POWER GRID TUBES
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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:

- **NUMBER OF ELECTRODES**
  - 2 — Diode
  - 3 — Triode
  - 4 — Tetrode
  - 5 — Pentode

- **DESCRIPTION**
  - C — Ceramic Envelope (No Glass)
  - N — External Anode, Natural Convection Air Cooling
  - P — Primarily for Pulse Applications
  - R — Internal Anode, Radiation Cooled
  - S — External Anode, Conduction Cooled
  - V — External Anode, Vapor Cooled
  - W — External Anode, Water Cooled
  - X — External Anode, Forced-Air Cooled

- **PLATE DISSIPATION (Watts)**
  - 1 — 0 to 10
  - 2 — 11 to 20
  - 3 — 21 to 30
  - 4 — 31 to 50
  - 5 — 51 to 100
  - 6 — 101 to 200
  - 7 — 201 to 500
  - 8 — 501 to 1000

- **AMPLIFICATION FACTOR**
  - 1 — 0 to 10
  - 2 — 11 to 20
  - 3 — 21 to 30
  - 4 — 31 to 50
  - 5 — 51 to 100
  - 6 — 101 to 200
  - 7 — 201 to 500
  - 8 — 501 to 1000

- **VERSION**
  - Distinguishes tubes which, although alike as to number of electrodes and plate dissipation, are not necessarily interchangeable physically or electrically.

*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>250A</td>
</tr>
<tr>
<td>2.50A</td>
<td>2.240A</td>
</tr>
<tr>
<td>8020/100R</td>
<td>250R</td>
</tr>
<tr>
<td>2.150D</td>
<td>2-2000A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXTERNAL ANODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2X1000A</td>
</tr>
<tr>
<td>2X3000F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MERCURY VAPOR</th>
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</thead>
<tbody>
<tr>
<td>RX21A</td>
</tr>
<tr>
<td>KY21A</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**

<table>
<thead>
<tr>
<th>Peak Inverse</th>
<th>1000 volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-C Current</td>
<td>0.001 ampere</td>
</tr>
<tr>
<td>Plate Dissipation</td>
<td>0.1 watt</td>
</tr>
</tbody>
</table>

**Characteristics**

- Cathode: Oxide-coated, unipotential
- Heater: 5.0 volts
- Voltage: 0.3 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**

<table>
<thead>
<tr>
<th>Peak Inverse</th>
<th>800 volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Current</td>
<td>0.125 amperes</td>
</tr>
<tr>
<td>Plate Dissipation</td>
<td>100 watts</td>
</tr>
</tbody>
</table>

**Characteristics**

- Cathode: Oxide coated, unipotential
- Heater: 6.3 volts
- Voltage: 0.9 to 1.0 amperes
- Capacitance (Cpk): 3.1 to 3.8 pf
- Base: Special
- Socket: Special
- Max. Seal Temp.: 250 °C
- Max. Anode Core Temp.: 290 °C
- Length: 2.75 inches
- Diameter: 1.265 inches
- Net Weight: 2.5 ounces
2C39A

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

**PLATE DISSIPATION**
100 watts

**FREQUENCY FOR MAXIMUM RATINGS**
2500 MHz

**COOLING**
Forced Air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Heater Type</th>
<th>Power Supply</th>
<th>Drive Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C Radio-Frequency Power Amplifier</td>
<td>1000 0.125 100 2.0</td>
<td>800 0.08 6.1 27</td>
</tr>
<tr>
<td>C Plate Modulated Radio-Frequency Amplifier or Oscillator</td>
<td>600 0.10 70 2.0</td>
<td>600 0.065 5.0 16</td>
</tr>
<tr>
<td>C Radio-Frequency Oscillator</td>
<td>800 0.125 100 2.0</td>
<td>900 0.09 — 12</td>
</tr>
</tbody>
</table>

2C39WA

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

**PLATE DISSIPATION**
100 watts

**FREQUENCY FOR MAXIMUM RATINGS**
2500 MHz

**COOLING**
Forced Air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Heater Type</th>
<th>Power Supply</th>
<th>Drive Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C Radio-Frequency Power Amplifier</td>
<td>1000 0.125 100 2.0</td>
<td>800 0.08 6.1 27</td>
</tr>
<tr>
<td>C Plate Modulated Radio-Frequency Amplifier or Oscillator</td>
<td>600 0.10 70 2.0</td>
<td>600 0.065 5.0 16</td>
</tr>
<tr>
<td>C Radio-Frequency Oscillator</td>
<td>800 0.125 100 2.0</td>
<td>900 0.09 — 12</td>
</tr>
</tbody>
</table>

7211

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

**PLATE DISSIPATION**
100 watts

**FREQUENCY FOR MAXIMUM RATINGS**
2500 MHz

**COOLING**
Forced Air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Heater Type</th>
<th>Power Supply</th>
<th>Drive Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C Radio-Frequency Power Amplifier 500 MHz</td>
<td>2500 0.19 100 2</td>
<td>900 0.14 9 65</td>
</tr>
<tr>
<td>C Radio-Frequency Power Amplifier 7500 MHz</td>
<td>2500 0.19 100 2</td>
<td>900 0.14 — 30</td>
</tr>
</tbody>
</table>

7815/3CPN10A5

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

The electrical characteristics of the 3CPN10A5 are similar to those of the 3CX100A5. The nominal plate dissipation rating of 100 watts may be exceeded if sufficient additional cooling is provided to maintain the anode and seal temperatures below the specified limits.

**PLATE DISSIPATION**
10 watts

**FREQUENCY FOR MAXIMUM RATINGS**
3000 MHz

**COOLING**
Conduction or Forced Air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Heater Type</th>
<th>Power Supply</th>
<th>Drive Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C Plate-Pulsed Power Oscillator—3000 MHz</td>
<td>3.500 3.0 10 2</td>
<td>3.500 3.0 0.0025 1400</td>
</tr>
<tr>
<td>C Grid Pulsed Amplifier—1100 MHz</td>
<td>2500 3.0 10 2</td>
<td>2200 1.9 0.001 2000</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 convection and conduction to a suitable heat sink.

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

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Maximum Pulse Ratings</th>
<th>Typical Pulse Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Voltage (volts)</td>
<td>Plate Voltage Current (amps)</td>
<td>Plate Grid Diss (watts)</td>
</tr>
<tr>
<td>6.3 volts</td>
<td>3500</td>
<td>5.0</td>
</tr>
<tr>
<td>C Plate Pulsed Power Oscillator - 3000 MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.25 pf</td>
<td>2000</td>
<td>5.0</td>
</tr>
</tbody>
</table>

7289 / 3CX100A5

The 3CX100A5 ceramic and metal planar UHF triode is intended to supersede all tubes in the 2C39A family. Narrow mechanical tolerances plus exacting electrical testing assure tube-to-tube uniformity. The tube unilaterally replaces 2C39A's and other associated tube types in most equipments without requiring electrical or mechanical modification.

PLATE DISSIPATION: 300 watts
FREQUENCY FOR MAXIMUM RATINGS: 2500 MHz
COOLING: Forced Air

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Maximum Pulse Ratings</th>
<th>Typical Pulse Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Voltage (volts)</td>
<td>Plate Voltage Current (amps)</td>
<td>Plate Grid Diss (watts)</td>
</tr>
<tr>
<td>6.0 volts</td>
<td>1000</td>
<td>0.125</td>
</tr>
<tr>
<td>C Radio Frequency Power Amplifier and Oscillator - 500 MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.05 amperes</td>
<td>1000</td>
<td>0.125</td>
</tr>
<tr>
<td>C Plate Modulated Radio-Frequency Power Amplifier - 500 MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.035 pf</td>
<td>600</td>
<td>0.100</td>
</tr>
</tbody>
</table>

8250 / 3CX100F5

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

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

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Maximum Pulse Ratings</th>
<th>Typical Pulse Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Voltage (volts)</td>
<td>Plate Voltage Current (amps)</td>
<td>Plate Grid Diss (watts)</td>
</tr>
<tr>
<td>26.5 volts</td>
<td>1000</td>
<td>0.125</td>
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<tr>
<td>C Radio Frequency Power Amplifier and Oscillator - 500 MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.2 to 0.24 amperes</td>
<td>1000</td>
<td>0.125</td>
</tr>
<tr>
<td>C Plate Modulated Radio-Frequency Power Amplifier - 500 MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.035 pf</td>
<td>600</td>
<td>0.100</td>
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</table>

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 3CPX100A5 especially suitable for airborne applications.

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

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Maximum Pulse Ratings</th>
<th>Typical Pulse Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Voltage (volts)</td>
<td>Plate Voltage Current (amps)</td>
<td>Plate Grid Diss (watts)</td>
</tr>
<tr>
<td>6.0 volts</td>
<td>3,500</td>
<td>3.0</td>
</tr>
<tr>
<td>C Plate Pulsed Power Oscillator - 3000 MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.15 volts</td>
<td>2,000</td>
<td>3.0</td>
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</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.

<table>
<thead>
<tr>
<th>CLASS OF OPERATIONS</th>
<th>PLATE DISSIPATION (WATTS)</th>
<th>FREQUENCY FOR MAXIMUM RATINGS (KHZ)</th>
<th>COOLING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forced Air</td>
<td>100</td>
<td>2500</td>
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**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>MAXIMUM RATINGS</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Voltage (volts)</td>
</tr>
<tr>
<td>Grid-Pulsed RF Amplifier and 1100 MHz Oscillator</td>
<td>2500</td>
</tr>
</tbody>
</table>

*During Pulse*

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

<table>
<thead>
<tr>
<th>CLASS OF OPERATIONS</th>
<th>PLATE DISSIPATION (WATTS)</th>
<th>FREQUENCY FOR MAXIMUM RATINGS (KHZ)</th>
<th>COOLING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forced Air</td>
<td>100</td>
<td>3</td>
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**CHARACTERISTICS**

<table>
<thead>
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<th>Type of Service</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Voltage (volts)</td>
</tr>
<tr>
<td>RF Power Amplifier and Oscillator</td>
<td>2500</td>
</tr>
<tr>
<td>Grid-Pulsed RF Oscillator and Amplifier</td>
<td>2500</td>
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</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>CLASS OF OPERATIONS</th>
<th>PLATE DISSIPATION (WATTS)</th>
<th>FREQUENCY FOR MAXIMUM RATINGS (KHZ)</th>
<th>COOLING</th>
</tr>
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<tbody>
<tr>
<td>Forced Air</td>
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<td>3</td>
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**CHARACTERISTICS**

<table>
<thead>
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<th>Type of Service</th>
<th>MAXIMUM RATINGS</th>
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</thead>
<tbody>
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<td></td>
<td>Voltage (volts)</td>
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<tr>
<td>RF Power Amplifier and Oscillator</td>
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</tr>
<tr>
<td>Grid-Pulsed or Plate-Pulsed RF Oscillator and Amplifier</td>
<td>8000</td>
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**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. The pulse ratings are applicable to 70,000 feet altitude making the 8745 especially suitable for airborne applications.

