Heater: 58 volts
Voltage: 6.0 volts
Current: 3.0 to 3.25 amperes
Max. Height: 2.5 inches
Capacities (Grounded Cathode):
Input: 36.2 pf (max)
Output: 3.5 to 4.5 pf
Feed-Through: 0.065 pf
Net Weight: 2.2 ounces
Max. Diameter: 1.31 inches
Max. Anode-Core Temp.: 250 °C
Max. Seal Temp.: 250 °C
Net Weight: 2.2 ounces
Max. Diameter: 1.31 inches
Max. Anode-Core Temp.: 250 °C
Max. Seal Temp.: 250 °C

Typical Operation

Plate Voltage: 2200 volts
Plate Current: 0.575 amperes
Screen Diss. Power: 1.8 watts

Maximum Ratings

4CX125C

Plate Voltage: 2200 volts
Plate Current: 0.575 amperes
Screen Diss. Power: 1.8 watts

4CX125F

Plate Voltage: 2200 volts
Plate Current: 0.575 amperes
Screen Diss. Power: 1.8 watts

6816

The 6816 is a small coaxial power tetrode designed for UHF power amplifier and oscillator service up to 1200 MHz. Coaxial construction makes this tube suitable for cavity circuits. This tube is identical to the 6815 except for heater voltage.

PLATE DISSIPATION

FREQUENCY FOR MAXIMUM RATINGS

1200 MHz

COOLING FORCED AIR

CHARACTERISTICS

Cathode: Oxide coated, unipotential
Heater: 4CX125C
Base: Special 9-pin
4CX125F
Base: Special 9-pin
Heater: 58 volts
Voltage: 6.0 volts
Current: 2.26 amperes
Max. Height: 1.95 inches
Cap: 1.31 inches
Input: 32.6 pf (max)
Output: 2.4 to 6.4 pf
Feed-Through: 0.065 pf
Net Weight: 2.2 ounces
Max. Diameter: 1.31 inches
Max. Anode-Core Temp.: 250 °C
Max. Seal Temp.: 250 °C
Net Weight: 2.2 ounces
Max. Diameter: 1.31 inches
Max. Anode-Core Temp.: 250 °C
Max. Seal Temp.: 250 °C

Typical Operation

Plate Voltage: 2000 volts
Plate Current: 0.210 amperes
Screen Diss. Power: 1.2 watts

Maximum Ratings

6816

Plate Voltage: 2000 volts
Plate Current: 0.210 amperes
Screen Diss. Power: 1.2 watts

6884

The 6884 is a small coaxial tetrode designed for UHF power amplifier and oscillator service up to 1200 MHz. The coaxial construction makes this tube suitable for cavity circuits. This tube is identical to the 6815 except for heater voltage.

PLATE DISSIPATION

FREQUENCY FOR MAXIMUM RATINGS

1200 MHz

COOLING FORCED AIR

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater: 4CX125C
Base: Special 9-pin
4CX125F
Base: Special 9-pin
Heater: 58 volts
Voltage: 6.0 volts
Current: 2.65 amperes
Max. Height: 1.71 inches
Cap: 1.31 inches
Input: 32.2 pf (max)
Output: 2.2 to 6.2 pf
Feed-Through: 0.065 pf
Net Weight: 2.2 ounces
Max. Diameter: 1.31 inches
Max. Anode-Core Temp.: 250 °C
Max. Seal Temp.: 250 °C
Net Weight: 2.2 ounces
Max. Diameter: 1.31 inches
Max. Anode-Core Temp.: 250 °C
Max. Seal Temp.: 250 °C

Typical Operation

Plate Voltage: 2000 volts
Plate Current: 0.210 amperes
Screen Diss. Power: 1.2 watts

Maximum Ratings

6884

Plate Voltage: 2000 volts
Plate Current: 0.210 amperes
Screen Diss. Power: 1.2 watts
TETRODES
EXTERNAL ANODE ■ FORCED-AIR COOLED

**7034/4X150A and 7035/4X150D**

The revival of external anode tetodes, and an Elmac original, continues to enjoy its deserved popularity. Recent tube improvements have made possible increases in maximum plate voltage and plate dissipation ratings. In Class AB or Class C service an input power of 500 watts is now allowed at frequencies up to 150 MHz. The 4X150D is a 25.5 volt heater version of the 4X150A.

**PLATE DISSIPATION**

FREQUENCY FOR MAXIMUM RATINGS

<table>
<thead>
<tr>
<th>Input</th>
<th>150 MHz</th>
<th>2000 watts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>150 MHz</td>
<td>2000 watts</td>
</tr>
<tr>
<td>Feed-Through</td>
<td>150 MHz</td>
<td>2000 watts</td>
</tr>
</tbody>
</table>

**CHARACTERISTICS**

- Cathode: Oxide-coated, unipotential
- Heater: 4X150A/4X150D
- Voltage: 6.6 to 26.5 volts
- Current: 2.5 to 3.9 A
- Capacitance (Grounded Cathode): Input: 16.25 to 18.75 pf
- Max Diameter: 1.64 inches
- Net Weight: 4 ounces

**8172/4X150G**

One of the four new external-anode coaxial-based tetodes, 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 150 MHz and is useful in pulse service at frequencies up to 1500 MHz.

**PLATE DISSIPATION**

FREQUENCY FOR MAXIMUM RATINGS

<table>
<thead>
<tr>
<th>Input</th>
<th>1500 MHz</th>
<th>250 watts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>1500 MHz</td>
<td>250 watts</td>
</tr>
<tr>
<td>Feed-Through</td>
<td>1500 MHz</td>
<td>250 watts</td>
</tr>
</tbody>
</table>

**CHARACTERISTICS**

- Cathode: Oxide-coated, unipotential
- Heater: 4X150G
- Voltage: 6.25 to 7.25 volts
- Current: 2.5 to 3.9 A
- Capacitance (Grounded Cathode): Input: 16.25 to 18.75 pf
- Max Diameter: 1.64 inches
- Net Weight: 6 ounces

**8296/4X150R and 8297/4X150S**

This Elmac tetrode is a ruggedized version of the famous 4X150A. It incorporates construction features found in the 4X150R and 4X150S 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 electronically identical except for a small (1.75 pf) increase in input-capacitance limits, its feed-through capacitance (0.01 pf) and in heater current (0.1 amperes). The 4X150S is identical but incorporates a 25.5 volt heater for mobile or airborne applications.

**PLATE DISSIPATION**

FREQUENCY FOR MAXIMUM RATINGS

<table>
<thead>
<tr>
<th>Input</th>
<th>1500 MHz</th>
<th>250 watts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>1500 MHz</td>
<td>250 watts</td>
</tr>
<tr>
<td>Feed-Through</td>
<td>1500 MHz</td>
<td>250 watts</td>
</tr>
</tbody>
</table>

**CHARACTERISTICS**

- Cathode: Oxide-coated, unipotential
- Heater: 4X150R/4X150S
- Voltage: 6.6 to 26.5 volts
- Current: 2.5 to 3.9 A
- Capacitance (Grounded Cathode): Input: 16.25 to 18.75 pf
- Max Diameter: 1.64 inches
- Net Weight: 4 ounces

**7203/4CX250B and 7204/4CX250F**

A 250 watt general purpose external anode tetrode featuring per mac metal construction. This compact power tube can be used at maximum ratings at frequencies up to 550 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

<table>
<thead>
<tr>
<th>Input</th>
<th>500 MHz</th>
<th>250 watts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>500 MHz</td>
<td>250 watts</td>
</tr>
<tr>
<td>Feed-Through</td>
<td>500 MHz</td>
<td>250 watts</td>
</tr>
</tbody>
</table>

**CHARACTERISTICS**

- Cathode: Oxide-coated, unipotential
- Heater: 4CX250B/4CX250F
- Voltage: 6.6 to 26.5 volts
- Current: 2.5 to 3.9 A
- Capacitance (Grounded Cathode): Input: 16.25 to 18.75 pf
- Max Diameter: 1.64 inches
- Net Weight: 4 ounces

*Two tubes.*
**TETRODES**

**EXTERNAL ANODE FORCED-AIR COOLED**

**8621 / 4CX250FG**

The 4CX250FG is essentially a 4CX250 manufactured for extra stability in airborne linear amplifier service.

**PLATE DISSIPATION**

FREQUENCY FOR MAXIMUM RATINGS

COOLING

**CHARACTERISTICS**

Cathode: Oxide-coated, unipotential
Heater
Voltage
76.5 volts

Current
0.62 amperes

Capacitances (Grounded Cathode): Input: 17.2 pf
Output: 5.8 pf
Feed-Through: 0.06 pf

**Maximum Ratings**

Class of Operation
Power Amplifier

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Screen Diss. (watts)</th>
<th>Plate Grid Diss. (watts)</th>
<th>Plate Drive Diss. (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Operation</td>
<td>2000</td>
<td>0.250</td>
<td>250</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>0.350</td>
<td>0.250</td>
<td>300</td>
<td></td>
</tr>
</tbody>
</table>

**7580W / 4CX250R**

4CX250M 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 4CX250, and where the use of a higher-perveance tetrode is indicated. The 4CX250M is designed to operate with maximum rated plate and screen voltages applied in equipment where shock and vibration are experienced.

**PLATE DISSIPATION**

FREQUENCY FOR MAXIMUM RATINGS

COOLING

**CHARACTERISTICS**

Cathode: Oxide-coated, unipotential
Heater
Voltage
6.0 volts

Current
2.2 to 2.9 amperes

Capacitances (Grounded Cathode): Input: 6.0 to 15.5 pf
Output: 4.2 to 5.2 pf
Feed-Through: 0.06 pf

**Maximum Ratings**

Class of Operation
Power Amplifier

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Screen Diss. (watts)</th>
<th>Plate Grid Diss. (watts)</th>
<th>Plate Drive Diss. (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Operation</td>
<td>2000</td>
<td>0.250</td>
<td>250</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>0.400</td>
<td>0.250</td>
<td>495</td>
<td></td>
</tr>
</tbody>
</table>

**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.

**PLATE DISSIPATION**

FREQUENCY FOR MAXIMUM RATINGS

COOLING

**CHARACTERISTICS**

Cathode: Oxide-coated, unipotential
Heater
Voltage
26.5 volts

Current
0.62 amperes (max)

Capacitances (Grounded Cathode): Input: 17.0 pf (max)
Output: 4.3 pf (max)
Feed-Through: 0.05 pf

**Maximum Ratings**

Class of Operation
Power Amplifier

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Screen Diss. (watts)</th>
<th>Plate Grid Diss. (watts)</th>
<th>Plate Drive Diss. (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Operation</td>
<td>1600</td>
<td>0.250</td>
<td>250</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1600</td>
<td>0.250</td>
<td>250</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

**8245 / 4CX250K and 8246 / 4CX250M**

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

**PLATE DISSIPATION**

FREQUENCY FOR MAXIMUM RATINGS

COOLING

**CHARACTERISTICS**

Cathode: Oxide-coated, unipotential
Heater: 4CX250K / 4CX250M
Voltage
6.0 volts

Current
2.3 to 3.0 amperes (max)

Capacitances (Grounded Cathode): Input: 25.0 to 29.0 pf
Output: 4.0 to 4.3 pf
Feed-Through: 0.05 pf

**Maximum Ratings**

Class of Operation
Power Amplifier

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Screen Diss. (watts)</th>
<th>Plate Grid Diss. (watts)</th>
<th>Plate Drive Diss. (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Operation</td>
<td>2000</td>
<td>0.250</td>
<td>250</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>0.250</td>
<td>250</td>
<td>12</td>
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</tr>
</tbody>
</table>

*Two tubes.*
### 4CPX250K

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**
- **FREQUENCY FOR MAXIMUM RATINGS**
- **COOLING**
  - Forced Air

#### CHARACTERISTICS
- **Cathode**: Oxide-coated, unipotential
- **Heater**: 6.0 volts
- **Current**: 2.3 to 3.0 amperes
- **Capacitance (Grounded Grid)**: 3.5 to 4.5 pf
- **Output**: 3.9 to 4.5 pf
- **Feed Through**: 0.06 pf

### 8167/4CX300A

This rugged ceramic-metal tube with unique bump-block base 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 accelerations (4G) up to 70 g. 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**
- **FREQUENCY FOR MAXIMUM RATINGS**
- **COOLING**
  - Forced Air

#### CHARACTERISTICS
- **Cathode**: Oxide-coated, unipotential
- **Heater**: 6.0 volts
- **Current**: 2.6 to 3.1 amperes
- **Capacitance (Grounded Grid)**: 3.0 to 3.8 pf

### 4CX300Y

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 Emco 4CX300Y is attractive for general use wherever a compact high power tube is indicated.

**PLATE DISSIPATION**
- **FREQUENCY FOR MAXIMUM RATINGS**
- **COOLING**
  - Forced Air

#### CHARACTERISTICS
- **Cathode**: Oxide-coated, unipotential
- **Heater**: 6.0 volts
- **Current**: 3.0 to 3.8 amperes
- **Capacitance (Grounded Grid)**: 3.0 to 3.8 pf

### 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**
- **FREQUENCY FOR MAXIMUM RATINGS**
- **COOLING**
  - Conduction

#### CHARACTERISTICS
- **Cathode**: Oxide-coated, unipotential
- **Heater**: 11.5 volts
- **Current**: 1.3 amperes
- **Capacitance (Grounded Grid)**: 3.0 to 3.8 pf

---

### Table: 4CPX250K Specifications

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage (volts)</td>
</tr>
<tr>
<td></td>
<td></td>
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### Table: 8167/4CX300A Specifications

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<td>Plate Voltage (volts)</td>
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### Table: 4CX300Y Specifications

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<td>Plate Voltage (volts)</td>
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### Table: 8072 Specifications

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<th>Type of Service</th>
<th>Maximum Ratings</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage (volts)</td>
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<tr>
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<td></td>
<td>2200</td>
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<td></td>
<td></td>
<td>2200</td>
</tr>
</tbody>
</table>
TETRODES
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, oscillator and linear RF power amplifier service.

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

CHARACTERISTICS
Cathode: Oxide-coated, amphotential
Heater/écran: 1.3 volts, 1.3 amperes
Capacitances: Input 7.0 pf, Output 3.0 pf
Max. Diameter 1.640 inches
Net Weight: 3 ounces

8321/4CX350A and 8322/4CX350F
These tubes are externally identical to the 44050B but contain more rugged internal construction. These compact radial beam tubes have high dissipation ratings of 300 watts. These tubes are intended primarily for Class-A linear service having high transconductance and allowing full output with extremely low drive requirements. The 4CX350A and 4CX350F differ only in heater voltage.

PLATE DISSIPATION: 350 watts
FREQUENCY FOR MAXIMUM RATINGS: 600 Mhz
COOLING: Forced Air

CHARACTERISTICS
Cathode: Oxide-coated, amphotential
Heater: 4CX350A 4CX350F
Voltage: 6.0 volts, 6.5 volts
Current: 2.9 to 3.6, 3.6 to 4.0 amperes
Capacitances: Grounded Cathode: Input 9.0 pf, Output 5.0 pf
Feed Through: 0.0 pf
Max. Diameter: 1.75 inches
Net Weight: 3 ounces

4CX600B/F
The 4CX600B/F is a ceramic and metal, air-cooled radial-beam 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: 600 watts
FREQUENCY FOR MAXIMUM RATINGS: 600 Mhz
COOLING: Forced Air

CHARACTERISTICS
Cathode: Oxide-coated, amphotential
Heater: 4CX600B 4CX600F
Voltage: 6.0 volts, 6.5 volts
Current: 2.9 to 3.6 amperes
Capacitances: Grounded Filament: Input 4.5 pf, Output 5.0 pf
Feed Through: 0.0 pf
Max. Diameter: 2.46 inches
Net Weight: 4 ounces

4CX600J
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 are < 1 dB or better when operated as below.

PLATE DISSIPATION: 600 watts (max.)
COOLING: Forced Air

CHARACTERISTICS
Cathode: Oxide-coated, amphotential
Heater: Special 9-pin BB-230
Voltage: 6.0 volts, 5.4 amperes
Capacitances: Input 50.0 pf, Output 6.3 pf
Feed Through: 0.2 pf (max)
Max. Diameter: 2.08 inches
Net Weight: 7.7 ounces

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Screen Voltage (volts)</th>
<th>Screen Diss. (watts)</th>
<th>Grid Voltage (volts)</th>
<th>Grid Diss. (watts)</th>
<th>Plate Drive Power (watts)</th>
<th>Screen Drive Power (watts)</th>
<th>Output Power (watts)</th>
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</thead>
<tbody>
<tr>
<td>8121</td>
<td>500 MHz</td>
<td>1.05</td>
<td>3.0</td>
<td>5.0</td>
<td>2.0</td>
<td>1.0</td>
<td>250 °C</td>
<td>150 °C</td>
<td>100°</td>
<td>165°</td>
<td></td>
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<tr>
<td>8122</td>
<td>800 MHz</td>
<td>1.05</td>
<td>3.0</td>
<td>5.0</td>
<td>2.0</td>
<td>1.0</td>
<td>250 °C</td>
<td>150 °C</td>
<td>100°</td>
<td>165°</td>
<td></td>
</tr>
</tbody>
</table>

Note: Use a bypassed cathode resistor of approximately 31 kΩ.

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Screen Voltage (volts)</th>
<th>Screen Diss. (watts)</th>
<th>Grid Voltage (volts)</th>
<th>Grid Diss. (watts)</th>
<th>Plate Drive Power (watts)</th>
<th>Screen Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4CX600B/F</td>
<td>AB, Radio-Frequency Power Amplifier</td>
<td>600 volts</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>2500</td>
<td>4000</td>
<td>0.54</td>
<td>0.4</td>
<td>650°</td>
</tr>
<tr>
<td></td>
<td>AB, Radio-Frequency Linear Power Amplifier</td>
<td>500 volts</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>2500</td>
<td>4000</td>
<td>0.27</td>
<td>0.4</td>
<td>309°</td>
</tr>
</tbody>
</table>

*In grid driven circuit at 470 MHz
**30 MHz
**Tetrodes**

### 8168 / 4CX1000A

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

**PLATE DISSIPATION**

- **1000 watts**
- **110 MHz**

**COOLING**

- Forced Air

**CHARACTERISTICS**

- **Cathode:** Oxide-coated, unipotential
- **Heater:** 6.0 volts
- **Current:** 11 amperes
- **Capacitances (Grounded Cathode):**
  - Input: 88 pf (max)
  - Output: 12.8 pf (max)
  - Feed-Through: 0.3 pf (max)
- **Screen Input:** 22 pf (max)
- **Screen Output:** 0.9 pf (max)
- **Grid Input:** 2000 pf (max)

### 8352 / 4CX1000K

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

**PLATE DISSIPATION**

- **1000 watts**
- **110 MHz**

**COOLING**

- Forced Air

**CHARACTERISTICS**

- **Cathode:** Oxide-coated, unipotential
- **Heater:** 6.0 volts
- **Current:** 11 amperes
- **Capacitances (Grounded Cathode):**
  - Input: 88 pf (max)
  - Output: 12.8 pf (max)
  - Feed-Through: 0.3 pf (max)
- **Screen Input:** 22 pf (max)
- **Screen Output:** 0.9 pf (max)
- **Grid Input:** 2000 pf (max)

### 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 demanding vibration and shock requirements. The 4CX1500A is useful 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**
- **110 MHz**

**COOLING**

- Forced Air

**CHARACTERISTICS**

- **Filament:** Therated tungsten
- **Voltage:** 7.0 volts
- **Current:** 48 amperes
- **Capacitances (Grounded Filament):**
  - Input: 150 pf
  - Output: 40 pf
  - Feed-Through: 60 pf
- **Grid Input:** 2500 pf
- **Grid Output:** 1000 pf
- **Screen Input:** 325 pf
- **Screen Output:** 75 pf
- **Grid Screen Parallels:** 1000 pf

### 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.

**PLATE DISSIPATION**

- **1500 watts**

**COOLING**

- Forced Air

**CHARACTERISTICS**

- **Cathode:** Oxide-coated, unipotential
- **Heater:** 6.0 volts
- **Current:** 11 amperes
- **Capacitances (Grounded Cathode):**
  - Input: 88 pf (max)
  - Output: 12.8 pf (max)
  - Feed-Through: 0.3 pf (max)
- **Screen Input:** 22 pf (max)
- **Screen Output:** 0.9 pf (max)
- **Grid Input:** 2000 pf (max)
**TETRODES**

**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 conditions. 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 tungsten
- **Voltage:** 18.0 to 23.0 pf
- **Current:** 7800 to 122 pf
- **Feed-Through:** 1.0 pf

**Maximum Ratings**

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Plate</th>
<th>Grid</th>
<th>Screen</th>
<th>Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>6000</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
</tr>
<tr>
<td>Current (amps)</td>
<td>2.0</td>
<td>1.65</td>
<td>0.55</td>
<td>1.4</td>
</tr>
<tr>
<td>Diss. (watts)</td>
<td>175</td>
<td>50</td>
<td>50</td>
<td>175</td>
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<tr>
<td>Diss. (watts)</td>
<td>50</td>
<td>30</td>
<td>25</td>
<td>31</td>
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<tr>
<td>Power (watts)</td>
<td>0.6</td>
<td>1.3</td>
<td>0.7</td>
<td>1.3</td>
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</table>

**Typical Operation**

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Plate</th>
<th>Grid</th>
<th>Screen</th>
<th>Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
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<tr>
<td>Current (amps)</td>
<td>1.4</td>
<td>1.3</td>
<td>1.3</td>
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</tr>
<tr>
<td>Diss. (watts)</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
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<tr>
<td>Diss. (watts)</td>
<td>50</td>
<td>50</td>
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<tr>
<td>Power (watts)</td>
<td>1.4</td>
<td>1.4</td>
<td>1.4</td>
<td>1.4</td>
</tr>
</tbody>
</table>

**4CX5000J**

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 DISSIPATION**

**FREQUENCY FOR MAXIMUM RATINGS**

**COOLING**

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten mesh
- **Voltage:** 7.5 volts
- **Current:** 100 amperes

**Maximum Ratings**

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Plate</th>
<th>Grid</th>
<th>Screen</th>
<th>Drive</th>
</tr>
</thead>
<tbody>
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<td>7500</td>
<td>7500</td>
<td>7500</td>
<td>7500</td>
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<tr>
<td>Current (amps)</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
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<tr>
<td>Diss. (watts)</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Diss. (watts)</td>
<td>75</td>
<td>75</td>
<td>75</td>
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<td>Power (watts)</td>
<td>1.25</td>
<td>1.25</td>
<td>1.25</td>
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</table>

**Typical Operation**

<table>
<thead>
<tr>
<th>Type of Operation</th>
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<th>Screen</th>
<th>Drive</th>
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<td>Plate Voltage</td>
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<td>7500</td>
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<tr>
<td>Current (amps)</td>
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<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Diss. (watts)</td>
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<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Diss. (watts)</td>
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<tr>
<td>Power (watts)</td>
<td>1.25</td>
<td>1.25</td>
<td>1.25</td>
<td>1.25</td>
</tr>
</tbody>
</table>