<table>
<thead>
<tr>
<th>CLASS OF OPERATIONS</th>
<th>PLATE DISSIPATION (WATTS)</th>
<th>FREQUENCY FOR MAXIMUM RATINGS (KHZ)</th>
<th>COOLING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forced Air</td>
<td>100</td>
<td>2500</td>
<td></td>
</tr>
</tbody>
</table>

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>MAXIMUM RATINGS</th>
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<tbody>
<tr>
<td></td>
<td>Voltage (volts)</td>
</tr>
<tr>
<td>Plate-Pulsed Power Oscillator — 3000 MHz</td>
<td>3.500</td>
</tr>
<tr>
<td>Grid Pulsed Amplifier — 1100 MHz</td>
<td>2.000</td>
</tr>
</tbody>
</table>

---

**UHF**

**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.

<table>
<thead>
<tr>
<th>CLASS OF OPERATIONS</th>
<th>PLATE DISSIPATION (WATTS)</th>
<th>FREQUENCY FOR MAXIMUM RATINGS (KHZ)</th>
<th>COOLING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forced Air</td>
<td>100</td>
<td>2500</td>
<td></td>
</tr>
</tbody>
</table>

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>MAXIMUM RATINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Voltage (volts)</td>
</tr>
<tr>
<td>Grid-Pulsed RF Amplifier and 1100 MHz Oscillator</td>
<td>2500</td>
</tr>
</tbody>
</table>

*During Pulse*
TRIODES

8755
The 8755 is a miniature, frequency-stable planar triode for advanced airborne and space applications. Its 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 application. This tube will also perform well as a grid or a plate-pulsed amplifier or oscillator at frequencies up to at least 3000 MHz.

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

INTERNAL ANODE

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**

### 8755
- **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**: 0.06 pf

#### Maximum Ratings

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Grid Diss (watts)</th>
<th>Plate Diss (watts)</th>
<th>Drive Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C Grid-Pulsed Oscillator or Amplifier</td>
<td>8000</td>
<td>5.0*</td>
<td>150*</td>
<td>1.5</td>
<td>7000*</td>
</tr>
<tr>
<td></td>
<td>C Pulse Plate Oscillator or Amplifier</td>
<td>10,000</td>
<td>5.0*</td>
<td>150*</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>— Pulse Modulator or Amplifier</td>
<td>8000</td>
<td>5.0*</td>
<td>150*</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

**Note**: *With suitable cooler

### 8756
- **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**: 0.04 pf

#### Maximum Ratings

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Grid Diss (watts)</th>
<th>Plate Diss (watts)</th>
<th>Drive Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C RF Power Amplifier or Oscillator</td>
<td>2500</td>
<td>0.125</td>
<td>150*</td>
<td>1.5</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>C Grid-Pulsed Oscillator or Amplifier</td>
<td>2500</td>
<td>3.0*</td>
<td>150*</td>
<td>1.5</td>
<td>2000*</td>
</tr>
</tbody>
</table>

**Note**: *With suitable cooler

### 8757
- **Cathode**: Oxide coated, unipotential  
- **Heater**:  
  - **Voltage**: 6.3 volts  
  - **Current**: 1.3 amperes
- **Capacitances**:  
  - **Grid Cathode**: 0.5 pf  
  - **Grid Plate**: 2.25 pf  
  - **Plate Cathode**: 0.06 pf

#### Maximum Ratings

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Grid Diss (watts)</th>
<th>Plate Diss (watts)</th>
<th>Drive Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C RF Power Amplifier or Oscillator (2500 MHz)</td>
<td>2500</td>
<td>0.225</td>
<td>150*</td>
<td>1.5</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>C Grid Pulsed RF Amplifier or Oscillator</td>
<td>2500</td>
<td>5.0**</td>
<td>150*</td>
<td>1.5</td>
<td>1850</td>
</tr>
</tbody>
</table>

**Note**: *With suitable cooler

### 254W
- **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

#### Maximum Ratings

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Grid Diss (watts)</th>
<th>Plate Diss (watts)</th>
<th>Drive Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C RF Power Amplifier</td>
<td>4000</td>
<td>0.225</td>
<td>100</td>
<td>0.06</td>
<td>3000</td>
</tr>
<tr>
<td></td>
<td>C Telephony</td>
<td>3000</td>
<td>0.180</td>
<td>85</td>
<td>0.06</td>
<td>2500</td>
</tr>
</tbody>
</table>

**Note**: *Jumbo 4 pin JETEC AA 20
**TRIODES**

### INTERNAL ANODE

#### 5867A

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

- **PLATE DISSIPATION**: 350 watts
- **GRID DISSIPATION**: 20 watts
- **COOLING**: Radiation and Forced Air

#### 6569

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

- **PLATE DISSIPATION**: 750 watts
- **FREQUENCY FOR MAXIMUM RATINGS**: 60 MHz
- **COOLING**: Forced Air

#### 6580

The 6580 is a 400-watt high-mu power triode designed especially for grounded grid RF amplifier service, but is also capable of good performance in other applications. Because of its high amplification factor and high plate dissipation, the 6580 will give 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

#### 8163/3-400Z

The Eimac 3-400Z is a new zero bias triode intended for linear amplifier applications. This tube may be used as a Class B RF amplifier or as one of the stages of a push-pull Class AB RF amplifier or modulator. At a plate voltage of 3000 volts, 1 KW 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

#### 5867A

- **Filament**: Thoriated tungsten
- **Voltage**: 5.0 volts
- **Current**: 14.1 amperes
- **Capacitances**
  - Grid-Plate: 7.2 pf
  - Grid-Plate: 3.7 pf
  - Plate-Grid: 0.10 pf

#### 6569

- **Filament**: Thoriated tungsten
- **Voltage**: 5.0 volts
- **Current**: 14.5 amperes
- **Capacitances**
  - Grid-Plate: 7.6 pf
  - Grid-Plate: 3.9 pf
  - Plate-Filament: 0.10 pf

#### 6580

- **Filament**: Thoriated tungsten
- **Voltage**: 5.0 volts
- **Current**: 14.5 amperes
- **Capacitances**
  - Grid-Plate: 6.0 to 9.0 pf
  - Grid-Plate: 4.0 to 5.3 pf
  - Plate-Filament: 0.11 pf

---

### Typical Operation

#### 5-pin Metal Shell

- **Base**: Johnson 122-275
- **Voltage**: 170 °C
- **Maximum Plate Cap Temp**: 6.38 inches
- **Net Weight**: 8 ounces

---

### Operation

#### 5-pin Special

- **Base**: Eimac SK-410
- **Maximum Base Temp**: 200 °C
- **Maximum Plate Temp**: 275 °C
- **Maximum Diameter**: 5.25 inches
- **Net Weight**: 7 ounces

---

### Ratings

#### Single-Ended Rectifier

- **Rating**: 0.400
- **Power**: 3000 watts
- **Efficiency**: 88.5%
- **Temperature**: 100 °C

---

### Two tubes
### 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 twenty 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>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</td>
</tr>
<tr>
<td>RF Linear Amplifier, Grounded Grid</td>
<td>4000 0.400 500 20</td>
<td>3000 0.370 30 750</td>
</tr>
<tr>
<td>AF Amplifier or Modulator</td>
<td>4000 0.400 500 20</td>
<td>3000 0.770 25 1420*</td>
</tr>
<tr>
<td>RF Power Amplifier or Oscillator</td>
<td>4000 0.350 500 20</td>
<td>3500 0.300 22 850</td>
</tr>
<tr>
<td>RF Power Amplifier Plate Modulated</td>
<td>3000 0.275 320 20</td>
<td>3000 0.275 25 640</td>
</tr>
</tbody>
</table>

*Two tubes*

#### EXTERNAL ANODE ■ FORCED-AIR COoled

**8164 / 3-1000Z**

The Elmac 3-1000Z is a zero-bias triode intended for linear amplifier applications. This tube may be used as a Class-B R-F amplifier in either the 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>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</td>
</tr>
<tr>
<td>RF Linear Amplifier and Modulator</td>
<td>3000 0.800 1000 50</td>
<td>3000 1.340 42 2570*</td>
</tr>
<tr>
<td>Radio-Frequency Linear Power Amplifier - SSB Grounded Grid</td>
<td>3000 0.800 1000 50</td>
<td>3000 0.670 65 1360</td>
</tr>
<tr>
<td>Radio-Frequency Power Amplifier and Oscillator</td>
<td>6000 0.700 1000 50</td>
<td>6000 0.760 57 3300</td>
</tr>
<tr>
<td>Plate Modulated R-F Power Amplifier</td>
<td>4500 0.550 670 50</td>
<td>4500 0.500 35 1765</td>
</tr>
</tbody>
</table>

*Two tubes*

**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**: 270 MHz
- **Cooling**: Forced Air

**Characteristics**

<table>
<thead>
<tr>
<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</td>
</tr>
<tr>
<td>Radio-Frequency Linear Power Amplifier, Grounded Grid - SSB</td>
<td>2500 1.0 1000 45</td>
<td>2500 0.800 65 12500</td>
</tr>
</tbody>
</table>

*Two tubes*

#### 8161/3CX2500A3

This popular high-power triode is widely employed in AM, FM, and TV service. Its coaxial filament and grid terminals assure 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>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</td>
</tr>
<tr>
<td>Audio-Frequency Power Amplifier and Oscillator</td>
<td>6000 2.5 2500 150</td>
<td>6000 3.0 113 13,000*</td>
</tr>
<tr>
<td>Radio-Frequency Power Amplifier and Oscillator</td>
<td>6000 2.5 2500 150</td>
<td>6000 1.8 136 10,000</td>
</tr>
<tr>
<td>Radio-Frequency Power Amplifier Grounded Grid 45 to 110 mc</td>
<td>4000 2.0 2500 150</td>
<td>4000 0.85 1900 7500</td>
</tr>
<tr>
<td>Plate Modulated Radio-Frequency Power Amplifier</td>
<td>5000 2.0 1670 150</td>
<td>5000 1.25 115 5300</td>
</tr>
</tbody>
</table>

*Two tubes*
TRIODES

EXTERNAL ANODE FORCED-AIR COOLED

8251/3CX2500F3
This compact, high power triode has electrical characteristics identical to those of the 3CX2500A3. Coaxial hosing is not used, however, and special socketing is not required; conventional grid and filament leads are attached. This tube is frequently employed in industrial-frequency or other radio-frequency equipments operating below 30 MHz.

**Plate Dissipation**: 2500 watts
**Frequency for Maximum Ratings**: 30 MHz
**Cooling**: Forced Air

**Characteristics**

- **Filament**: Thoriated tungsten
- **Voltage**: 7.5 volts
- **Current**: 49 to 54 amperes (max)
- **Capacitance**:
  - Grid-Filament: 29.2 to 40.2 pf
  - Grid-Plate: 16.8 to 32.2 pf
  - Plate-Filament: 0.6 to 1.2 pf
- **Maximum Ratings**:
  - **Maximum Seal Temp.**: 175 °C
  - **Maximum Anode-Cathode Temp.**: 175 °C
  - **Maximum Height**: 38.0 inches
  - **Maximum Diameter**: 3.625 inches
  - **Net Weight**: 7.5 pounds

**Class of Operation**

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Grid Diss. (watts)</th>
<th>Plate Current (amps)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B: Audio-Freq. Power Amplifier and Modulator</td>
<td>6000</td>
<td>2.5</td>
<td>150</td>
<td>5000</td>
<td>2.0</td>
<td>150</td>
</tr>
<tr>
<td>C: Modulated Radio-Freq. Power Amplifier</td>
<td>5000</td>
<td>2.0</td>
<td>150</td>
<td>5000</td>
<td>2.0</td>
<td>150</td>
</tr>
</tbody>
</table>

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

**Plate Dissipation**: 2500 watts
**Frequency for Maximum Ratings**: 75 MHz
**Cooling**: Forced Air

**Characteristics**

- **Filament**: Thoriated tungsten
- **Voltage**: 7.5 volts
- **Current**: 53 amperes (max)
- **Capacitance**:
  - Grid-Filament: 40.2 pf (max)
  - Grid-Plate: 23.7 pf (max)
  - Plate-Filament: 1.2 pf (max)
- **Maximum Ratings**:
  - **Maximum Seal Temp.**: 250 °C
  - **Maximum Height**: 18.437 inches
  - **Maximum Diameter**: 4.156 inches
  - **Net Weight**: 6.5 pounds

**Class of Operation**

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Grid Diss. (watts)</th>
<th>Plate Current (amps)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B: Audio-Freq. Power Amplifier and Modulator</td>
<td>6000</td>
<td>2.5</td>
<td>150</td>
<td>5000</td>
<td>2.0</td>
<td>150</td>
</tr>
<tr>
<td>C: RF Industrial Oscillator</td>
<td>6000</td>
<td>2.5</td>
<td>250</td>
<td>5000</td>
<td>2.0</td>
<td>150</td>
</tr>
</tbody>
</table>

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.