**8170W / 4CX5000R**

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

**PLATE DISSIPATION**

**FREQUENCY FOR MAXIMUM RATINGS**

**COOLING**

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten mesh
- **Voltage:** 7.5 volts
- **Current:** 100 amperes

**Maximum Ratings**

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Plate</th>
<th>Grid</th>
<th>Screen</th>
<th>Drive</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>Current (amps)</td>
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<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Diss. (watts)</td>
<td>250</td>
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<td>250</td>
<td>250</td>
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<td>1.25</td>
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**Typical Operation**

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Plate</th>
<th>Grid</th>
<th>Screen</th>
<th>Drive</th>
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<tbody>
<tr>
<td>Plate Voltage</td>
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<td>7500</td>
<td>7500</td>
</tr>
<tr>
<td>Current (amps)</td>
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<td>4.0</td>
<td>4.0</td>
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<tr>
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<td>250</td>
<td>250</td>
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<tr>
<td>Diss. (watts)</td>
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<td>75</td>
<td>75</td>
<td>75</td>
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<td>Power (watts)</td>
<td>1.25</td>
<td>1.25</td>
<td>1.25</td>
<td>1.25</td>
</tr>
</tbody>
</table>

*Two tubes.*


**TETRODES**

**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 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**

10,000 watts

**COOLING**

Forced Air

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten
- **Voltage:** 6.7 volts
- **Current:** 7.5 amperes
- **Capacitance (Grounded Filament):** Input 300 pf, Output 120 pf
- **Max. Height:** 9.375 inches
- **Max. Diameter:** 7.5 inches
- **Net Weight:** 12.8 pounds

### 8281/4CX15,000A

A valuable 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 capabilities allow it to operate at full ratings through the FM broadcast band. The 4CX15,000A is recommended for use in new equipment design or for its plate dissipation rating and is intended for use where the mechanical environment includes shock and vibration as in transportable equipment.

**PLATE DISSIPATION**

15,000 watts

**COOLING**

Forced Air

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten
- **Voltage:** 6.3 volts
- **Current:** 15 amperes
- **Capacitance (Grounded Filament):** Input 148.5 to 161.5 pf, Output 27.0 to 27.5 pf
- **Max. Height:** 9.44 inches
- **Max. Diameter:** 7.54 inches
- **Net Weight:** 12.6 pounds

### 4CX15,000J

The 4CX15,000J 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**

15,000 watts

**COOLING**

Forced Air

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten mesh
- **Voltage:** 7.5 volts
- **Current:** 155 amperes
- **Max. Envelope Temp.:** 250 °C
- **Max. Plate Core Temp.:** 250 °C
- **Max. Height:** 9.375 inches
- **Max. Diameter:** 7.5 inches
- **Net Weight:** 12.5 pounds

### 8349/4CX35,000C

Eimac's largest, forced-air cooled power tetrode has a plate dissipation rating of 30 kilowatts and is suitable for 30,000 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

**COOLING**

Forced Air

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten
- **Voltage:** 10.0 volts
- **Current:** 300 amperes
- **Capacitance (Grounded Filament):** Input 465 pf, Output 15 pf, Feed-Through 245 pf
- **Max. Height:** 17.00 inches
- **Max. Diameter:** 9.75 inches
- **Net Weight:** 50 pounds

---

*Two tubes.*
TETRODES

EXTERNAL ANODE • FORCED-AIR COOLED

4X500A
This medium-power external anode tetrode finds wide acceptance in FM broadcast service. The instant-heating filament of thoriated tungsten and the overall compactness are but two of the 4X500A's bonus features. Maximum ratings apply to 100 MHz. PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS 120 MHz — class C CW 220 MHz — class B TV COOLING CHARACTERISTICS Filament: Thoriated tungsten Voltage: 5.0 volts Current: 12.2 to 13.7 amperes Capacitances (Grounded Cathode): Max. Seal Temp. 175 °C Max. Height 4.76 inches Output 4.9 to 6.9 oh Feed-Through 0.1 oh Base 4-pin special Socket Ferrar-SK-900 EXTERNAL ANODEsten and the overall compactness are but two of the 4X500A's bonus features. Maximum ratings apply to 100 MHz.- PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS 120 MHz — class C CW 220 MHz — class B TV COOLING CHARACTERISTICS Filament: Thoriated tungsten Voltage: 5.0 volts Current: 12.2 to 13.7 amperes Capacitances (Grounded Cathode): Max. Seal Temp. 175 °C Max. Height 4.76 inches Output 4.9 to 6.9 oh Feed-Through 0.1 oh Base 4-pin special Socket Ferrar-SK-900

4CW800B and 4CW800F
The 4CW800B/F is a ceramic-metal, liquid-cooled radial-beam tetrode. Its low lead-resistance, low input and output capacitance and small size make it ideal for use in distributed amplifiers for which it was especially designed. Rugged construction, unifilament electrode structure and direct mounting to the chassis make the tube suitable for severe shock and vibration environments.

PLATE DISSIPATION FREQUENCY FOR MAXIMUM RATINGS 800 watts COOLING CHARACTERISTICS Cathode: Oxide coated, unipotential Heater: 6L6G 4CW800B 4CW800F Voltage: 6.5 volts Current: 4.7 1.25 amperes Constant 48 pf (max) Max. Diameter 3.0 inches Base: Special Form: 3000 3000 12000 250 0.350 0.350 Special se 250 0.350 Special Se 3000 3000 12000 250 0.350 0.350 Special Se

8244/4CW2000A
This recent addition to the Linear line is electrically identical to the popular 4CX500A 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 FREQUENCY FOR MAXIMUM RATINGS 2000 watts COOLING CHARACTERISTICS Cathode: Oxide-coated, unipotential Heater Voltage: 8.1 to 9.8 volts Constant 12 to 13 oh Feed-Through 0.05 oh Base: Special onch filament Set Point: Ferrar-SK-800 series Max. Seal Temp. 250 °C Max. Height 5.54 inches Max. Diameter 2.66 inches Net Weight 1.7 pounds AB, Audio-frequency Power Amplifier and Modulator

4CW10.000A
Electrically identical to the 4CW500A except for its plate dissipataion 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 FREQUENCY FOR MAXIMUM RATINGS 17,000 watts COOLING CHARACTERISTICS Filament: Thoriated tungsten Voltage: 15 volts Capacitances (Grounded Cathode): Max. Height 11.44 inches Max. Diameter 4.66 inches Net Weight 7.5 pounds

MAXIMUM RATING Maximum Ratings Typical Operation

Class of Service Type of Operation Class of Operation Type of Operation

Plate Plate Screen Grid Drive

Volts Watts Volts Watts Volts Watts Volts Watts Volts Watts

A B C A B C A B C

Maximum Ratings Typical Operation

Class of Service Type of Operation Class of Operation Type of Operation

Plate Plate Screen Grid Drive

Volts Watts Volts Watts Volts Watts Volts Watts Volts Watts

A B C A B C A B C

Maximum Ratings Typical Operation

Class of Service Type of Operation Class of Operation Type of Operation

Plate Plate Screen Grid Drive

Volts Watts Volts Watts Volts Watts Volts Watts Volts Watts
**TETRODES**

**4CW25,000A**

The 4CW25,000A is a liquid-cooled, general-purpose tetrode with the same basic characteristics as the air-cooled 4CW15,000A. It is recommended for regulator and pulse-modulator service.

**PLATE DISSIPATION:** 25,000 watts

**FREQUENCY FOR MAXIMUM RATINGS:** 110 MHz

**Cooling:** Water and Forced Air

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten mesh
- **Voltage (Base):** 6.0 volts
- **Current (Base):** 220 amperes
- **Capacitance (Grounded Filament):** Max. Envelope: 155 pf, Max. Height: 17 inches, Max. Diameter: 4.6 inches
- **Output:** 24 pf, Less than: 2.0 pf, Net Weight: 13.5 pounds

**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 as a Class AB push-pull AF amplifier or modulator. The tube rejects useful as a plate and screen modulated Class C RF amplifier.

**PLATE DISSIPATION:** 50,000 watts

**FREQUENCY FOR MAXIMUM RATINGS:** 110 MHz

**Cooling:** Liquid

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten mesh
- **Voltage (Base):** 12 volts
- **Current (Base):** 220 amperes
- **Capacitance (Grounded Filament):** Jacket: 6.5 pf, Max. Height: 13 inches, Max. Diameter: 7.75 inches, Net Weight: 35 pounds
- **Output:** 340 pf, Max. Height: 66.5 inches, Max. Diameter: 7.75 inches, Net Weight: 35 pounds
- **Max. Seal Temp.:** 250 °C
- **Max. Diameter:** 7.75 inches
- **Height:** 13 inches
- **Net Weight:** 35 pounds

**4CW100,000D**

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 RF linear amplifier, or as 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

**Cooling:** Liquid

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten mesh
- **Voltage (Base):** 10.0 volts
- **Current (Base):** 220 amperes
- **Capacitance (Grounded Filament):** Max. Height: 18 inches, Max. Diameter: 8 inches, Net Weight: 60 pounds
- **Output:** 50 pf (max), Net Weight: 60 pounds
- **Feed Through:** 3.2 pf
- **Max. Seal Temp.:** 250 °C
- **Max. Diameter:** 7.75 inches
- **Height:** 13 inches
- **Net Weight:** 60 pounds

**4CW100,000E** *

The 4CW100,000E is a ceramic-metal, liquid-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 makes the tube ideal for broadband grid driver operation. The 4CW100,000E is also useful in pulse modulator-regulator service.

**PLATE DISSIPATION:** 100,000 watts

**Cooling:** Liquid and Forced Air

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten mesh
- **Voltage (Base):** 16 volts
- **Current (Base):** 220 amperes
- **Capacitance (Grounded Filament):** Max. Height: 18 inches, Max. Diameter: 8 inches, Net Weight: 60 pounds
- **Output:** 50 pf (max), Net Weight: 60 pounds
- **Feed Through:** 0.9 pf
- **Max. Seal Temp.:** 250 °C
- **Max. Diameter:** 7.75 inches
- **Height:** 13 inches
- **Net Weight:** 60 pounds

*Shown with SK-2100 water jacket.
**TETRODES**

**EXTERNAL ANODE • WATER COOLED**

### 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.

#### PLATE DISSIPATION

**250,000 watts**

**COOLING**

**Liquid**

### CHARACTERISTICS

- **Filament**: Therated tungsten
- **Base**: Special
- **Special**: Socket
- **Max. Seal Temp**: 200 °C
- **Max. Height**: 29.5 inches
- **Max. Diameter**: 13 inches
- **Net Weight**: 100 pounds

*Shows with SK-1720 water jacket.

### 8249 / 4W300B

A general-purpose radial-beam tetrode with electrical characteristics similar to those of the 8173/4W20,000A operation as a television visual RF amplifier will deliver a synchronizing power output of 25 kW at 216 MHz with 5 MHz bandwidth. The coaxial construction of the tube is ideal for cavity circuits.

#### PLATE DISSIPATION

**300 watts**

**COOLING**

**Water and Forced Air**

### CHARACTERISTICS

- **Cathode**: Oxide coated, unipotential tungsten
- **Weight**: 6.0 volts
- **Current**: 2.3 to 7.0 amperes
- **Radius**: Grounded Biketion: 14.2 ± 0.5 inch
- **Feed-Through**: 0.06 inch

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

### 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 500 MHz. A single 8173/4W20,000A operating as a television visual RF amplifier will deliver a synchronizing power output of 25 kW at 216 MHz with 5 MHz bandwidth. The coaxial construction of the tube is ideal for cavity circuits.