**Plate Dissipation**: 3000 watts
**Grid Dissipation**: 50 watts
**Cooling**: Forced Air

**Characteristics**

- **Filament**: Thoriated tungsten
- **Voltage**: 7.5 volts
- **Current**: 49 to 54 amperes (max)
- **Capacitance**:
  - Grid-Filament: 29 pf
  - Grid-Plate: 17 pf
  - Plate-Filament: 2.5 pf
- **Maximum Ratings**:
  - **Maximum Seal Temp.**: 175 °C
  - **Maximum Anode-Core Temp.**: 175 °C
  - **Maximum Height**: 8.594 inches
  - **Maximum Diameter**: 4.156 inches
  - **Net Weight**: 6.75 pounds

**Class of Operation**

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Grid Diss. (watts)</th>
<th>Plate Current (amps)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB: Audio-Freq. Power Amplifier and Modulator</td>
<td>6000</td>
<td>2.5</td>
<td>3000</td>
<td>6000</td>
<td>2.65</td>
<td>0.0</td>
</tr>
</tbody>
</table>

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.

**Plate Dissipation**: 3000 watts
**Grid Dissipation**: 50 watts
**Cooling**: Forced Air

**Characteristics**

- **Filament**: Thoriated tungsten
- **Voltage**: 1.5 volts
- **Current**: 49 to 54 amperes (max)
- **Capacitance**:
  - Grid-Filament: 29 pf
  - Grid-Plate: 17 pf
  - Plate-Filament: 2.5 pf
- **Maximum Ratings**:
  - **Maximum Seal Temp.**: 175 °C
  - **Maximum Anode-Core Temp.**: 175 °C
  - **Maximum Diameter**: 4.156 inches
  - **Net Weight**: 7.5 pounds

**Class of Operation**

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Grid Diss. (watts)</th>
<th>Plate Current (amps)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB: Audio-Freq. Power Amplifier and Modulator</td>
<td>6000</td>
<td>2.5</td>
<td>3000</td>
<td>6000</td>
<td>2.65</td>
<td>0.0</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.

**Plates Dissipation**
- 3000 watts
- Frequency for maximum ratings: 75 MHz
- Cooling: Forced Air

**Characteristics**
- Filament: Thoriated tungsten
- Voltage: 7.5 volts
- Current: 175 volts
- Capacitance:
  - Grid-Plate: 51 amperes
  - Grid-Plate: 38 pf
  - Grid-Plate: 14 pf
  - Plate: 5000

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.

**Plates Dissipation**
- 3000 watts
- Frequency for maximum ratings: 30 MHz
- Cooling: Forced Air

**Characteristics**
- Filament: Thoriated tungsten
- Voltage: 7.5 volts
- Current: 175 volts
- Capacitance: 175 amperes
- Maximum Height: 38 pf
- Net Weight: 250 pounds

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.

**Plates Dissipation**
- 5000 watts
- Frequency for maximum ratings: 90 MHz
- Cooling: Forced Air

**Characteristics**
- Filament: Thoriated tungsten
- Voltage: 7.5 volts
- Current: 7.5 volts
- Capacitance: 78 amperes
- Maximum Height: 53 pf
- Net Weight: 4.0 pounds

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.

**Plates Dissipation**
- 5000 watts
- Frequency for maximum ratings: 90 MHz
- Cooling: Forced Air

**Characteristics**
- Filament: Thoriated tungsten
- Voltage: 7.5 volts
- Current: 28 amperes
- Capacitance: 53 pf
- Net Weight: 150 pounds

---

**Notes:**
- Two tubes.

---

**Table:**

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>B</th>
<th>B</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio-Frequency Power Amplifier or Modulator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage (volts)</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
</tr>
<tr>
<td>Current (amps)</td>
<td>7.5</td>
<td>7.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Plate Diss. (watts)</td>
<td>3000</td>
<td>3000</td>
<td>3000</td>
</tr>
<tr>
<td>Grid Diss. (watts)</td>
<td>225</td>
<td>225</td>
<td>225</td>
</tr>
<tr>
<td>Drive Diss. (watts)</td>
<td>4000</td>
<td>4000</td>
<td>4000</td>
</tr>
<tr>
<td>Output Power (watts)</td>
<td>120</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Net Weight (pounds)</td>
<td>11,000</td>
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<td>11,000</td>
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**Table:**

<table>
<thead>
<tr>
<th>Type of Service</th>
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<tbody>
<tr>
<td>RF Industrial Oscillator</td>
<td></td>
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<tr>
<td>Voltage (volts)</td>
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<tr>
<td>Current (amps)</td>
<td>3.0</td>
</tr>
<tr>
<td>Plate Diss. (watts)</td>
<td>5000</td>
</tr>
<tr>
<td>Grid Diss. (watts)</td>
<td>0.5</td>
</tr>
<tr>
<td>Drive Diss. (watts)</td>
<td>9000</td>
</tr>
<tr>
<td>Output Power (watts)</td>
<td>208</td>
</tr>
<tr>
<td>Net Weight (pounds)</td>
<td>16,600</td>
</tr>
</tbody>
</table>
**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).

**PLATE DISSIPATION** 17,000 watts  
**GRID DISSIPATION** 100 watts  
**FREQUENCY FOR MAXIMUM RATINGS** 140 MHz  
**COOLING** Forced Air

### CHARACTERISTICS

<table>
<thead>
<tr>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Service</strong></td>
<td><strong>Plate Voltage (volts)</strong></td>
</tr>
<tr>
<td>AB: Audio-Frequency Power Amplifier</td>
<td>7000</td>
</tr>
<tr>
<td>C: Radio Frequency Industrial Oscillator</td>
<td>5000</td>
</tr>
<tr>
<td>A: Voltage Regulator Service</td>
<td>7000 **</td>
</tr>
</tbody>
</table>

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

### 8159 / 3CX10,000A3

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

**PLATE DISSIPATION** 17,000 watts  
**GRID DISSIPATION** 250 watts  
**FREQUENCY FOR MAXIMUM RATINGS** 140 MHz  
**COOLING** Forced Air

### CHARACTERISTICS

<table>
<thead>
<tr>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Service</strong></td>
<td><strong>Plate Voltage (volts)</strong></td>
</tr>
<tr>
<td>C: Radio Frequency Industrial Oscillator</td>
<td>7000</td>
</tr>
<tr>
<td>AB: Radio Frequency Linear Power Amplifier - SSB Grounded Grid</td>
<td>7000</td>
</tr>
<tr>
<td>C: Radio Frequency Power Amplifier - Grounded Grid</td>
<td>7000</td>
</tr>
</tbody>
</table>

**Plate-Modulated R-F Power Amplifier**

<table>
<thead>
<tr>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Service</strong></td>
<td><strong>Plate Voltage (volts)</strong></td>
</tr>
<tr>
<td>C: Power Amplifier</td>
<td>5500</td>
</tr>
</tbody>
</table>

### 3CX10,000H3

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

**PLATE DISSIPATION** 10,000 watts  
**GRID DISSIPATION** 700 watts  
**FREQUENCY FOR MAXIMUM RATINGS** 90 MHz  
**COOLING** Forced Air

### CHARACTERISTICS

<table>
<thead>
<tr>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Service</strong></td>
<td><strong>Plate Voltage (volts)</strong></td>
</tr>
<tr>
<td>C: RF Industrial Oscillator</td>
<td>10,000</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 pull push audio amplifier under class B zero bias conditions will deliver up to 45 kilowatts of useful output power.

**PLATE DISSIPATION** 12,000 watts  
**GRID DISSIPATION** 500 watts  
**FREQUENCY FOR MAXIMUM RATINGS** 140 MHz  
**COOLING** Forced Air

### CHARACTERISTICS

<table>
<thead>
<tr>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Service</strong></td>
<td><strong>Plate Voltage (volts)</strong></td>
</tr>
<tr>
<td>B: Audio-Frequency Power Amplifier</td>
<td>7000</td>
</tr>
<tr>
<td>B: Radio Frequency Linear Power Amplifier, Grounded Grid - SSB</td>
<td>7000</td>
</tr>
<tr>
<td>C: Radio Frequency Power Amplifier or Oscillator</td>
<td>7000</td>
</tr>
<tr>
<td>C: Plate-Modulated R-F Power Amplifier</td>
<td>5500</td>
</tr>
</tbody>
</table>

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

PLATE DISSIPATION: 15,000 watts
GRID DISSIPATION: 500 watts
FREQUENCY FOR MAXIMUM RATINGS: 100 MHz
COOLING: Forced Air

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grid-Plate</strong></td>
</tr>
<tr>
<td>400 to 580 pt</td>
</tr>
<tr>
<td><strong>Grid-Plate</strong></td>
</tr>
<tr>
<td>30.0 to 38.0 pt</td>
</tr>
<tr>
<td><strong>Plate-Filament</strong></td>
</tr>
<tr>
<td>1.2 to 1.5 pt</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Maximum Ratings</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plate Voltage</strong></td>
</tr>
<tr>
<td>152 to 168 volts</td>
</tr>
<tr>
<td><strong>Current</strong></td>
</tr>
<tr>
<td>6.3 volts</td>
</tr>
<tr>
<td><strong>Diss. (watts)</strong></td>
</tr>
<tr>
<td>1500</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Typical Operation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drive Power</strong></td>
</tr>
<tr>
<td>4.0 (amps)</td>
</tr>
<tr>
<td><strong>Output Power</strong></td>
</tr>
<tr>
<td>2000 (watts)</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.

PLATE DISSIPATION: 15,000 watts
GRID DISSIPATION: 500 watts
FREQUENCY FOR MAXIMUM RATINGS: 90 MHz
COOLING: Forced Air

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grid-Plate</strong></td>
</tr>
<tr>
<td>58.0 pf</td>
</tr>
<tr>
<td><strong>Grid-Plate</strong></td>
</tr>
<tr>
<td>38.0 pf</td>
</tr>
<tr>
<td><strong>Plate-Filament</strong></td>
</tr>
<tr>
<td>15.0 pf</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Maximum Ratings</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plate Voltage</strong></td>
</tr>
<tr>
<td>172 volts</td>
</tr>
<tr>
<td><strong>Current (amps)</strong></td>
</tr>
<tr>
<td>172</td>
</tr>
<tr>
<td><strong>Diss. (watts)</strong></td>
</tr>
<tr>
<td>1500</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Typical Operation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drive Power</strong></td>
</tr>
<tr>
<td>4.0 (amps)</td>
</tr>
<tr>
<td><strong>Output Power</strong></td>
</tr>
<tr>
<td>2000 (watts)</td>
</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.

PLATE DISSIPATION: 20,000 watts
GRID DISSIPATION: 500 watts
FREQUENCY FOR MAXIMUM RATINGS: 110 MHz
COOLING: Forced Air

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grid-Plate</strong></td>
</tr>
<tr>
<td>65 to 75 pf</td>
</tr>
<tr>
<td><strong>Grid-Plate</strong></td>
</tr>
<tr>
<td>38.0 to 48.0 pf</td>
</tr>
<tr>
<td><strong>Plate-Filament</strong></td>
</tr>
<tr>
<td>2.0 to 2.6 pf</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Maximum Ratings</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plate Voltage</strong></td>
</tr>
<tr>
<td>100 volts</td>
</tr>
<tr>
<td><strong>Current (amps)</strong></td>
</tr>
<tr>
<td>160</td>
</tr>
<tr>
<td><strong>Diss. (watts)</strong></td>
</tr>
<tr>
<td>2000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Typical Operation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drive Power</strong></td>
</tr>
<tr>
<td>4.0 (amps)</td>
</tr>
<tr>
<td><strong>Output Power</strong></td>
</tr>
<tr>
<td>2000 (watts)</td>
</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.

PLATE DISSIPATION: 20,000 watts
GRID DISSIPATION: 500 watts
FREQUENCY FOR MAXIMUM RATINGS: 110 MHz
COOLING: Forced Air

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grid-Plate</strong></td>
</tr>
<tr>
<td>65 to 75 pf</td>
</tr>
<tr>
<td><strong>Grid-Plate</strong></td>
</tr>
<tr>
<td>38.0 to 48.0 pf</td>
</tr>
<tr>
<td><strong>Plate-Filament</strong></td>
</tr>
<tr>
<td>2.0 to 2.6 pf</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Maximum Ratings</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plate Voltage</strong></td>
</tr>
<tr>
<td>100 volts</td>
</tr>
<tr>
<td><strong>Current (amps)</strong></td>
</tr>
<tr>
<td>160</td>
</tr>
<tr>
<td><strong>Diss. (watts)</strong></td>
</tr>
<tr>
<td>2000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Typical Operation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drive Power</strong></td>
</tr>
<tr>
<td>4.0 (amps)</td>
</tr>
<tr>
<td><strong>Output Power</strong></td>
</tr>
<tr>
<td>2000 (watts)</td>
</tr>
</tbody>
</table>
TRIODES

EXTERNAL ANODE ▶ FORCED-AIR COOLED

6697A

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

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

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage (volts)</td>
<td>Plate Voltage</td>
<td>Plate Voltage</td>
</tr>
<tr>
<td>Current (amps)</td>
<td>Plate Dist. (watts)</td>
<td>Grid Dist. (watts)</td>
</tr>
<tr>
<td>B 16,000</td>
<td>11.0</td>
<td>35,000</td>
</tr>
<tr>
<td>C 16,000</td>
<td>11.0</td>
<td>35,000</td>
</tr>
<tr>
<td>C 10,000</td>
<td>8.5</td>
<td>23,000</td>
</tr>
</tbody>
</table>

*Two tubes

EXTERNAL ANODE ▶ WATER COOLED

8240/3CW5000A1

The 3CW5000A1 is a water-cooled version of the 3CW3000A1 and is useful in audio service when forced 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

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage (volts)</td>
<td>Plate Voltage</td>
<td>Plate Voltage</td>
</tr>
<tr>
<td>Current (amps)</td>
<td>Plate Dist. (watts)</td>
<td>Grid Dist. (watts)</td>
</tr>
<tr>
<td>AB 6000</td>
<td>2.5</td>
<td>5000</td>
</tr>
</tbody>
</table>

*Two tubes

8241/3CW5000F1

The 3CW5000F1 is a water-cooled version of the 3CW3000F1. 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

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage (volts)</td>
<td>Plate Voltage</td>
<td>Plate Voltage</td>
</tr>
<tr>
<td>Current (amps)</td>
<td>Plate Dist. (watts)</td>
<td>Grid Dist. (watts)</td>
</tr>
<tr>
<td>AB 6000</td>
<td>2.5</td>
<td>5000</td>
</tr>
</tbody>
</table>

*Two tubes

8242/3CW5000A3

This water-cooled version of the 3CW2500A3 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

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage (volts)</td>
<td>Plate Voltage</td>
<td>Plate Voltage</td>
</tr>
<tr>
<td>Current (amps)</td>
<td>Plate Dist. (watts)</td>
<td>Grid Dist. (watts)</td>
</tr>
<tr>
<td>AB 6000</td>
<td>2.5</td>
<td>5000</td>
</tr>
</tbody>
</table>

*Two tubes
8243/3CW5000F3

The 3CW5000F3 is electrically identical to the 3CK2500F3 except for plate-dissipation rating. Its water-cooled anode with 5000 watt capability makes it an ideal choice for equipment where high power must be dissipated or where it is more convenient to cool with water than forced air. Conventional grid and filament leads allow installation without special socketing.

**PLATE DISSIPATION**
5000 watts

**FREQUENCY FOR MAXIMUM RATINGS**
75 MHz

**COOLING**
Water and Forced Air

---

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

---

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 plate dissipation with low water flow and pressure drop. A power input of 30,000 watts is permissible up to 90 MHz. Plentiful reserve emission is available from its 560 watt filament. A grid contact flange is provided for bolting the tube directly to a strap or grid deck, eliminating the need for a socket.

**PLATE DISSIPATION**
10,000 watts

**FREQUENCY FOR MAXIMUM RATINGS**
90 MHz

**COOLING**
Water and Forced Air

---

3CW10,000H3

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

**PLATE DISSIPATION**
10,000 watts

**FREQUENCY FOR MAXIMUM RATINGS**
90 MHz

**COOLING**
Water and Forced Air

---

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Filament: Thoriated tungsten Voltage</th>
<th>7.5 volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>53 amperes (max)</td>
</tr>
<tr>
<td>Capacitances: Grid-Filament</td>
<td>40.2 pf</td>
</tr>
<tr>
<td>Grid-Plate</td>
<td>24.2 pf</td>
</tr>
<tr>
<td>Plate-Filament</td>
<td>1.20 pf</td>
</tr>
</tbody>
</table>

**Maximum Ratings**

<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>Plate Voltage</th>
<th>Plate Current</th>
<th>Plate Diss.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>RF Industrial Oscillator</td>
<td>6000</td>
<td>2.5</td>
<td>5000</td>
<td>150</td>
<td>5000</td>
<td>2.26</td>
<td>59</td>
<td>8000</td>
<td>2.08</td>
</tr>
<tr>
<td>B</td>
<td>Audio-Frequency Power Amplifier and Modulator</td>
<td>6000</td>
<td>1.5</td>
<td>5000</td>
<td>150</td>
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**Typical Operation**

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<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage</th>
<th>Plate Current</th>
<th>Plate Power</th>
<th>Grid Voltage</th>
<th>Grid Current</th>
<th>Grid Power</th>
<th>Plate Voltage</th>
<th>Plate Current</th>
<th>Plate Power</th>
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<tr>
<td>A</td>
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**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>FILAMENT: THORIATED TUNGSTEN</th>
<th>CHARACTERISTICS</th>
<th>BASE</th>
<th>COAXIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOLTAGE</td>
<td>7.5 V</td>
<td>MAXIMUM SEAL TEMP.</td>
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<tr>
<td>CURRENT</td>
<td>53 AMPERES (MAX)</td>
<td>MAXIMUM HEIGHT</td>
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<tr>
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<td>40.2 PF</td>
<td>MAXIMUM DIAMETER</td>
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<td>24.2 PF</td>
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<td>PLATE-FILAMENT</td>
<td>1.20 PF</td>
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**CHARACTERISTICS**

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<td>VOLTAGE</td>
<td>7.5 V</td>
<td>MAXIMUM SEAL TEMP.</td>
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</tr>
<tr>
<td>CURRENT</td>
<td>78 AMPERES (MAX)</td>
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<td>17.5 INCHES</td>
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<tr>
<td>CAPACITANCES: GRID-FILAMENT</td>
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<td>MAXIMUM DIAMETER</td>
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<td>GRID-PLATE</td>
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**CHARACTERISTICS**

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<thead>
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<th>FILAMENT: THORIATED TUNGSTEN</th>
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<tr>
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<td>MAXIMUM DIAMETER</td>
<td>6.05 INCHES</td>
</tr>
<tr>
<td>GRID-PLATE</td>
<td>25 PF</td>
<td>NET WEIGHT</td>
<td>10 POUNDS</td>
</tr>
<tr>
<td>PLATE-FILAMENT</td>
<td>1.5 PF</td>
<td></td>
<td></td>
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**CHARACTERISTICS**

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<thead>
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<th>BASE</th>
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<td>53 PF</td>
<td>MAXIMUM DIAMETER</td>
<td>5.090 INCHES</td>
</tr>
<tr>
<td>GRID-PLATE</td>
<td>25 PF</td>
<td>NET WEIGHT</td>
<td>10 POUNDS</td>
</tr>
<tr>
<td>PLATE-FILAMENT</td>
<td>1.5 PF</td>
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</tbody>
</table>
**TRIODES**

**EXTERNAL ANODE II WATER COOLED**

### 3CW20,000A1

The Eimac 3CW20,000A1 is a ceramic-metal low-mu power triode intended for use as a linear amplifier in audio or rf applications requiring high output power with zero driving power. It features a large 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 75 kw of output power (two tubes, push-pull).

**Characteristics**

- **Filament:** Thoriated tungsten
- **Voltage:** 7.5 volts
- **Current:** 94.0 to 104.0 amperes
- **Capacitance (Grounded Filament):** Grid-Filament: 45.0 to 57.0 pf, Grid-Plate: 25.0 to 32.0 pf, Plate-Filament: 2.4 to 4.2 pf
- **Device:** 3CW20,000A1

### 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 145 MHz, also as a grounded-grid FM amplifier developing 20 kilowatts useful output power.

**Characteristics**

- **Filament:** Thoriated tungsten
- **Voltage:** 7.5 volts
- **Current:** 94 to 104 amperes
- **Capacitance (Grounded Filament):** Grid-Filament: 41.0 to 58.0 pf, Grid-Plate: 30.0 to 38.0 pf, Plate-Filament: 1.20 to 1.50 pf
- **Device:** 3CW20,000A3

### 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 characteristic 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.

**Characteristics**

- **Filament:** Thoriated tungsten
- **Voltage:** 7.5 volts
- **Current:** 94 to 104.0 amperes
- **Capacitance (Grounded Filament):** Grid-Filament: 63 pf, Grid-Plate: 61 pf, Plate-Filament: 0.055 pf
- **Device:** 3CW20,000A7

### 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.

**Characteristics**

- **Filament:** Thoriated tungsten
- **Voltage:** 7.5 volts
- **Current:** 104.0 amperes (max)
- **Capacitance:** Grid-Filament: 58 pf, Plate-Plate: 30 pf, Plate-Filament: 1.5 pf
- **Device:** 3CW20,000H3

---

**TABLES AND DIAGRAMS:**

- **Characteristics:** Triodes, including specifications and ratings.
- **Diagrams:** Showing tube configurations and connections.