#### PLATE DISSIPATION

**20,000 watts**

**COOLING**

**Water and Forced Air**

### CHARACTERISTICS

- **Cathode**: Unipotential thermistor filament heated by electron bombardment
- **Voltage**: 6.0 volts
- **Current**: 1.9 amperes
- **Input**: 1500 input
- **Output**: 1500 output
- **Feed-Through**: 0.06 inch

*Two tubes.

### EXTERNAL ANODE • VAPOR COOLED

### 4CV1500B

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 designed 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

**1500 watts**

**COOLING**

**Vapor and Forced Air**

### CHARACTERISTICS

- **Cathode**: Oxide coated, unipotential tungsten
- **Weight**: 6.0 volts
- **Current**: 12.8 amperes
- **Feed-Through**: 0.06 inch

*Corresponds to 250,000 watts at 100 per cent sine wave modulation.
**4CV8000A**

This vapor-cooled version of Eimac’s 4CX8000A 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 16 kilowatts of audio frequency output with little distortion in Class AB service.

**PLATE DISSIPATION**
- **4CV8000A**: 8000 watts

**FREQUENCY FOR MAXIMUM RATINGS**
- **4CV8000A**: 150 MHz

**COOLING**
- **Vapor and Forced Air**

**CHARACTERISTICS**
- **Filament**: Thoriated tungsten
- **Voltage**: 25 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
- **Socket**: Eimac SK-1400
- **Max. Seal Temp.**: 250°C
- **Max. Height**: 7.983 inches
- **Max. Diameter**: 7.016 inches
- **Net Weight**: 21 pounds

**TYPICAL OPERATION**
- **Class of Operation**: Service
- **Type of Service**: Power Amplifier
- **Power Output**: 8000 watts
- **Screen Voltage**: 10,000 volts
- **Plate Voltage**: 10,000 volts
- **Grid Voltage**: 1000 volts
- **Drive Voltage**: 100 volts
- **Drive Current**: 1.4 amperes
- **Drive Power**: 2.2 watts

**SPECIFICATIONS**
- **Input**: 120 to 140 pf
- **Output**: 10.5 to 14.5 pf
- **Feed-Through**: 1.4 pf
- **Net Weight**: 21 pounds

---

**4CV20.000A**

A vapor-cooled version of the popular 4CX500A, 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 similar Eimac vapor-cooled tube types.

**PLATE DISSIPATION**
- **4CV20.000A**: 20,000 watts

**FREQUENCY FOR MAXIMUM RATINGS**
- **4CV20.000A**: 30 MHz

**COOLING**
- **Vapor and Forced Air**

**CHARACTERISTICS**
- **Filament**: Thoriated tungsten
- **Voltage**: 35 volts
- **Current**: 73 to 78 amperes
- **Capacitances (Grounded Filament)**:
  - **Input**: 138 to 142 pf
  - **Output**: 18.0 to 21.5 pf
  - **Feed-Through**: 1.0 pf
- **Socket**: E1mac SK-310
- **Max. Seal Temp.**: 250°C
- **Max. Height**: 7.15 inches
- **Max. Diameter**: 7.016 inches
- **Net Weight**: 21 pounds

**TYPICAL OPERATION**
- **Class of Operation**: Service
- **Type of Service**: Power Amplifier
- **Power Output**: 20,000 watts
- **Screen Voltage**: 10,000 volts
- **Plate Voltage**: 10,000 volts
- **Grid Voltage**: 7500 volts
- **Drive Voltage**: 7.5 volts
- **Drive Current**: 500 amperes
- **Drive Power**: 6000 watts

**SPECIFICATIONS**
- **Input**: 138 to 142 pf
- **Output**: 18.0 to 21.5 pf
- **Feed-Through**: 1.0 pf
- **Net Weight**: 21 pounds

---

**4CV35.000A**

Recommended for use as a modulator, oscillator, or amplifier, the 4CV35.000A is usable to 120 megacycles. With a plate voltage of 35 kV in Class C service, the tube is capable of over 25 kilowatts output power. The plate dissipation of 35 kilowatts allows use of the 4CV35.000A in low-efficiency Class AB, etc., service.

**PLATE DISSIPATION**
- **4CV35.000A**: 35,000 watts

**FREQUENCY FOR MAXIMUM RATINGS**
- **4CV35.000A**: 110 MHz

**COOLING**
- **Vapor and Forced Air**

**CHARACTERISTICS**
- **Filament**: Thoriated tungsten
- **Voltage**: 85 volts
- **Current**: 152 to 158 amperes
- **Capacitances (Grounded Filament)**:
  - **Input**: 118 to 122 pf
  - **Output**: 22.0 to 27.0 pf
  - **Feed-Through**: 2.0 pf
- **Socket**: E1mac SK-310
- **Max. Seal Temp.**: 250°C
- **Max. Height**: 9.125 inches
- **Max. Diameter**: 7.48 inches
- **Net Weight**: 24 pounds

**TYPICAL OPERATION**
- **Class of Operation**: Service
- **Type of Service**: Amplifier and Oscillator
- **Power Output**: 25,000 watts
- **Screen Voltage**: 10,000 volts
- **Plate Voltage**: 15,000 volts
- **Grid Voltage**: 750 volts
- **Drive Voltage**: 12 volts
- **Drive Current**: 1500 amperes
- **Drive Power**: 30,000 watts

**SPECIFICATIONS**
- **Input**: 118 to 122 pf
- **Output**: 22.0 to 27.0 pf
- **Feed-Through**: 2.0 pf
- **Net Weight**: 24 pounds

---

**4CV50.000E**

The 4CV50.000E is a ceramic-metal, vapor-cooled tetrode intended for use at the 50 to 120 kV 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 RF amplifier or modulator.

The 4CV50.000E can also be used as a plate and screen modulated Class C RF amplifier.

**PLATE DISSIPATION**
- **4CV50.000E**: 50,000 watts

**COOLING**
- **Vapor and Forced Air**

**CHARACTERISTICS**
- **Filament**: Thoriated tungsten mesh
- **Voltage**: 1200 volts
- **Current**: 220 amperes
- **Capacitances**:
  - **Input**: 340 pf
  - **Output**: 4.3 pf
  - **Feed-Through**: 0.7 pf
- **Socket**: E1mac SK-310 Series
- **Max. Seal Temp.**: 250°C
- **Max. Anode Flange Temp.**: 200°C
- **Max. Height**: 13.0 inches
- **Max. Diameter**: 7.75 inches
- **Net Weight**: 35 pounds

**TYPICAL OPERATION**
- **Class of Operation**: Service
- **Type of Service**: Amplifier and Oscillator
- **Power Output**: 15,000 watts
- **Screen Voltage**: 15,000 volts
- **Plate Voltage**: 15,000 volts
- **Grid Voltage**: 1500 volts
- **Drive Voltage**: 12 volts
- **Drive Current**: 1500 amperes
- **Drive Power**: 225 watts

**SPECIFICATIONS**
- **Input**: 340 pf
- **Output**: 4.3 pf
- **Feed-Through**: 0.7 pf
- **Net Weight**: 35 pounds

---

*Shown with BR-700 boiler.*
**4CV75,000A**

The 4CV75,000A is a vacuum-shield metal, vapor-cooled tetrode with basic characteristics the same as the 4CV100,000E. It uses 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
- **Base Voltage:** 300 volts
- **Current:** 300 amperes
- **Cathodes:** Grounded
- **Capacitances (Grounded Cathode):**
  - Input: 460 pf
  - Output: 40 pf
  - Feed-Through: 2.3 pf
- **Max. Envelope Temp.:** 250 °C
- **Max. Height (In BR-320 boiler):** 19.1 inches
- **Max. Diameter (Of BR-320 boiler):** 9.4 inches
- **Net Weight:** 60 pounds

*Shown with BR-320 boiler.

---

**8351 / 4CV100,000C**

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

**PLATE DISSIPATION:** 100,000 watts

**FREQUENCY FOR MAXIMUM RATINGS:** 30 MHz

**COOLING:** Vapor and Forced Air

**CHARACTERISTICS**
- **Filament:** Thoriated tungsten
- **Voltage:** 100 volts
- **Current:** 300 amperes
- **Capacitances (Grounded Cathode):**
  - Input: 430 pf
  - Output: 40 pf
- **Net Weight:** 95 pounds

*Shown with BR-320 boiler.

---

**4CV100,000E**

The 4CV100,000E is a ceramic-metal vapor-cooled 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 driving operation. The 4CV100,000E is also useful in pulse modulator and regulator service.

**PLATE DISSIPATION:** 100,000 watts

**FREQUENCY FOR MAXIMUM RATINGS:** 30 MHz

**COOLING:** Vapor and Forced Air

**CHARACTERISTICS**
- **Filament:** Thoriated tungsten
- **Voltage:** 100 volts
- **Current:** 300 amperes
- **Capacitances (Grounded Cathode):**
  - Input: 430 pf
  - Output: 40 pf
- **Net Weight:** 95 pounds

*Shown with BR-800 boiler.

---

**4CV250,000A and 4CV250,000V**

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

**PLATE DISSIPATION:** 250,000 watts

**FREQUENCY FOR MAXIMUM RATINGS:** 30 MHz

**COOLING:** Vapor and Water

**CHARACTERISTICS**
- **Filament:** Thoriated tungsten
- **Voltage:** 250 volts
- **Current:** 660 amperes
- **Capacitances (Grounded Cathode):**
  - Input: 800 pf (max)
  - Output: 130 pf (max)
  - Feed-Through: 6.0 pf
- **Max. Height:** 26.02 inches
- **Max. Diameter:** 15.562 inches
- **Net Weight:** 190 pounds

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

---

**TETRODES**

**EXTERNAL ANODE II VAPOR COOLED**

**4CV75,000A**

<table>
<thead>
<tr>
<th>Class</th>
<th>Type of Operation</th>
<th>Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(volts) (amps) (watts)</td>
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<tr>
<td></td>
<td>Plate Screen Drive Output</td>
<td>Plate Screen Drive Output</td>
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<td>(volts) (amps) (watts)</td>
<td>(volts) (amps) (watts)</td>
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</tr>
<tr>
<td><strong>C</strong></td>
<td>Power Amplifier</td>
<td>15.000 15.0 75.000 1750 500</td>
<td>15.000 1500 11.8 120 140,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Radio-Frequency Power Amplifier (Plate Modulated)</td>
<td>12,500 15.0 50.000 1750 500</td>
<td>11,000 750 9.1 1000 82,000</td>
<td></td>
</tr>
<tr>
<td><strong>AB</strong></td>
<td>Audio Frequency Amplifier or Modulator</td>
<td>15,000 15.0 75.000 1750 500</td>
<td>11,000 1500 18.8 129,000</td>
<td></td>
</tr>
</tbody>
</table>

**8351 / 4CV100,000C**

<table>
<thead>
<tr>
<th>Class</th>
<th>Type of Operation</th>
<th>Service</th>
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<td>Plate Screen Drive Output</td>
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<tr>
<td><strong>AB</strong></td>
<td>Audio-Frequency Power Amplifier and Modulator</td>
<td>20,000 15.0 100,000 1750 500</td>
<td>18,000 1500 20.0 0 246,400</td>
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<tr>
<td></td>
<td>Radio-Frequency Linear Power Amplifier - 3SB</td>
<td>20,000 15.0 100,000 1750 500</td>
<td>18,000 1500 10.0 0 123,200</td>
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<tr>
<td><strong>C</strong></td>
<td>Radio-Frequency Power Amplifier and Oscillator</td>
<td>20,000 15.0 100,000 1750 500</td>
<td>17,500 1500 11.8 125,158,000</td>
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<tr>
<td><strong>C</strong></td>
<td>Plate Modulated RF Power Amplifier</td>
<td>17,500 15.0 66,500 1750 500</td>
<td>16,000 750 12.0 1260 138,500</td>
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**4CV100,000E**

<table>
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<tr>
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<tr>
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<td>(volts) (amps) (watts)</td>
<td>(volts) (amps) (watts)</td>
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<td>Plate Screen Drive Output</td>
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<td>(volts) (amps) (watts)</td>
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<tr>
<td><strong>A</strong></td>
<td>Radio-Frequency Pulse Power Amplifier or Oscillator</td>
<td>20.000 - 100,000 1750</td>
<td>25.000* 2500 68 - 180,000</td>
<td></td>
</tr>
</tbody>
</table>

*Typical operation in distributed amplifier service. **RF power into load per tube.
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.

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage Current</td>
<td>Plate Screen Voltage Current Power</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(volts)(amps)(watts)</td>
<td>(volts)(amps)(watts)</td>
</tr>
<tr>
<td>A</td>
<td>Audio-Freq. Power</td>
<td>4000</td>
<td>0.290</td>
</tr>
<tr>
<td>B</td>
<td>Audio-Freq. Power</td>
<td>4000</td>
<td>0.290</td>
</tr>
<tr>
<td>C</td>
<td>Plate-Mod. Radio-Freq. Power</td>
<td>4000</td>
<td>0.180</td>
</tr>
<tr>
<td>C</td>
<td>Plate-Mod. Radio-Freq. Power</td>
<td>4000</td>
<td>0.180</td>
</tr>
</tbody>
</table>

175A

The 175A is a beam pentode which incorporates a unique wire-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.

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage Current</td>
<td>Plate Screen Voltage Current Power</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(volts)(amps)(watts)</td>
<td>(volts)(amps)(watts)</td>
</tr>
<tr>
<td>C</td>
<td>RF Amplifier or Oscillator</td>
<td>4000</td>
<td>0.350</td>
</tr>
<tr>
<td>A</td>
<td>Linear RF Amplifier</td>
<td>4000</td>
<td>0.350</td>
</tr>
</tbody>
</table>

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 loads of shock and vibration. The tube incorporates a unique wire-type suppressor grid which permits high power output at relatively low plate voltage and provides excellent characteristics for use as a linear RF or audio amplifier.

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage Current</td>
<td>Plate Screen Voltage Current Power</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(volts)(amps)(watts)</td>
<td>(volts)(amps)(watts)</td>
</tr>
<tr>
<td>C</td>
<td>RF Amplifier or Oscillator</td>
<td>2000</td>
<td>0.150</td>
</tr>
<tr>
<td>A</td>
<td>Linear RF Amplifier</td>
<td>2000</td>
<td>0.175</td>
</tr>
</tbody>
</table>

5-500A

The 5-500A is a compact, ruggedly constructed radio-beam power pentode with a maximum plate dissipation rating of 500 watts. It is intended for use as an amplifier, oscillator or modulator. The 5-500A plate-current rating, low grid-plate capacitance and low driving power requirements permit maximum power capability to be combined with low plate input and economic drive requirements.

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage Current</td>
<td>Plate Screen Voltage Current Power</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(volts)(amps)(watts)</td>
<td>(volts)(amps)(watts)</td>
</tr>
<tr>
<td>C</td>
<td>RF Power Amplifier or Oscillator</td>
<td>4000</td>
<td>0.450</td>
</tr>
<tr>
<td>A</td>
<td>RF Linear Amplifier</td>
<td>4000</td>
<td>0.450</td>
</tr>
<tr>
<td>C</td>
<td>Plate Modulated RF Amplifier</td>
<td>4000</td>
<td>0.340</td>
</tr>
<tr>
<td>A</td>
<td>AF Power Amplifier or Modulator</td>
<td>4000</td>
<td>0.450</td>
</tr>
</tbody>
</table>

*Two tubes.
8295/172

This tube is an air-cooled, glass and 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, linear RF amplifier service. The 8295A is a ceramic-metal power pentode designed to be used as a Class AB linear amplifier in audio or radio frequency applications. Its low intermodulation distortion characteristics make it especially suitable for single-sided service.

**PLATE DISSIPATION**

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Base</th>
<th>7 pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socket</td>
<td>Einac 181</td>
</tr>
<tr>
<td>Heater</td>
<td>6.0 volts</td>
</tr>
<tr>
<td>Voltage</td>
<td>8.2 amperes</td>
</tr>
<tr>
<td>Current</td>
<td>Max. Seal Temp. 250 °C</td>
</tr>
<tr>
<td>Capacitances:</td>
<td>Max. Height 5.125 inches</td>
</tr>
<tr>
<td>Input</td>
<td>42 pf</td>
</tr>
<tr>
<td>Output</td>
<td>21 pf</td>
</tr>
<tr>
<td>Feed-Through</td>
<td>0.09 pf</td>
</tr>
<tr>
<td><strong>Net Weight</strong></td>
<td>3.0 pounds</td>
</tr>
</tbody>
</table>

**Typical Operation**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>3000</td>
<td>1.0</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>3000</td>
<td>0.800</td>
<td>1000</td>
</tr>
</tbody>
</table>

**5CX1500A**

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

**PLATE DISSIPATION**

**FREQUENCY FOR MAXIMUM RATINGS**

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Base</th>
<th>Special</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socket</td>
<td>Einac 209A</td>
</tr>
<tr>
<td>Heater</td>
<td>6.0 volts</td>
</tr>
<tr>
<td>Voltage</td>
<td>8.2 amperes</td>
</tr>
<tr>
<td>Current</td>
<td>Max. Seal Temp. 250 °C</td>
</tr>
<tr>
<td>Capacitances:</td>
<td>Max. Height 5.125 inches</td>
</tr>
<tr>
<td>Input</td>
<td>42 pf</td>
</tr>
<tr>
<td>Output</td>
<td>21 pf</td>
</tr>
<tr>
<td>Feed-Through</td>
<td>0.09 pf</td>
</tr>
<tr>
<td><strong>Net Weight</strong></td>
<td>3.0 pounds</td>
</tr>
</tbody>
</table>

**Typical Operation**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>3000</td>
<td>1.0</td>
<td>2500</td>
</tr>
<tr>
<td></td>
<td>3000</td>
<td>0.800</td>
<td>2500</td>
</tr>
</tbody>
</table>

**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, linear RF amplifier service. The 8432 is a ceramic-metal beam pentode featuring compact construction. The tube is especially suited for low-distortion Class AB, 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, and Class B service.

**PLATE DISSIPATION**

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Base</th>
<th>7 pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socket</td>
<td>Einac 181</td>
</tr>
<tr>
<td>Heater</td>
<td>6.0 volts</td>
</tr>
<tr>
<td>Voltage</td>
<td>8.2 amperes</td>
</tr>
<tr>
<td>Current</td>
<td>Max. Seal Temp. 250 °C</td>
</tr>
<tr>
<td>Capacitances:</td>
<td>Max. Diameter 4.032 inches</td>
</tr>
<tr>
<td>Input</td>
<td>42 pf</td>
</tr>
<tr>
<td>Output</td>
<td>21 pf</td>
</tr>
<tr>
<td>Feed-Through</td>
<td>0.09 pf</td>
</tr>
<tr>
<td><strong>Net Weight</strong></td>
<td>3.0 pounds</td>
</tr>
</tbody>
</table>

**Typical Operation**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>3000</td>
<td>1.0</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>3000</td>
<td>0.800</td>
<td>1000</td>
</tr>
</tbody>
</table>

**8432**

The 8432 is a ceramic metal beam pentode featuring compact construction. The tube is especially suited for low-distortion Class AB, 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, and Class B service.

**PLATE DISSIPATION**

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Base</th>
<th>7 pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socket</td>
<td>Einac 181</td>
</tr>
<tr>
<td>Heater</td>
<td>6.0 volts</td>
</tr>
<tr>
<td>Voltage</td>
<td>8.2 amperes</td>
</tr>
<tr>
<td>Current</td>
<td>Max. Seal Temp. 250 °C</td>
</tr>
<tr>
<td>Capacitances:</td>
<td>Max. Diameter 4.032 inches</td>
</tr>
<tr>
<td>Input</td>
<td>42 pf</td>
</tr>
<tr>
<td>Output</td>
<td>21 pf</td>
</tr>
<tr>
<td>Feed-Through</td>
<td>0.09 pf</td>
</tr>
<tr>
<td><strong>Net Weight</strong></td>
<td>3.0 pounds</td>
</tr>
</tbody>
</table>

**Typical Operation**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>3000</td>
<td>1.0</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>3000</td>
<td>0.800</td>
<td>1000</td>
</tr>
</tbody>
</table>

---

**5CX1500A**

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

**PLATE DISSIPATION**

**FREQUENCY FOR MAXIMUM RATINGS**

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Base</th>
<th>Special</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special</td>
<td>Einac 209A</td>
</tr>
<tr>
<td>Heater</td>
<td>6.0 volts</td>
</tr>
<tr>
<td>Voltage</td>
<td>8.2 amperes</td>
</tr>
<tr>
<td>Current</td>
<td>Max. Seal Temp. 250 °C</td>
</tr>
<tr>
<td>Capacitances:</td>
<td>Max. Height 5.125 inches</td>
</tr>
<tr>
<td>Input</td>
<td>42 pf</td>
</tr>
<tr>
<td>Output</td>
<td>21 pf</td>
</tr>
<tr>
<td>Feed-Through</td>
<td>0.09 pf</td>
</tr>
<tr>
<td><strong>Net Weight</strong></td>
<td>3.0 pounds</td>
</tr>
</tbody>
</table>

**Typical Operation**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>3000</td>
<td>1.0</td>
<td>2500</td>
</tr>
<tr>
<td></td>
<td>3000</td>
<td>0.800</td>
<td>2500</td>
</tr>
</tbody>
</table>
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.
A high-vacuum triode designed for pulse-modulator service and incorporating a pyro-cathode 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 tungsten  
- Voltage: 8.5 volts  
- Current: 15.9 to 17.7 amperes
- Capacitances:  
  - Grid-Plate: 3.0 to 5.6 pf  
  - Grid-Filament: 7.0 to 12.0 pf  
  - Plate-Filament: 15.0 pf
- Base: 50-watt jumbo 4-pin  
- Socket: E. F. Johnson Co. No. 123-211 or National Co. AX-90  
- Maximum Seal Temp: 225 °C  
- Maximum Length: 12.625 inches  
- Maximum Diameter: 3.125 inches  
- Net Weight: 1.3 pounds

**Maximum Ratings**
- DC Plate Voltage: 30 kilovolts  
- Peak Plate Current: 15 amperes  
- Plate Dissipation: 860 watts  
- Grid Dissipation: 50 watts

**Typical Operation**
- DC Plate Voltage: 28 kilovolts  
- Pulse Plate Voltage: 25 kilovolts  
- Pulse Plate Current: 15 amperes  
- Peak Drive Power: 75 kilowatts  
- Peak Output Power: 175 kilowatts  
- Duty: 0.2 percent

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**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 5021. It is recommended for use in equipment of new design.