---

**COOLING:**

- **Water and Forced Air**

---

*Two tubes.*
TRIODES
EXTERNAL ANODE II 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 Me with operation at slightly reduced ratings to 140 Me.

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

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
</tr>
<tr>
<td>Current</td>
</tr>
<tr>
<td>Capacitances (Grounded Filament)</td>
</tr>
<tr>
<td>Grid-Filament</td>
</tr>
<tr>
<td>Grid-Plate</td>
</tr>
<tr>
<td>Plate-Filament</td>
</tr>
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<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
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<td><strong>Plate</strong></td>
<td><strong>Voltage</strong></td>
<td><strong>Current</strong></td>
</tr>
<tr>
<td>(volts)</td>
<td>(amps.)</td>
<td>(watts)</td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Oscillator or Amplifier</td>
<td>10,000</td>
</tr>
<tr>
<td>AB</td>
<td>Radio-Frequency Linear Power Amplifier</td>
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<tr>
<td>C</td>
<td>Plate Modulated RF Power Amplifier</td>
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3CW30,000H3
The 3CW30,000H3 is a water-cooled ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its water cooled anode is conservatively rated at 30,000 watts plate dissipation with low water flow and pressure drop. Input of 60,000 watts is permissible up to 90 MHz. The grid structure is rated at 500 watts.

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

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
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<tbody>
<tr>
<td>Voltage</td>
</tr>
<tr>
<td>Current</td>
</tr>
<tr>
<td>Capacitances</td>
</tr>
<tr>
<td>Grid-Filament</td>
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<tr>
<td>Grid-Plate</td>
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<td>Plate-Filament</td>
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<table>
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<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plate</strong></td>
<td><strong>Voltage</strong></td>
<td><strong>Current</strong></td>
</tr>
<tr>
<td>(volts)</td>
<td>(amps.)</td>
<td>(watts)</td>
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<td>RF Industrial Oscillator</td>
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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 RATINGS**
90 MHz
**COOLING**
Water and Forced Air

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
</tr>
<tr>
<td>Current</td>
</tr>
<tr>
<td>Capacitances</td>
</tr>
<tr>
<td>Grid-Filament</td>
</tr>
<tr>
<td>Grid-Plate</td>
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<tr>
<td>Plate-Filament</td>
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<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
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<tbody>
<tr>
<td><strong>Plate</strong></td>
<td><strong>Voltage</strong></td>
<td><strong>Current</strong></td>
</tr>
<tr>
<td>(volts)</td>
<td>(amps.)</td>
<td>(watts)</td>
</tr>
<tr>
<td>C</td>
<td>RF Industrial Oscillator</td>
<td>12,000</td>
</tr>
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</table>

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

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

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
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<tbody>
<tr>
<td>Voltage</td>
</tr>
<tr>
<td>Current</td>
</tr>
<tr>
<td>Capacitances (Grounded Filament)</td>
</tr>
<tr>
<td>Grid-Filament</td>
</tr>
<tr>
<td>Grid-Plate</td>
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<tr>
<td>Plate-Filament</td>
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<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
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<tbody>
<tr>
<td><strong>Plate</strong></td>
<td><strong>Voltage</strong></td>
<td><strong>Current</strong></td>
</tr>
<tr>
<td>(volts)</td>
<td>(amps.)</td>
<td>(watts)</td>
</tr>
<tr>
<td>B</td>
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<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier or Oscillator</td>
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</tr>
<tr>
<td>C</td>
<td>Plate-Modulated RF Power Amplifier</td>
<td>10,000</td>
</tr>
</tbody>
</table>

*Two tubes.
TRIODES

EXTERNAL ANODE VAPOR COOLED

3CV30,000A1
The 3CV30,000A1 is a vapor-cooled triode with characteristics similar to the 3CV10,000A1. It has low the value and is recommended for Class AB1, 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 (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>Plate-Filament Diss. (watts)</th>
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</thead>
<tbody>
<tr>
<td>AB2</td>
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<td>7000</td>
<td>5.0</td>
<td>30,000</td>
<td>100</td>
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<td></td>
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</table>

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, or 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 (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid Voltage (volts)</th>
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<tbody>
<tr>
<td>C</td>
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<td>10,000</td>
<td>6.0</td>
<td>30,000</td>
<td>100</td>
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<td></td>
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</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 9R-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 (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>Plate-Filament Diss. (watts)</th>
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<tbody>
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<td>C</td>
<td>RF Industrial Oscillator</td>
<td>10,000</td>
<td>6.0</td>
<td>30,000</td>
<td>500</td>
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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 (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>Plate-Filament Diss. (watts)</th>
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<tbody>
<tr>
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<td>11.0</td>
<td>80,000</td>
<td>750</td>
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<td></td>
<td></td>
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<tr>
<td>C</td>
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<td>16,000</td>
<td>11.0</td>
<td>80,000</td>
<td>750</td>
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<td></td>
<td></td>
</tr>
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<td>C</td>
<td>Plate-Modulated RF Power Amplifier</td>
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<td>53,000</td>
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</table>

*Two tubes
## 8165/4-65A

A general purpose cathode 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 170 MHz.

### PLATE DISSIPATION
65 watts

### FREQUENCY FOR MAXIMUM RATINGS
150 MHz

### COOLING
Connection and Radiation

### CHARACTERISTICS
- **Filament** - Thoriated tungsten
- **Voltage** - 6.0 volts
- **Current** - 3.2 to 3.8 amperes
- **Capacitances Grounded Filament - Input** - 6.0 to 7.3 pF
- **Output** - 16 to 7.6 pf
- **Feed Through** - 0.12 pf

### Maximum Ratings

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Screen Voltage (volts)</th>
<th>Screen Current (amps)</th>
<th>Drive Voltage (volts)</th>
<th>Drive Current (amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>3500</td>
<td>0.150</td>
<td>65</td>
<td>10</td>
<td>750</td>
<td>0.070</td>
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<tr>
<td>AB</td>
<td>3500</td>
<td>0.150</td>
<td>65</td>
<td>10</td>
<td>3000</td>
<td>0.065</td>
</tr>
<tr>
<td>AB</td>
<td>3500</td>
<td>0.150</td>
<td>65</td>
<td>10</td>
<td>5</td>
<td>1800</td>
</tr>
<tr>
<td>AB</td>
<td>3500</td>
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<td>65</td>
<td>10</td>
<td>5</td>
<td>3000</td>
</tr>
<tr>
<td>C</td>
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<table>
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<th>Typical Operation</th>
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<th>Plate Current (amps)</th>
<th>Screen Voltage (volts)</th>
<th>Screen Current (amps)</th>
<th>Drive Voltage (volts)</th>
<th>Drive Current (amps)</th>
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<tbody>
<tr>
<td>AB</td>
<td>3500</td>
<td>0.150</td>
<td>65</td>
<td>10</td>
<td>750</td>
<td>0.070</td>
</tr>
<tr>
<td>AB</td>
<td>3500</td>
<td>0.150</td>
<td>65</td>
<td>10</td>
<td>3000</td>
<td>0.065</td>
</tr>
<tr>
<td>AB</td>
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<td>0.150</td>
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<td>10</td>
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<td>1800</td>
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<tr>
<td>AB</td>
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<td>0.150</td>
<td>65</td>
<td>10</td>
<td>5</td>
<td>3000</td>
</tr>
<tr>
<td>C</td>
<td>3500</td>
<td>0.150</td>
<td>65</td>
<td>10</td>
<td>5</td>
<td>250</td>
</tr>
</tbody>
</table>

### Two Tubes

## 4D21/4-125A

This 125-watt general purpose power tetrode is usable at maximum ratings to 170 MHz. Its low interelectrode capacitances make it ideal for r-f amplifier service but it is equally useful in audio applications.

### PLATE DISSIPATION
125 watts

### FREQUENCY FOR MAXIMUM RATINGS
170 MHz

### COOLING
Radiation and Forced Air

### CHARACTERISTICS
- **Filament** - Thoriated tungsten
- **Voltage** - 5.0 volts
- **Current** - 6.0 to 7.0 amperes
- **Capacitances Grounded Filament - Input** - 9.2 to 12.4 pf
- **Outlet** - 2.3 to 2.5 pf
- **Feed Through** - 0.07 pf

### Maximum Ratings

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Screen Voltage (volts)</th>
<th>Screen Current (amps)</th>
<th>Drive Voltage (volts)</th>
<th>Drive Current (amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>3000</td>
<td>0.450</td>
<td>250</td>
<td>35</td>
<td>3000</td>
<td>0.320</td>
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<td>250</td>
<td>35</td>
<td>3000</td>
<td>0.320</td>
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<tr>
<td>AB</td>
<td>3000</td>
<td>0.450</td>
<td>250</td>
<td>35</td>
<td>3000</td>
<td>0.320</td>
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<td>3000</td>
<td>0.450</td>
<td>250</td>
<td>35</td>
<td>3000</td>
<td>0.320</td>
</tr>
</tbody>
</table>

### Two Tubes

## 6155

This 125 watt general purpose power tetrode is usable at maximum ratings to 170 MHz. Its low interelectrode capacitances make it ideal for r-f amplifier service but it is equally useful in audio applications.

### PLATE DISSIPATION
125 watts

### FREQUENCY FOR MAXIMUM RATINGS
170 MHz

### COOLING
Forced Air

### CHARACTERISTICS
- **Filament** - Thoriated tungsten
- **Voltage** - 5.0 volts
- **Current** - 6.0 to 7.0 amperes
- **Capacitances Grounded Filament - Input** - 0.26 to 0.25 pf
- **Outlet** - 0.01 pf

### Maximum Ratings

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Screen Voltage (volts)</th>
<th>Screen Current (amps)</th>
<th>Drive Voltage (volts)</th>
<th>Drive Current (amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>3000</td>
<td>0.225</td>
<td>125</td>
<td>20</td>
<td>2500</td>
<td>0.225</td>
</tr>
<tr>
<td>AB</td>
<td>3000</td>
<td>0.225</td>
<td>125</td>
<td>20</td>
<td>3000</td>
<td>0.225</td>
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<td>3500</td>
<td>0.225</td>
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<td>AB</td>
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<td>125</td>
<td>20</td>
<td>4000</td>
<td>0.225</td>
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<tr>
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<td>125</td>
<td>20</td>
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<td>0.225</td>
<td>125</td>
<td>20</td>
<td>4000</td>
<td>0.152</td>
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</tbody>
</table>

### Two Tubes

## 5D22/4-250A

The Elmac 4-250A employs 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 audio applications but it is often used in audio-amplifier work as well.