**Maximum Plate Voltage**: 20 kilovolts  
**Maximum Pulse Plate Current**: 18 amperes  
**Cooling**: Radiation and Convection

**Characteristics**
- Cathode: Oxide-coated, unipolar  
- Heater:  
  - Voltage: 26.0 volts  
  - Current: 1.95 to 2.35 amperes
- Capacitances:  
  - Grounded Cathode:  
    - Input: 30.0 to 50.0 pf  
    - Output: 6.0 to 11.0 pf  
    - Feed-through: 7.0 pf  
  - Grid: 6.0 pf  
  - Plate: 3.063 inches  
- Net Weight: 12 ounces

**Maximum Ratings**
- DC Plate Voltage: 20 kilovolts  
- DC Screen Voltage: 1.5 kilovolts  
- Peak Plate Current: 13 amperes  
- Plate Dissipation: 60 watts  
- Screen Dissipation: 6 watts  
- Grid Dissipation: 1 watt

**Typical Operation**
- DC Plate Voltage: 20 kilovolts  
- DC Screen Voltage: 1.25 kilovolts  
- Pulse Plate Voltage: 18.75 kilovolts  
- Pulse Plate Current: 18 amperes  
- Peak Drive Power: 502 watts  
- Peak Output Power: 537 kilowatts  
- Duty: 0.1 percent  
- Pulse Duration: 2 microseconds

---

**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 5021. It is recommended for use in equipment of new design.

**Maximum Plate Voltage**: 20 kilovolts  
**Maximum Pulse Plate Current**: 18 amperes  
**Cooling**: Radiation and Convection

**Characteristics**
- Cathode: Oxide-coated, unipolar  
- Heater:  
  - Voltage: 26.0 volts  
  - Current: 1.95 to 2.35 amperes
- Capacitances:  
  - Grounded Cathode:  
    - Input: 30.0 to 50.0 pf  
    - Output: 6.0 to 11.0 pf  
    - Feed-through: 2.0 pf  
  - Grid: 2.81 inches  
  - Plate: 3.063 inches  
- Net Weight: 12 ounces

**Maximum Ratings**
- DC Plate Voltage: 20 kilovolts  
- DC Screen Voltage: 1.5 kilovolts  
- Peak Plate Current: 13 amperes  
- Plate Dissipation: 60 watts  
- Screen Dissipation: 6 watts  
- Grid Dissipation: 1 watt

**Typical Operation**
- DC Plate Voltage: 20 kilovolts  
- DC Screen Voltage: 1.25 kilovolts  
- Pulse Plate Voltage: 18.75 kilovolts  
- Pulse Plate Current: 18 amperes  
- Peak Drive Power: 502 watts  
- Peak Output Power: 537 kilowatts  
- Duty: 0.1 percent  
- Pulse Duration: 2 microseconds

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**8187 / 4PR65A**

A compact, high-vacuum, radial-beam tetrode incorporating a pyro-cathode and a non-emitting grid, intended for pulse-modulator 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

**Characteristics**
- Filament: Thoriated tungsten  
- Voltage: 5.0 volts  
- Current: 3.2 to 3.8 amperes
- Capacitances:  
  - Grounded Cathode:  
    - Input: 6.0 to 8.3 pf  
    - Output: 1.9 to 3.6 pf  
    - Feed-through: 0.12 pf  
- Base: 5-pin metal shell  
- Maximum Base-Plate Temp: 300 °C  
- Maximum Plate Temp: 225 °C  
- Maximum Diameter: 6.38 inches  
- Net Weight: 3 ounces

**Maximum Ratings**
- DC Plate Voltage: 15 kilovolts  
- DC Screen Voltage: 2 kilovolts  
- Peak Plate Current: 1 ampere  
- Plate Dissipation: 60 watts  
- Screen Dissipation: 10 watts  
- Grid Dissipation: 5 watts

**Typical Operation**
- DC Plate Voltage: 15 kilovolts  
- DC Screen Voltage: 1 kilovolt  
- Pulse Plate Voltage: 14 kilovolts  
- Pulse Plate Current: 1 ampere  
- Peak Drive Power: 11 watts  
- Peak Output Power: 15 watts  
- Duty: 5.0 percent

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**8247 / 4PR125A**

A compact, high-vacuum, radial-beam tetrode incorporating a pyro-cathode and a non-emitting grid, intended for pulse-modulator 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: Thoriated tungsten  
- Voltage: 8.0 volts  
- Current: 6.0 to 7.0 amperes
- Capacitances:  
  - Grounded Cathode:  
    - Input: 9.2 to 12.4 pf  
    - Output: 2.915 pf  
    - Feed-through: 0.07 pf  
- Base: 5-pin metal shell  
- Maximum Base-Plate Temp: 300 °C  
- Maximum Plate Temp: 170 °C  
- Maximum Diameter: 5.69 inches  
- Net Weight: 6.5 ounces

**Maximum Ratings**
- 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: 40 watts  
- Duty: 4.0 percent
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 PLATE CURRENT 4 amperes
COOLING Radiation and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 5.0 volts
Current 13.5 to 14.7 amperes
Capacitances: Input 11 to 15 ufd
Output 4.2 to 5.6 ufd
Feed-Through 0.17 ufd
Socket Elmac SK-400
Max. Plate-Scale Temp. 200 °C
Max. Envelope Temp. 200 °C
Max. Length 7.5 inches
Max. Diameter 3.5 inches
Net Weight 125 ounces

MAXIMUM RATINGS

DC PLATE VOLTAGE 50 kilovolts
DC SCREEN VOLTAGE 2.5 kilovolts
PEAK PLATE CURRENT 4 amperes
PLATE DISSIPATION 250 watts
SCREEN DISSIPATION 75 watts
GRID DISSIPATION 5 watts

TYPICAL OPERATION

DC Plate Voltage 49.7 kilovolts
DC Screen Voltage 1.9 kilovolts
Pulse Plate Voltage 48 kilovolts
Pulse Plate Current 4 amperes
Peak Drive Power 415 watts
Peak Output Power 192 kilowatts
Duty 1.7 percent

8188 / 4PR400A

A compact, high-vacuum, radial-beam tetrode incorporating a pyrovac plate and non-emitting grids, intended for pulse-modulator 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 8 amperes
COOLING Radiation and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 20.0 to 22.7 amperes
Capacitances (Grounded Cathode): Input 23.8 to 32.4 ufd
Output 6.8 to 9.4 ufd
Feed-Through 0.35 ufd
Base 5-pin metal shell
Socket Elmac SK-400
Max. Base-Scale Temp. 150 °C
Max. Plate-Scale Temp. 200 °C
Max. Length 5.63 inches
Max. Diameter 6.25 inches
Net Weight 1.5 pounds

MAXIMUM RATINGS

DC PLATE VOLTAGE 30 kilovolts
DC SCREEN VOLTAGE 8 amperes
PEAK PLATE CURRENT 100 watts
PLATE DISSIPATION 75 watts
SCREEN DISSIPATION 75 watts
GRID DISSIPATION 10 watts

TYPICAL OPERATION

DC Plate Voltage 30 kilovolts
DC Screen Voltage 1.5 kilovolts
Pulse Plate Voltage 28 kilovolts
Pulse Plate Current 8 amperes
Pulse Drive Power 220 watts
Peak Output Power 235 kilowatts
Duty 1.6 percent

8189 / 4PR1000A

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 recommended for use in new equipments where high plate, high current, or high duty preclude the use of tubes employing oxide-coated cathodes.

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

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 15.0 volts
Current 20.0 to 22.7 amperes
Capacitances (Grounded Cathode): Input 23.8 to 32.4 ufd
Output 6.8 to 9.4 ufd
Feed-Through 0.35 ufd
Base 5-pin metal shell
Socket Elmac SK-500
Max. Base-Scale Temp. 150 °C
Max. Plate-Scale Temp. 200 °C
Max. Length 5.63 inches
Max. Diameter 6.25 inches
Net Weight 1.5 pounds

MAXIMUM RATINGS

DC PLATE VOLTAGE 45 kilovolts
DC SCREEN VOLTAGE 8 amperes
PEAK PLATE CURRENT 100 watts
PLATE DISSIPATION 75 watts
SCREEN DISSIPATION 75 watts
GRID DISSIPATION 10 watts

TYPICAL OPERATION

DC Plate Voltage 30 kilovolts
DC Screen Voltage 1.5 kilovolts
Pulse Plate Voltage 28 kilovolts
Pulse Plate Current 8 amperes
Pulse Drive Power 220 watts
Peak Output Power 235 kilowatts
Duty 1.6 percent

8189 / 4PR1000B

The Elmac 4PR1000B is a ruggedized version of the 4PR1000A. 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 recommended for use in new equipments where high voltage, high current, or high duty preclude the use of tubes employing oxide-coated cathodes.

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

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 15.0 volts
Current 20.0 to 22.7 amperes
Capacitances (Grounded Cathode): Input 23.8 to 32.4 ufd
Output 6.8 to 9.4 ufd
Feed-Through 0.35 ufd
Base 5-pin metal shell
Socket Elmac SK-500
Max. Base-Scale Temp. 150 °C
Max. Plate-Scale Temp. 200 °C
Max. Length 5.63 inches
Max. Diameter 6.25 inches
Net Weight 1.5 pounds

MAXIMUM RATINGS

DC PLATE VOLTAGE 45 kilovolts
DC SCREEN VOLTAGE 8 amperes
PEAK PLATE CURRENT 100 watts
PLATE DISSIPATION 75 watts
SCREEN DISSIPATION 75 watts
GRID DISSIPATION 10 watts

TYPICAL OPERATION

DC Plate Voltage 30 kilovolts
DC Screen Voltage 1.5 kilovolts
Pulse Plate Voltage 28 kilovolts
Pulse Plate Current 8 amperes
Pulse Drive Power 220 watts
Peak Output Power 235 kilowatts
Duty 1.6 percent

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 DISSIPATION 1000 watts
FREQUENCY FOR MAXIMUM RATINGS 30 MHz
COOLING Radiation and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 20 to 22.7 amperes
Capacitances (Grounded Cathode): Input 23.8 to 32.4 ufd
Output 5.5 to 7.2 ufd
Feed-Through 0.35 of max.
Base 5-pin special socket
Socket SK-500
Maximum Operating Temperatures: Envelope Temperature 225 °C max.
Seal Temperature 200 °C max.
Maximum Height 9.625 inches
Maximum Diameter 5.250 inches
Net Weight 1.5 pounds
Class of Operation Class "C"
Type of Service Pulse Modulator

MAXIMUM RATINGS

PLATE VOLTAGE 37 kilovolts
PEAK PLATE CURRENT 5 amperes
Screen Voltage 1000 volts
Pulse Drive Power 480 watts
Peak Output Power 2.2 kilowatts

TYPICAL OPERATIONS

Capacitive Load
Plate Voltage
Pulse Plate Voltage
Screen Voltage
Pulse Drive Power
Peak Output Power

Resistive Load
Plate Voltage
Pulse Plate Voltage
Screen Voltage
Pulse Drive Power
Peak Output Power

Duty
58 percent
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 non-ferrous 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.

<table>
<thead>
<tr>
<th>SK-300A</th>
<th>SK-1306</th>
<th>SK-306</th>
<th>SK-300</th>
<th>SK-300A*</th>
</tr>
</thead>
</table>

### SOCKETS AND ACCESSORIES

<table>
<thead>
<tr>
<th>AIR-SYSTEM SOCKET</th>
<th>TUBE</th>
<th>BYPASS CAPACITOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK-184</td>
<td>829A</td>
<td>2000 2500 1000 500</td>
</tr>
<tr>
<td>SK-184A</td>
<td>829A</td>
<td>2000 1000 screen</td>
</tr>
<tr>
<td>SK-209B</td>
<td>8432</td>
<td>2000 1000 screen</td>
</tr>
<tr>
<td>SK-265A</td>
<td>264</td>
<td>2000 1000 screen</td>
</tr>
<tr>
<td>SK-291A</td>
<td>290</td>
<td>2000 1000 screen</td>
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### BYPASS CAPACITOR

<table>
<thead>
<tr>
<th>VOLTAGE</th>
<th>ELEMENT</th>
<th>GROUNDED CONTACTS</th>
<th>CHIMNEY</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCWV</td>
<td>BYPASSED</td>
<td></td>
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### ACCESSORIES

<table>
<thead>
<tr>
<th>SK-300</th>
<th>SK-300A*</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>none</td>
</tr>
</tbody>
</table>

* SK-300A has low pressure drop characteristic; recommended for new designs.