### PLATE DISSIPATION
250 watts

### FREQUENCY FOR MAXIMUM RATINGS
110 megacycles

### COOLING
Radiation and Forced Air

### CHARACTERISTICS
- **Filament** - Thoriated tungsten
- **Voltage** - 13.5 to 14.7 amperes
- **Current** - 13.5 to 14.7 amperes
- **Capacitances Grounded Filament - Input** - 10.7 to 14.5 pf
- **Outlet** - 0.14 pf

### Maximum Ratings

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Screen Voltage (volts)</th>
<th>Screen Current (amps)</th>
<th>Drive Voltage (volts)</th>
<th>Drive Current (amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
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<td>250</td>
<td>35</td>
<td>3000</td>
<td>0.413</td>
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<td>4000</td>
<td>0.165</td>
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<td>AB</td>
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<td>0.473</td>
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<td>AB</td>
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<td>0.312</td>
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<td>C</td>
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<td>250</td>
<td>35</td>
<td>3000</td>
<td>0.413</td>
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<tr>
<td>C</td>
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<tr>
<td>C</td>
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<td>0.350</td>
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<td>0.473</td>
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<tr>
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<td>0.350</td>
<td>250</td>
<td>35</td>
<td>4000</td>
<td>0.312</td>
</tr>
</tbody>
</table>

### Two Tubes
6156

The Eimac 6156 is a compact, ruggedly constructed power triode 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  

CHARACTERISTICS:  
Filament: Thoriated tungsten  
Voltage: 50 volts  
Current: 13.5 to 14.5 amperes  
Capacitances (Grounded Filament):  
Input: 10.7 to 14.5 pf  
Output: 3.7 to 5.0 pf  
Feed Through: 0.14 pf  
Base: 5 pin metal shell  
Socket: Eimac SK-400  
Max Base Seal Temp: 120°C  
Max Envelope Temp: 125°C  
Max Height: 6.88 inches  
Max Diameter: 3.56 inches  
Net Weight: 8 ounces  

Typical Operation:  
Plate Voltage: 600 volts  
Plate Current: 0.412 amp  
Plate Dissipation: 75 watts  
Screen Voltage: 510 volts  
Screen Current: 0.185 amp  
Screen Dissipation: 45 watts  
Grid Voltage: 2.5 volts  
Grid Current: 0.170 amp  
Grid Dissipation: 400 watts  

*Two Tubes

8438/4-400A

A 400 watt general-purpose feedback beam tetrode, the 4-400A is ideal for any r-f application below 1.1 MHz. Its ratings allow an input power up to 1400 watts in such service or in others where power r-f frequencies or audio frequencies are to be amplified.  

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

CHARACTERISTICS:  
Filament: Thoriated tungsten  
Voltage: 50 volts  
Current: 13.5 to 14.5 amperes  
Capacitances (Grounded Filament):  
Input: 10.7 to 14.5 pf  
Output: 4.7 to 6.6 pf  
Feed Through: 0.12 pf  
Base: 5 pin metal shell  
Socket: Eimac SK-400  
Max Base Seal Temp: 120°C  
Max Envelope Temp: 125°C  
Max Height: 6.88 inches  
Max Diameter: 3.56 inches  
Net Weight: 8 ounces  

Typical Operation:  
Plate Voltage: 750 volts  
Plate Current: 0.585 amp  
Plate Dissipation: 1540 watts  
Screen Voltage: 270 volts  
Screen Current: 0.250 amp  
Screen Dissipation: 660 watts  
Grid Voltage: 5 volts  
Grid Current: 0.350 amp  
Grid Dissipation: 1200 watts  

*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 1.5 MHz.  

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

CHARACTERISTICS:  
Filament: Thoriated tungsten  
Voltage: 50 volts  
Current: 14 to 14.5 amperes  
Capacitances (Grounded Filament):  
Input: 12.5 pf  
Output: 4.7 pf  
Feed Through: 0.12 pf  
Base: 5 pin special  
Socket: Johnson 172-275  
Max Base Seal Temp: 120°C  
Max Envelope Temp: 225°C  
Max Height: 5.962 inches  
Max Diameter: 3.422 inches  
Net Weight: 6.7 ounces  

Typical Operation:  
Plate Voltage: 500 volts  
Plate Current: 0.350 amp  
Plate Dissipation: 1540 watts  
Screen Voltage: 270 volts  
Screen Current: 0.250 amp  
Screen Dissipation: 660 watts  
Grid Voltage: 5.9 volts  
Grid Current: 0.350 amp  
Grid Dissipation: 1200 watts  

*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  

CHARACTERISTICS:  
Filament: Thoriated tungsten  
Voltage: 50 volts  
Current: 14 to 14.5 amperes  
Capacitances (Grounded Filament):  
Input: 12.5 pf  
Output: 5.5 pf  
Feed Through: 0.12 pf  
Base: EIA AS 07  
Socket: Eimac SK-400  
Max Base Seal Temp: 120°C  
Max Envelope Temp: 225°C  
Max Height: 6.375 inches  
Max Diameter: 3.562 inches  
Net Weight: 9 ounces  

Typical Operation:  
Plate Voltage: 500 volts  
Plate Current: 0.350 amp  
Plate Dissipation: 1540 watts  
Screen Voltage: 270 volts  
Screen Current: 0.250 amp  
Screen Dissipation: 660 watts  
Grid Voltage: 5 volts  
Grid Current: 0.350 amp  
Grid Dissipation: 1200 watts  

*Two Tubes
**TETRODES**

**INTERNAL ANODE**

**8166/4-1000A**

The high power general-purpose tetrode is capable of dissipating 1000 watts from its redunantly 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. The heater is designed for use with a designated heater if the tube is to be used for broadcast. The 8166/4-1000A is also suitable for use in general-purpose tetrode circuits or with suitable auxiliary circuits where the tube is operated at below 500 MHz. Suitable tetrode circuits include those utilizing 8166/4-1000A in places where the tetrode is to be used with the same circuits as the 8166/4-1000A.

**PLATE DISSIPATION**

**FREQUENCY FOR MAXIMUM RATINGS**

**COOLING**

**CHARACTERISTICS**

- **Fragmented Tungsten**
  - Voltage: 1.5 volts
  - Current: 2.3 to 2.7 amperes
  - Capacities: Grounded Filaments: Input: 28.8 to 32.4 pf, Output: 3.8 to 4.0 gf
  - Feed Through: 0.35 pf

- **Base**
  - Material: 5-pin metal shell
  - Socket: Eimac SK 500
  - Base Seal Temp: 150°C
  - Max Diameter: 5.75 inches
  - Net Weight: 15 pounds

**Typical Operation**

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

**EXTERNAL ANODE CONDUCTION COOLED**

**4CN15A**

A special version of the popular 4CN100A, intended for use in low power applications where cheap and rugged design is ideal. The 4CN15A is suitable for use in broadcast systems where a general-purpose tetrode is required. The 4CN15A has a maximum plate dissipation of 15 watts.

**PLATE DISSIPATION**

**FREQUENCY FOR MAXIMUM RATINGS**

**COOLING**

**CHARACTERISTICS**

- **Cathode**: Oxide-coated, unpotential
  - Voltage: 6.0 volts
  - Current: 2.6 to 3.1 amperes
  - Capacities: Grounded Cathode: Input: 50 to 65 pf, Output: 65 to 75 pf
  - Feed Through: 0.065 pf

- **Base**
  - Material: Special, bleedblock
  - Socket: Eimac SK 100 series
  - Maximum Seal Temp: 350°C
  - Max Anode Core Temp: 350°C
  - Max Height: 2.5 inches
  - Max Diameter: 0.944 inches
  - Net Weight: 2.5 ounces

**Typical Operation**

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

**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 easily cooled circuits.

**PLATE DISSIPATION**

**FREQUENCY FOR MAXIMUM RATINGS**

**COOLING**

**CHARACTERISTICS**

- **Cathode**: Oxide-coated, unpotential
  - Voltage: 26.5 volts
  - Current: 0.45 to 0.57 amperes
  - Capacities: Grounded Cathode: Input: 28.7 to 36.7 pf, Output: 4.0 to 5.0 pf
  - Feed Through: 0.065 pf

- **Base**
  - Material: Special, bleedblock
  - Socket: Eimac SK 100 series
  - Maximum Heat Sink: 25°C
  - Max Anode Core Temp: 25°C
  - Max Height: 1.085 inches
  - Max Diameter: 1.085 inches

**Typical Operation**

<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</td>
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<td></td>
<td>Screen Voltage</td>
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<td>Drive Voltage</td>
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<td>Drive Power</td>
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<td>Drive (watts)</td>
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<td>Drive (watts)</td>
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<td>Drive (watts)</td>
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</tbody>
</table>

**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**

**FREQUENCY FOR MAXIMUM RATINGS**

**COOLING**

**CHARACTERISTICS**

- **Cathode**: Oxide-coated, unpotential
  - Voltage: 6.0 volts
  - Current: 2.6 amperes
  - Capacities: Grounded Cathode: Input: 15.5 pf, Output: 5.0 pf
  - Feed Through: 0.04 pf

- **Base**
  - Material: Special, bleedblock
  - Socket: Eimac SK 100 series
  - Maximum Heat Sink: 25°C
  - Max Anode Core Temp: 25°C
  - Max Height: 2.445 inches
  - Max Diameter: 1.635 inches
  - Net Weight: 5.5 ounces

**Typical Operation**

<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</td>
<td>Current (amps)</td>
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<td></td>
<td>Screen Voltage</td>
<td>Current (amps)</td>
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<td>Grid Voltage</td>
<td>Current (amps)</td>
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<td>Drive Voltage</td>
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<td>Drive Power</td>
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<td>Drive (watts)</td>
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</tbody>
</table>

**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 this flat surface is 1/2" x 1/2".** Thermal design should ensure that for maximum expected anode dissipation, heat input through the beryllium oxide wafer will be high enough to dissipate that power with no more than 225°C temperature difference at the interface between anode and beryllium oxide wafer.
TETRODES
EXTERNAL ANODE ■ CONDUCTION COOLED

4CS25OH and 4CS250HA
The 4CS250H and 4CS250HA are conduct-cooled tetodes having the basic electrical characteristics of the 4CX130A. These tubes are intended primarily for class AB linear service. They have high transconductance and produce full output with extremely low drive power.

PLATE DISSIPATION

COOLING

250 watts

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater: 4CX125C 4CX125F
Voltage: 6.0 volts
Current: 6.0 amps (max)
Capacitances (Grounded Cathode): Net Weight 4 ounces
Feed Through: 0.065 pf

EXTERNAL ANODE ■ FORCED-AIR COOLED

4CX125C and 4CX125F
The 4CX125C is a horizontally-finned version of the 4CX125A and is intended for use where transverse air cooling is desired. It is also useful where anode power is dissipated by local incineration. Its electrical characteristics are identical to those of the 4CX130A with the exception of plate dissipation which is established at 125 watts with air cooling. It is ideally suited for applications where shock and vibration are experienced. The 4CX125F is an identical tube with 36V 250 C heater.

PLATE DISSIPATION

COOLING

175 watts

FREQUENCY FOR MAXIMUM RATINGS

500 MHz

COOLING

FREQUENCY FOR MAXIMUM RATINGS

1200 MHz

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater: 4CX125C 4CX125F
Socket Eimac 2948 000
Voltage: 6.0 volts
Current: 6.0 to 6.456 amps
Capacitances (Grounded Cathode): Net Weight 4 ounces
Feed Through: 0.065 pf

6816
The 6816 is a small coaxial power tetrode designed for UHF power amplifier and oscillator service up to 1700 MHz. Coaxial construction makes this tube suitable for cavity circuits.

PLATE DISSIPATION

COOLING

115 watts

FREQUENCY FOR MAXIMUM RATINGS

1200 MHz

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater: 6.0 watts
Voltage: 6.0 volts
Current: 266 amps (max)
Capacitances (Grounded Cathode): Net Weight 2.2 ounces
Feed Through: 0.065 pf

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 6816 except for heater voltage.

PLATE DISSIPATION

COOLING

115 watts

FREQUENCY FOR MAXIMUM RATINGS

1200 MHz

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater: 6.0 watts
Voltage: 6.0 volts
Current: 480 to 575 amps (max)
Capacitances (Grounded Cathode): Net Weight 2.2 ounces
Feed Through: 0.065 pf
**TETRODES**

**EXTERNAL ANODE & FORCED-AIR COOLED**

### 7034/4X150A and 7035/4X150D

The voltage of external anode tetrodes, and an Elmer 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 26.5 volt heater version of the 4X150A.

**PLATE DISSIPATION**
- 250 watts

**FREQUENCY FOR MAXIMUM RATINGS**
- 150 MHz

**COOLING**
- Forced Air

**CHARACTERISTICS**
- Cathode: Oxide-coated, unipotential
- Heater: 4X150A
- Voltage: 9.5 volts
- Current: 2.9 to 4.2 amperes
- Capacitances ([Grounded Cathode])
  - Input: 0.50 inches
  - Output: 2.90 inches
  - Feed Through: 0.05 pf

### 8172/4X150G

One of the foremost in external anode coaxial base tetrodes, the 4X150G continues to deliver long life and high reliability in VHF and UHF applications. It is intended for use in CW service at frequencies up to 1250 MHz and is useful in pulse service at frequencies up to 1500 MHz.

**PLATE DISSIPATION**
- 250 watts

**FREQUENCY FOR MAXIMUM RATINGS**
- 500 MHz CW

**COOLING**
- Forced Air

**CHARACTERISTICS**
- Cathode: Oxide-coated, unipotential
- Heater: 4X150G
- Voltage: 2.5 volts
- Current: 6.2 to 7.3 amperes
- Capacitances ([Grounded Cathode])
  - Input: 25.0 to 29.0 pf
  - Output: 4.0 to 4.5 pf
  - Feed Through: 0.05 pf

### 8296/4X150R and 8297/4X150S

This Elmac tetrode is a ruggedized version of the famous 4X150A. It incorporates construction features found in the 4CX150A and 4CX250U resulting in a tube capable of operating at full voltages in environments where moderate shock and vibration are present. The 4X150R will replace the 4X150A in nearly all applications since it is electrically identical except for a small (1.75 pf) increase in input capacitance limits; in feed-through capacitance (0.01 pf) and in heater current (0.1 amperes). The 4X150S is identical but incorporates a 26.5 volt heater for mobile or airborne applications.

**PLATE DISSIPATION**
- 250 watts

**FREQUENCY FOR MAXIMUM RATINGS**
- 150 MHz

**COOLING**
- Forced Air

**CHARACTERISTICS**
- Cathode: Oxide-coated, unipotential
- Heater: 4X150R
- Voltage: 6.0 volts
- Current: 2.3 to 2.9 amperes
- Capacitances ([Grounded Cathode])
  - Input: 1.50 inches
  - Output: 1.70 inches
  - Feed Through: 0.06 pf

### 7203/4CX250B and 7204/4CX250F

A 250 watt general purpose external anode tetrode featuring ceramic metal construction. This compact power tube can be used at max. ratings at frequencies to 500 MHz. It is recommended for use in equipments of new design. The 4CX250B is identical in all respects to the 4CX250F heater rated at 26.5 volts.

**PLATE DISSIPATION**
- 250 watts

**FREQUENCY FOR MAXIMUM RATINGS**
- 500 MHz

**COOLING**
- Forced Air

**Characteristics**
- Cathode: Oxide-coated, unipotential
- Heater: 4CX250B
- Voltage: 6.0 volts
- Current: 2.3 to 2.6 amperes
- Capacitances ([Grounded Cathode])
  - Input: 4.0 to 5.0 inches
  - Output: 6.0 to 6.5 pf
  - Feed Through: 0.06 pf

---

### Table: Specifications

<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>Plate Voltage (watts)</td>
<td>Plate Current (amps)</td>
<td>Plate Diss (watts)</td>
<td>Screen Current (amps)</td>
</tr>
<tr>
<td>A/B. Audio Frequency Power Amplifier and Modulator</td>
<td>2000 250 12</td>
<td>—</td>
<td>2000 250 0 0.50* 0 600*</td>
</tr>
<tr>
<td>A/B. Radio Frequency Linear Power Amplifier and Modulator</td>
<td>2000 250 12</td>
<td>—</td>
<td>2000 250 0 0.50* 0 300</td>
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<tr>
<td>C. Radio Frequency Power Amplifier and Oscillator</td>
<td>2000 250 12</td>
<td>2</td>
<td>2000 250 0 2.9 350</td>
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<tr>
<td>C. Plate Modulated RF Power Amplifier</td>
<td>1600 250 165 12</td>
<td>1.2</td>
<td>1500 250 0 2.8 1.7 235</td>
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</table>

**Notes:**
- Max. Dissipation in watts.
- *Two tubes.*
**TETRODES**

**EXTERNAL ANODE & FORCED-AIR COOLED**

**8621/4CX250FG**

The 4CX250FG is essentially a 4CX250F manufactured for extra stability in airborne linear amplifier service.

**PLATE DISSIPATION**

FREQUENCY FOR MAXIMUM RATINGS 250 watts

COOLING 500 MHz Forced Air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathode</td>
<td>Oxide-coated, unipotential</td>
</tr>
<tr>
<td>Heater</td>
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<tr>
<td>Voltage</td>
<td>60 volts</td>
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<tr>
<td>Current</td>
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<tr>
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<tr>
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</tr>
<tr>
<td>Feed Through</td>
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</table>

**7580W / 4CX250R**

4CX250R is a ruggedized version of the 7580. It is intended for use in environments where shock and vibration levels preclude the use of such a tube as the 4CX250, and where the use of a higher perveance tetrode is indicated. The 4CX250R is designed to operate with maximum rated plate and screen voltages applied in equipment where shock and/or vibration is experienced.

**PLATE DISSIPATION**

FREQUENCY FOR MAXIMUM RATINGS 250 watts

COOLING 500 MHz Forced Air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathode</td>
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<td>Heater</td>
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</tr>
<tr>
<td>Voltage</td>
<td>60 volts</td>
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<tr>
<td>Current</td>
<td>0.62 amperes</td>
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<tr>
<td>Capacitance (Grounded Cathode)</td>
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</tr>
<tr>
<td>Output</td>
<td>5.0 pf</td>
</tr>
<tr>
<td>Feed Through</td>
<td>0.06 pf</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 250 watts

COOLING 500 MHz Forced Air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Parameter</th>
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<tr>
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<tr>
<td>Voltage</td>
<td>60 volts</td>
</tr>
<tr>
<td>Current</td>
<td>0.62 amperes</td>
</tr>
<tr>
<td>Capacitance</td>
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<tr>
<td>Output</td>
<td>5.0 pf</td>
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<tr>
<td>Feed Through</td>
<td>0.06 pf</td>
</tr>
</tbody>
</table>

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

These coaxial base tetrodes are particularly useful as a CW RF amplifier between 500 and 1200 MHz. In pulse applications, the useful frequency is above 1500 MHz. The 4CX250K employs a 6 0 volt heater while the 4CX250M uses a 25 volt heater.

**PLATE DISSIPATION**

FREQUENCY FOR MAXIMUM RATINGS 250 watts

COOLING 500 MHz Forced Air

**CHARACTERISTICS**

<table>
<thead>
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<td>Heater</td>
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<td>Voltage</td>
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<td>Current</td>
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<td>Capacitance</td>
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<td>Output</td>
<td>5.0 pf</td>
</tr>
<tr>
<td>Feed Through</td>
<td>0.06 pf</td>
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**Maximum Ratings**

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<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
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</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>Plate Current</td>
<td>Plate Screen</td>
</tr>
<tr>
<td>(volts)</td>
<td>(amps)</td>
<td>(volts)</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------</td>
<td>-----------------</td>
</tr>
</tbody>
</table>
TETRODES

EXTERNAL ANODE  \|  FORCED-AIR COOLED

4CX250K

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 30W is available at 0.005 duty.

**Plate Dissipation:** 250 watts

**Frequency for Maximum Ratings:**

**Cooling:** Forced Air

**Characteristics:**
- **Cathode:** Oxide coated, unpotential
- **Heater:** 6.6 volts
- **Current:** 3.3 to 3.9 amperes
- **Capacitances:** Grounded Grid: Input 1.4 to 1.5 pf, Output 3.9 to 4.5 pf
- **Feed Through:** 0.01 pf
- **Base:** Special coaxial
- **Max. Seat Temp.:** 250 °C
- **Max. Anode Core Temp.:** 250 °C
- **Max. Height:** 2.813 inches
- **Max. Diameter:** 1.660 inches
- **Net Weight:** 4 ounces

**Typical Operation:**
- **G Grid-Pulsed Amplifier:** 450 MHz / 250 usec pulses
  - **Power:** 5.500 0 250 300 12
  - **Current:** 1.000 0.250 0.005 10.000

8167/4CX300A

This rugged ceramic metal tetrode with unique breakback base has electrical characteristics similar to other tubes in the 4CX150 and 4CX250 families but is especially suited for service in severe environments. Its unique internal construction assures reliable operation at acceleration levels up to 20 g's. Suitable for service from dc to 500 MHz, the 4CX300A is first choice for use in new equipment where shock and vibration are expected.

**Plate Dissipation:** 300 watts

**Frequency for Maximum Ratings:**

**Cooling:** Forced Air

**Characteristics:**
- **Cathode:** Oxide coated, unpotential
- **Heater:** 6.6 volts
- **Current:** 2.6 to 3.3 amperes
- **Capacitances:** Grounded Grid: Input 25 to 33 pf, Output 35 to 45 pf
- **Feed Through:** 0.06 pf
- **Base:** Special breakback
- **Socket:** Eimac 5A7-100 series
- **Max. Seat Temp.:** 225 °C
- **Max. Anode Core Temp.:** 250 °C
- **Max. Height:** 2.5 inches
- **Max. Diameter:** 1.65 inches
- **Net Weight:** 4 ounces

**Typical Operation:**
- **AB:** Audio Frequency Power Amplifier and Modulator
  - **Power:** 2,000 0.4 400 8
  - **Current:** 750 400 0.75 0 850
- **AB:** Audio Frequency Linear Power Amplifier - 8SB
  - **Power:** 2,000 0.4 400 8
  - **Current:** 2,500 850 0 450
- **C:** Ratio Frequency Power Amplifier and Oscillator
  - **Power:** 2,000 0.4 400 8
  - **Current:** 400 250 0.4 3.8 600
- **C:** Plate Modulated R.F. Power Amplifier
  - **Power:** 2,000 0.3 250 8
  - **Current:** 800 250 0.3 1.7 300

4CX300Y

This special version of the 4CX300A has a higher plate current rating which allows 80 per cent more input power. Physically identical to the 4CX300A, the Eimac 4CX300Y is attractive for general use wherever a compact high power tetrode is indicated.