†Accessory screen bypass cap. available as Y-433 (1600 pf, 1800 DCWV) for the SK-300 and SK-300A.

<table>
<thead>
<tr>
<th>SK-310</th>
<th>SK-400</th>
<th>SK-410</th>
<th>SK-500</th>
<th>SK-600</th>
</tr>
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<tbody>
<tr>
<td>4CX20,000A</td>
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<td>none</td>
<td>none</td>
<td>none</td>
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<tr>
<td>4CX25,000A</td>
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<td>none</td>
<td>none</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>SK-400</th>
<th>SK-410</th>
<th>SK-500</th>
<th>SK-600</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-125A</td>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>4DX21A</td>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>4PR125A</td>
<td>none</td>
<td>none</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>SK-500</th>
<th>SK-600</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-1000A</td>
<td>none</td>
</tr>
<tr>
<td>4PR1000A</td>
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</tr>
<tr>
<td>4PR1008B</td>
<td>279</td>
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</table>

<table>
<thead>
<tr>
<th>SK-600</th>
<th>SK-602</th>
<th>SK-612†</th>
</tr>
</thead>
<tbody>
<tr>
<td>4X150A</td>
<td>none</td>
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<tr>
<td>4X150D</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>4X150R</td>
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<td>none</td>
</tr>
</tbody>
</table>

* Body, contacts, & retainer supplied separately; no bypass capacitor.
† Low inductance version.
SK-604

This tube puller is designed for use in removing coaxial-base and 9-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.

BYPASS CAPACITOR

<table>
<thead>
<tr>
<th>AIR-SYSTEM SOCKET</th>
<th>TUBE</th>
<th>CAP. pf</th>
<th>VOLTAGE DCWV</th>
<th>ELEMENT BYPASSED</th>
<th>GROUNDED CONTACTS</th>
<th>CHIMNEY</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK-604A*</td>
<td>4X150A</td>
<td>2700</td>
<td>1000</td>
<td>screen</td>
<td>none</td>
<td>SK-606</td>
</tr>
<tr>
<td>SK-620A*</td>
<td>4X150D</td>
<td>1100</td>
<td>1000</td>
<td>screen</td>
<td>none</td>
<td>SK-606</td>
</tr>
<tr>
<td>SK-610A*</td>
<td>4X150F</td>
<td>525</td>
<td>500</td>
<td>cathode</td>
<td>none</td>
<td>SK-626</td>
</tr>
<tr>
<td>SK-630A*</td>
<td>4X150B</td>
<td>1100</td>
<td>1000</td>
<td>screen</td>
<td>cath.</td>
<td>SK-635B</td>
</tr>
<tr>
<td>SK-650</td>
<td>4CX125C</td>
<td>1100</td>
<td>400</td>
<td>screen</td>
<td>1 htr</td>
<td>SK-606</td>
</tr>
<tr>
<td>SK-655*</td>
<td>4CX125F</td>
<td>none</td>
<td>none</td>
<td></td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>SK-660*</td>
<td>4CX125G</td>
<td>none</td>
<td>none</td>
<td></td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>SK-665*</td>
<td>4CX125H</td>
<td>none</td>
<td>none</td>
<td></td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>SK-700</td>
<td>4CN15A</td>
<td>1100</td>
<td>400</td>
<td>screen</td>
<td>1 htr &amp; cath.</td>
<td>SK-606</td>
</tr>
<tr>
<td>SK-710</td>
<td>4CX125A</td>
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<td>none</td>
<td></td>
<td>none</td>
<td></td>
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<tr>
<td>SK-710A*</td>
<td>4CX125C</td>
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<td>none</td>
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<td>SK-7111</td>
<td>4CX125F</td>
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<tr>
<td>SK-711A+</td>
<td>4CX125G</td>
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<td>none</td>
<td></td>
<td>none</td>
<td></td>
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<tr>
<td>SK-712A++</td>
<td>4CX125H</td>
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<tr>
<td>SK-720</td>
<td>4CN15A</td>
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<td>none</td>
<td></td>
</tr>
<tr>
<td>SK-720A*</td>
<td>4CN15D</td>
<td>none</td>
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<td>none</td>
<td></td>
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<tr>
<td>SK-750</td>
<td>4CN15A</td>
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<td>none</td>
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<td>none</td>
<td>integral</td>
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<tr>
<td>SK-751*</td>
<td>4CN15C</td>
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<td>none</td>
<td></td>
<td>none</td>
<td>integral</td>
</tr>
<tr>
<td>SK-770</td>
<td>4CN15B</td>
<td>none</td>
<td>none</td>
<td></td>
<td>none</td>
<td>integral</td>
</tr>
</tbody>
</table>

* Bypass capacitor has long external arc path.
† Body insulation is teflon.
‡ BeO body only, no mounting bracket.
§ SK-661 with clamp assembly matches tube type 4CS250HA with SK-1910 BeO block attached to its anode.

- SK-650 is a simple, light-weight socket; SK-655 is matching bypass unit, can also be used with coaxial-based tubes in family (e.g. 4CX250K).
- SK-660* is for conduction-cooled tube types.
- SK-661++ is a low-capacitance version of the SK-760.
### SOCKETS AND ACCESSORIES

#### 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.

#### AIR-SYSTEM SOCKET TUBE

| SK-800B | 4CX1100A | 1500 | 400 | screen | none |
| SK-810B | 4CX1500A | 1500 | 400 | cathode | screen |
| SK-850B | 4CX2000A | 1500 | 400 | cathode | screen |
| SK-820 | 4CX1900A | 500 | 400 | cathode | screen |
| SK-830A | 4CX1900A | 2500 | 1000 | screen | cathode |
| SK-831 | 4CX1500A | 2500 | 1000 | screen | none |
| SK-840 | 5CX1500A | none | none | none | none |
| SK-870 | 3CX1000A | none | none | none | none |

* Screen bypass capacitor isolated from screen contacts.
† No chimney required.

#### SCREEN BYPASS CAPACITOR

| SK-900 | 4X500A | 650 | 700 | screen | none |
| SK-1300 | 3CW10,000A | none | none | none | none |
| SK-1310 | 3CV30,000A | none | none | none | none |
| SK-1400A | 4CX3500A | 1800 | 1000 | screen | none |
| SK-1470 | 4CX3000A | none | none | screen | SK-1426 |
| SK-1420 | 5CX3000A | none | none | screen | SK-1426 |
| SK-1490 | 4CV8000A | none | none | none | none |

* Low-inductance base arrangement.
† No mounting flange included.

#### CONTROL GRID CONNECTOR

| SK-1710 | 4CV250,000A | 4CW250,000A | 4CW250,000V |
| SK-1712 | 4CV250,000A | 4CW250,000A | 4CW250,000V |
| SK-1720 | 4CW250,000A/V | Water jacket |

#### OTHER ACCESSORIES

| SK-500 | YM-500 | YM-501 |
| SK-510 | YM-510 | YM-511 |
| SK-600 | YM-600 | YM-601 |
| SK-700 | YM-700 | YM-701 |
| SK-800 | YM-800 | YM-801 |
| SK-900 | YM-900 | YM-901 |
| SK-1000 | YM-1000 | YM-1001 |
| SK-1100 | YM-1100 | YM-1101 |
| SK-1200 | YM-1200 | YM-1201 |
| SK-1300 | YM-1300 | YM-1301 |
| SK-1400 | YM-1400 | YM-1401 |
| SK-1500 | YM-1500 | YM-1501 |
| SK-1600 | YM-1600 | YM-1601 |
| SK-1700 | YM-1700 | YM-1701 |
| SK-1800 | YM-1800 | YM-1801 |
| SK-1900 | YM-1900 | YM-1901 |

#### AIR DISTRIBUTOR

| SK-500 | 6697A | Air distributor |
| SK-600 | 6697A | Tube support for air distributor |
| SK-700 | 6697A | Filament connector, small |
| SK-800 | 6697A | Filament connector, large |
| SK-900 | 6697A | Grid connector |
| SK-1000 | 6697A | Anode water jacket |
| SK-1100 | 6697A | Mounting clamp for water jacket |
| SK-1200 | 6697A | Mounting plate for water jacket |
| SK-1300 | 6697A | Filament connector (two required) |
| SK-1400 | 6697A | Control grid connector |
| SK-1500 | 6697A | Water jacket |

#### BEO BLOCKS

| SK-1900 | Y-190 | BeO block, attaches to anode of tube for conduction cooling applications |
| SK-2000 | Y-200 | BeO block, attaches to anode of tube for conduction cooling applications |
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

<table>
<thead>
<tr>
<th>Tube Type Number</th>
<th>Tube Type</th>
<th>Maximum Plate Dissipation (kW)</th>
<th>Socket</th>
<th>Boilers†</th>
<th>Control Box‡</th>
<th>Reservoir§</th>
<th>Steam Line¶</th>
<th>Water Line¶</th>
<th>Pressure Equalizer Fitting</th>
</tr>
</thead>
<tbody>
<tr>
<td>4CV8,000A</td>
<td>Tetrode</td>
<td>8</td>
<td>SK-1490</td>
<td>BR-101</td>
<td>CB-102</td>
<td>RE-100</td>
<td>043026N</td>
<td>AF-100</td>
<td>AD-100</td>
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<tr>
<td>4CV20,000A</td>
<td>Tetrode</td>
<td>20</td>
<td>SK-310</td>
<td>BR-200</td>
<td>CB-202</td>
<td>RE-200</td>
<td>043065N</td>
<td>AF-200</td>
<td>AD-200</td>
</tr>
<tr>
<td>3CV30,000A3</td>
<td>Triode</td>
<td>30</td>
<td>SK-1310</td>
<td>BR-200</td>
<td>CB-202</td>
<td>RE-200</td>
<td>043065N</td>
<td>AF-200</td>
<td>AD-200</td>
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<td>Tetrode</td>
<td>35</td>
<td>SK-310</td>
<td>BR-200</td>
<td>CB-202</td>
<td>RE-200</td>
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<td>AF-200</td>
<td>AD-200</td>
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<td>BR-700</td>
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<td>4CV75,000</td>
<td>Tetrode</td>
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<td>SK-1500</td>
<td>BR-320</td>
<td>CB-202</td>
<td>RE-200</td>
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<tr>
<td>7480</td>
<td>Triode</td>
<td>80</td>
<td>SK-1600 Series³</td>
<td>BR-400</td>
<td>CB-202</td>
<td>RE-200</td>
<td>043033N</td>
<td>AF-300</td>
<td>AD-300</td>
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<td>Tetrode</td>
<td>100</td>
<td>SK-1510</td>
<td>BR-300</td>
<td>CB-202</td>
<td>RE-200</td>
<td>043033N</td>
<td>AF-300</td>
<td>AD-300</td>
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<td>4CV100,000E</td>
<td>Tetrode</td>
<td>100</td>
<td>SK-2000</td>
<td>BR-800</td>
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<tr>
<td>4CV250,000V</td>
<td>Tetrode</td>
<td>250</td>
<td>SK-1700 Series⁴</td>
<td>BR-605</td>
<td>CB-202</td>
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<td>5 1/2&quot; OD</td>
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<td>4CV250,000A</td>
<td>Tetrode</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. One boiler per tube except BR-500 which accommodates two tubes.
2. Solenoid Operated Valve #124281 and Pressure Interlock #124434 may be used in all system combinations.
3. Capacities of the reservoirs are: RE-100 = 1 qt., RE-200 = 2 qt., RE-300 = 1 gal.
4. For multiple tube systems, the components are multiplied by the number of tubes used.
5. Includes water-cooled filament and grid connections.
Eimac will recommend condensers for specific system cooling requirements.
OTHER PRODUCTS

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.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>Length (inches)</th>
<th>Dia. (inches)</th>
<th>Hole Dia.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR-1</td>
<td>11/16</td>
<td>1/2</td>
<td>.052</td>
</tr>
<tr>
<td>HR-2</td>
<td>11/16</td>
<td>1/2</td>
<td>.062</td>
</tr>
<tr>
<td>HR-3</td>
<td>11/16</td>
<td>1/2</td>
<td>.072</td>
</tr>
<tr>
<td>HR-4</td>
<td>7/8</td>
<td>3/4</td>
<td>.102</td>
</tr>
<tr>
<td>HR-5</td>
<td>7/8</td>
<td>3/4</td>
<td>.127</td>
</tr>
<tr>
<td>HR-6</td>
<td>7/8</td>
<td>3/4</td>
<td>.357</td>
</tr>
<tr>
<td>HR-7</td>
<td>1-11/32</td>
<td>1-3/8</td>
<td>.127</td>
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<tr>
<td>HR-8</td>
<td>1-11/32</td>
<td>1-3/8</td>
<td>.575</td>
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<td>HR-9</td>
<td>4-11/32</td>
<td>1-3/8</td>
<td>.569</td>
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<td>HR-10</td>
<td>1-11/32</td>
<td>1-3/8</td>
<td>.510</td>
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RECOMMENDED CONNECTORS FOR USE WITH EACH EIMAC TUBE TYPE

<table>
<thead>
<tr>
<th>TUBE</th>
<th>Plate Connector</th>
<th>Grid Connector</th>
<th>TUBE</th>
<th>Plate Connector</th>
<th>Grid Connector</th>
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<tr>
<td>2.25A</td>
<td>HR-1</td>
<td>25T</td>
<td>HR-1</td>
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<td>2.50A</td>
<td>HR-1</td>
<td>33T</td>
<td>HR-3</td>
<td></td>
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<tr>
<td>2.150D</td>
<td>HR-6</td>
<td>35TG</td>
<td>HR-3</td>
<td></td>
<td></td>
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<tr>
<td>2.240A</td>
<td>HR-6</td>
<td>75TH-TL</td>
<td>HR-3</td>
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<td>2.450A</td>
<td>HR-8</td>
<td>100TH-TL</td>
<td>HR-2</td>
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<tr>
<td>2.2000A</td>
<td>HR-8</td>
<td>VT127A</td>
<td>HR-3</td>
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<tr>
<td>3-1000Z</td>
<td>HR-8</td>
<td>230TH-TL</td>
<td>HR-6</td>
<td></td>
<td>HR-3</td>
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<tr>
<td>5C24</td>
<td>HR-1</td>
<td>250R</td>
<td>HR-6</td>
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<td>4-65A</td>
<td>HR-6</td>
<td>304TH-TL</td>
<td>HR-6</td>
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<tr>
<td>40214-125A</td>
<td>HR-6</td>
<td>460TH-TL</td>
<td>HR-8</td>
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<tr>
<td>50224-230A</td>
<td>HR-6</td>
<td>5923-200A3</td>
<td>HR-10</td>
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<td>HR-5</td>
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<td>4-400A</td>
<td>HR-6</td>
<td>750TL</td>
<td>HR-8</td>
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<td>4-1000A</td>
<td>HR-8</td>
<td>866A</td>
<td>HR-8</td>
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<td>4E27A5-125B</td>
<td>HR-8</td>
<td>872A</td>
<td>HR-8</td>
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<td>4PR60A</td>
<td>HR-8</td>
<td>1000T</td>
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<td>5C21</td>
<td>HR-8</td>
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<td>HR-9</td>
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<td>KY21A</td>
<td>HR-9</td>
<td>2000T</td>
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<td>KY21A</td>
<td>HR-9</td>
<td>8000100R</td>
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</table>

*For marking per MIL-STD-1308 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 contact. It is especially suitable for making 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. All sizes come in standard 36 inch lengths. Standard stock is heat treated and silver plated. Also available without heat treating or plating.

<table>
<thead>
<tr>
<th>Type</th>
<th>Finger Radius (inches)</th>
<th>Finger Width (inches)</th>
<th>Slot Width (inches)</th>
<th>Slot Depth (inches)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF-100</td>
<td>1/16</td>
<td>1/8</td>
<td>0.040</td>
<td>35/64</td>
<td>spooned</td>
</tr>
<tr>
<td>CF-200</td>
<td>1/16</td>
<td>1/8</td>
<td>0.040</td>
<td>35/64</td>
<td>double-edged</td>
</tr>
<tr>
<td>CF-300</td>
<td>13/64</td>
<td>1/8</td>
<td>0.040</td>
<td>35/64</td>
<td>double-edged</td>
</tr>
<tr>
<td>CF-400</td>
<td>13/64</td>
<td>1/8</td>
<td>0.040</td>
<td>35/64</td>
<td>double-edged</td>
</tr>
<tr>
<td>CF-500</td>
<td>15/32</td>
<td>1/8</td>
<td>0.040</td>
<td>7/8</td>
<td>reverse radius</td>
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<tr>
<td>CF-600</td>
<td>15/32</td>
<td>1/8</td>
<td>0.040</td>
<td>29/32</td>
<td>reverse radius</td>
</tr>
<tr>
<td>CF-700</td>
<td>1/16</td>
<td>1/8</td>
<td>0.040</td>
<td>9/32</td>
<td>spooned</td>
</tr>
<tr>
<td>CF-800</td>
<td>1/16</td>
<td>1/8</td>
<td>0.040</td>
<td>15/32</td>
<td>spooned and bent</td>
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<tr>
<td>CF-900</td>
<td>0.030</td>
<td>1/16</td>
<td>0.020</td>
<td>15/36</td>
<td>smallest fingers</td>
</tr>
</tbody>
</table>

Eimac Contact Finger Stock is available on special factory order in the following semi-finished states:

- Slotted and formed (Not heat treated or plated)
- Slotted, formed, and heat treated (Not plated)
- Slotted, formed, and plated (Not heat treated)

VACUUM SWITCHES

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

<table>
<thead>
<tr>
<th>Type</th>
<th>Intended Service</th>
<th>Insulation</th>
<th>Current</th>
<th>Peak Test Voltage</th>
<th>DC Coil</th>
</tr>
</thead>
<tbody>
<tr>
<td>VS-2</td>
<td>RF</td>
<td>Glass</td>
<td>5a (30 MHz)</td>
<td>20 KV</td>
<td>12 V, 24 V</td>
</tr>
<tr>
<td>VS-6</td>
<td>Pulse</td>
<td>Glass</td>
<td>150a (Pulse)</td>
<td>22 KV</td>
<td>12 V, 24 V</td>
</tr>
<tr>
<td>VS-8</td>
<td>Medical Defibrillator</td>
<td>Glass</td>
<td>—</td>
<td>15 KV</td>
<td>30 V</td>
</tr>
<tr>
<td>VS-9</td>
<td>RF</td>
<td>Ceramic</td>
<td>4a (15 MHz)</td>
<td>4 KV</td>
<td>26.5 V</td>
</tr>
</tbody>
</table>
Eimac will be glad to furnish additional information on the products listed in this catalog. Simply note your product interest on a reply card and mail. Prompt response is assured.

<table>
<thead>
<tr>
<th>Date</th>
<th>Please send me further information on the following Eimac products:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>My application is</td>
</tr>
<tr>
<td></td>
<td>Special requirements</td>
</tr>
<tr>
<td></td>
<td>Name</td>
</tr>
<tr>
<td></td>
<td>Title or Position</td>
</tr>
<tr>
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<td>Company</td>
</tr>
<tr>
<td></td>
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EIMAC division of varian  
301 INDUSTRIAL WAY • SAN CARLOS, CALIFORNIA

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<td></td>
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</tr>
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</table>

EIMAC division of varian  
301 INDUSTRIAL WAY • SAN CARLOS, CALIFORNIA
FACTORY LOCATIONS

EIMAC division of Varian
301 Industrial Way
San Carlos, California 94070
Telephone: (415) 592-1221
TWX: 910-376-4893

EIMAC division of Varian
1678 South Pioneer Road
Salt Lake City, Utah 84104
Telephone: (801) 487-7561

FIELD SALES OFFICES

ATLANTA
3110 Maple Drive N.E.
Suite 203
Atlanta, Georgia 30305
Telephone: (404) 261-4574
TWX: 910-751-8369

ALBUQUERQUE
9000 Menual Boulevard NE
Albuquerque, New Mexico 87112
Telephone: (505) 296-1248

BOSTON
400 Wyman Street
Waltham, Massachusetts 02154
Telephone: (617) 891-4560
TWX: 710-324-0688

CHICAGO
Executive Plaza Office Bldg.
205 West Touhy Avenue
Park Ridge, Illinois 60068
Telephone: (312) 825-6686
TWX: 910-253-1824

DALLAS
First Bank & Trust Building
P.O. Box 689
811 South Central Expressway
Richardson, Texas 75081
Telephone: (214) 235-2385
TWX: 910-867-4712

INTERNATIONAL SALES OFFICES

AUSTRALIA
Varian Pty. Ltd.
38 Oxley Street
Crows Nest
Sydney, Australia
Telephone: 430-673
Telex: 430-673

BENELUX
Varian Associates Holland N.V.
Maassluisstraat 100
P.O. Box 9158
Amsterdam, Holland
Telephone: (020) 15 94 10
Telex: 14 099

BRAZIL
Varian Indústria e Comércio Ltda.
Av. Paulista, 2073-18º conj. 1824
Sao Paulo - ZP 3, Brazil
Telephone: 80 99 27
Telex: 21 228

BRITISH ISLES
Varian Associates Ltd.
Russell House
Molesley Road
Walton-on-Thames
Surrey, England
Telephone: Walton-on-Thames 2 87 66
Telex: 261 351

CANADA
Varian Associates of Canada, Ltd.
45 River Road
Georgetown, Ontario, Canada
Telephone: (416) 877-6901
Telex: 022-95628

FRANCE
MICROWAVE
Thomson-Varian S.A.
6 rue Mario Nikis
75 Paris 15e
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Telex: 28 873

GERMANY
Varian GmbH
Breitwiesenstrasse 9
7 Stuttgart-Vaihingen
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Telephone: (0711) 73 20 28
Telex: 72 55614

ITALY
Varian SpA
Via Varian
10040 Leini (Torino)
Italy
Telephone: (02) 26 80 86
Telex: 21 228

JAPAN
Marubun Co., Ltd.
1, 2-Chome, Odemmacho
Nihombashi, Chuo-Ku
Tokyo, Japan
Telephone: 662-8151
Telex: 22957
Cable: Marubun, Tokyo

PHOENIX
77 West Third Avenue
Scottsdale, Arizona 85251
Telephone: (602) 947-5461
TWX: 910-950-1298

SAN FRANCISCO
4940 El Camino Real
Los Altos, California 94022
Telephone: (415) 968-7630
TWX: 910-379-6446

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Telex: 21 228

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Telex: 261 351