**Plate Dissipation:** 400 watts

**Frequency for Maximum Ratings:**

**Cooling:** Forced Air

**Characteristics:**
- **Cathode:** Oxide coated, unpotential
- **Heater:** 6.6 volts
- **Current:** 3.00 to 3.85 amperes
- **Capacitances:** Grounded Grid: Input 30.0 to 38.0 pf, Output 39.0 to 45.0 pf
- **Feed Through:** 0.01 pf
- **Base:** Special breakback
- **Socket:** Eimac 5A7-100 series
- **Max. Seat Temp.:** 225 °C
- **Max. Anode Core Temp.:** 250 °C
- **Max. Height:** 2.5 inches
- **Max. Diameter:** 1.65 inches
- **Net Weight:** 4 ounces

**Typical Operation:**
- **AB:** Audio Frequency Power Amplifier and Modulator
  - **Power:** 2,000 0.4 400 8
  - **Current:** 2,000 850 0 450
- **AB:** Audio Frequency Linear Power Amplifier - 8SB
  - **Power:** 2,000 0.4 400 8
  - **Current:** 400 250 0.4 3.8 600
- **C:** Ratio Frequency Power Amplifier and Oscillator
  - **Power:** 2,000 0.4 400 8
  - **Current:** 800 250 0.3 1.7 300

8072

The 8072 is a conventional ceramic and metal power tetrode designed for use in audio frequency power amplifier, oscillator and linear R.F. power amplifier service.

**Plate Dissipation:** See Note

**Frequency for Maximum Ratings:**

**Cooling:** Conduction

**Characteristics:**
- **Cathode:** Oxide coated, unpotential
- **Heater:** 11.5 volts
- **Current:** 1.3 amperes
- **Capacitances:** Grounded Grid: Input 1.0 to 1.3 pf, Output 3.0 to 6.0 pf
- **Feed Through:** 0.01 pf
- **Base:** 31-pin
- **Socket:** Microfil CH64-2
- **Max. Seat Temp.:** 250 °C
- **Max. Anode Core Temp.:** 250 °C
- **Max. Height:** 2.26 inches
- **Max. Diameter:** 1.436 inches
- **Net Weight:** 2 ounces

**Typical Operation:**

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

**EXTERNAL ANODE II 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

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathode Oxide-coated, unipotential</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Heater 4CX500B/4CX600F</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Voltage 6.0</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Current 5.6</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Capacitances</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Input</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Output</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Feed-Through</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Max. Diameter</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Weight</td>
<td>Yoke Special breechblock</td>
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<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>Radio Frequency Power Amplifier and Oscillator</td>
<td>Plate Voltage (volts)</td>
<td>Plate Screen Voltage (volts)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plate Screen Diss. Diss. (watts)</td>
<td>Drive Output Power (watts)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2400 0.250</td>
<td>105 5.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1000* 200 0.30</td>
<td>5.0 165</td>
</tr>
<tr>
<td>AB</td>
<td>Linear Radio Frequency Amplifier</td>
<td>Plate Voltage (volts)</td>
<td>Plate Screen Voltage (volts)</td>
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<td></td>
<td></td>
<td>Plate Screen Diss. Diss. (watts)</td>
<td>Drive Output Power (watts)</td>
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<tr>
<td></td>
<td></td>
<td>2400 0.100 150</td>
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<tr>
<td></td>
<td></td>
<td>1500** 250 0.210</td>
<td>0.3 170</td>
</tr>
</tbody>
</table>

*In grid circuit at 470 MHz

**8321/4CX350A and 8322/4CX350F**

These tubes are externally identical to the 4CX350F but contain more rugged internal construction. These compact radial beam tetrodes have good output characteristics at 450 watts. These tubes are intended primarily for Class AB linear service having high transconductance and allowing full output with extremely low drive requirements. The 4CX350A and 4CX350F differ only in heater voltages.

**PLATE DISSIPATION** 350 watts

**FREQUENCY FOR MAXIMUM RATINGS** 500 MHz

**COOLING** Forced Air

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Cathode Oxide-coated, unipotential</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Heater 4CX500B/4CX600F</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Voltage 6.0</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Current 5.6</td>
<td>Yoke Special breechblock</td>
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<tr>
<td>Capacitances</td>
<td>Yoke Special breechblock</td>
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<td>Input</td>
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<th>Maximum Ratings</th>
<th>Typical Operation</th>
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<tbody>
<tr>
<td>AB</td>
<td>Audio Frequency Power Amplifier and Modulator</td>
<td>Plate Voltage (volts)</td>
<td>Plate Screen Voltage (volts)</td>
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<tr>
<td></td>
<td></td>
<td>Plate Screen Diss. Diss. (watts)</td>
<td>Drive Output Power (watts)</td>
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<tr>
<td></td>
<td></td>
<td>3000 0.4</td>
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<td></td>
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<td>2400 0.54*</td>
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<td></td>
<td></td>
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<td>Drive Output Power (watts)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3000 0.600</td>
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<tr>
<td></td>
<td></td>
<td>2000 0.270</td>
<td>0 600</td>
</tr>
</tbody>
</table>

*Two tubes

**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** 800 MHz

**COOLING** Forced Air

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
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<tbody>
<tr>
<td>Cathode Oxide-coated, unipotential</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Heater 4CX500B/4CX600F</td>
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<tr>
<td>Voltage 6.0</td>
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<td>Current 5.6</td>
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<tr>
<td>Output</td>
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<tr>
<td>Feed-Through</td>
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<tr>
<td>Max. Diameter</td>
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<td></td>
<td>Plate Screen Diss. Diss. (watts)</td>
<td>Drive Output Power (watts)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3000 0.600</td>
<td>600 15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2500 0.585</td>
<td>1.0 1000</td>
</tr>
</tbody>
</table>

**4CX600J**

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

**PLATE DISSIPATION** 600 watts (max.)

**COOLING** Forced Air

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathode Oxide-coated, unipotential</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Heater 4CX500B/4CX600F</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Voltage 6.0</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Current 5.6</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Capacitances</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Input</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Output</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Feed-Through</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Max. Diameter</td>
<td>Yoke Special breechblock</td>
</tr>
<tr>
<td>Weight</td>
<td>Yoke Special breechblock</td>
</tr>
</tbody>
</table>

<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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<tr>
<td>AB</td>
<td>Radio Frequency Linear Amplifier</td>
<td>Plate Voltage (volts)</td>
<td>Plate Screen Voltage (volts)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plate Screen Diss. Diss. (watts)</td>
<td>Drive Output Power (watts)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3000 0.6</td>
<td>600 15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2000 0.585</td>
<td>1.0 1000</td>
</tr>
</tbody>
</table>

*In grid driven circuit at 470 MHz

Note: Use a bypassed cathode resistor of approximately 11 ohms.
8168/4CX1000A

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

**PLATE DISSIPATION**

1000 watts

**COOLING**

110 MHz Forced Air

**CHARACTERISTICS**

- **Cathode**: Oxide coated, unipotential
- **Heater**: 6 watts
- **Voltage**: 5.0 volts
- **Current**: 8.1 to 9.9 amperes
- **Capacitances (Grounded Cathode)**: Input: 1.25 pf, Output: 3.37 pf
- **Maximum**: 2.85 inches
- **Net Weight**: 27 ounces

---

8352/4CX1000K

This high power ceramic metal tube is electrically identical to the 4CX1000A, but gives improved performance at UHF due to its solid-plate construction. A ceramic-metal plate tube 161/2 inches long, with a market degree, gives stable UHF operation as a class AB amplifier.

**PLATE DISSIPATION**

1000 watts

**COOLING**

Forced Air

**CHARACTERISTICS**

- **Cathode**: Oxide coated, unipotential
- **Base**: Ring and breechblock
- **Voltage**: 5.0 volts
- **Current**: 1.8 to 2.2 amperes
- **Capacitances (Grounded Cathode)**: Input: 1.25 pf, Output: 3.37 pf
- **Maximum**: 2.85 inches
- **Net Weight**: 27 ounces

---

4CX1500A

The 4CX1500A is a compact, high power ceramic and metal tube. 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 ideal for use as a RF linear amplifier, a Class AB audio amplifier, or a Class C power amplifier, plate modulated amplifier, or a pulse modulator.

**PLATE DISSIPATION**

1500 watts

**COOLING**

110 MHz Forced Air

**CHARACTERISTICS**

- **Filament**: Throatized filament
- ** Voltage**: 5.0 volts
- **Current**: 38 to 42 amperes
- **Capacitances (Grounded Filament)**: Input: 1.25 pf, Output: 3.37 pf
- **Net Weight**: 33.70 inches
- **Net Weight**: 78 ounces

---

8660/4CX1500B

The 4CX1500B is a ceramic metal, forced air cooled, radial beam tube with a rated plate dissipation of 1500 watts. It is a low pressure, high current tube specifically designed for exceptionally low intermodulation distortion and low grid leakage. The low distortion characteristics make the tube suitable for RF and wide band linear amplifier service.

**PLATE DISSIPATION**

1500 watts

**COOLING**

Forced Air

**CHARACTERISTICS**

- **Cathode**: Oxide coated, unipotential
- **Voltage**: 6.0 volts
- **Current**: 11 amperes
- **Capacitances (Grounded Cathode)**: Input: 0.3 pf, Output: 12.8 pf
- **Feed Through**: 0.33 pf
- **Net Weight**: 27 ounces

---

(Tables and diagrams are not included in this text representation.)
**TETRODES**

**EXTERNAL ANODE II 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**
3000 watts

**COOLING FREQUENCY FOR MAXIMUM RATINGS**
150 MHz

**CHARACTERISTICS**
- Filament: Thoria-lined tungsten
- Voltage: 8.0 volts
- Current: 43.5 amperes
- Capacitances (grounded filament): Base: Special, ring and screenblock: 43.5 amperes
- Max. Seal Temp: 250 °C
- Max. Anode Core Temp: 250 °C
- Feed Through: 1.494 (max)
- Max. Diameter: 4.63 inches
- Net Weight: 5.5 pounds

**Max. Ratings**
- Plate Voltage: 5000 volts
- Plate Current: 250 amperes
- Grid Voltage: 500 volts
- Grid Current: 1000 amperes

**Typical Operation**
- Plate Voltage: 850 volts
- Plate Current: 6.5 amperes


**8710/4CX5000A**
This high power ceramic and metal tetrode features high class AB output power at audio and radio frequencies. It is also an excellent choice for AM or FM commercial service where high efficiency class C operation is desired. Its modern and straightforward design makes it preferred for use in new equipment.

**PLATE DISSIPATION**
5000 watts

**COOLING FREQUENCY FOR MAXIMUM RATINGS**
30 MHz

**CHARACTERISTICS**
- Filament: Thoria-lined tungsten
- Voltage: 7.5 volts
- Current: 73 to 78 amperes
- Capacitances (grounded filament): Base: Special, concentric: 1000 amperes
- Max. Seal Temp: 250 °C
- Max. Anode Core Temp: 250 °C
- Feed Through: 1.00 (max)
- Max. Diameter: 4.938 inches
- Net Weight: 9.5 pounds

**Max. Ratings**
- Plate Voltage: 5000 volts
- Plate Current: 250 amperes
- Grid Voltage: 500 volts
- Grid Current: 250 amperes

**Typical Operation**
- Plate Voltage: 1250 volts
- Plate Current: 1.9 amperes


**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**
5000 watts

**COOLING FREQUENCY FOR MAXIMUM RATINGS**
30 MHz

**CHARACTERISTICS**
- Filament: Thoria-lined tungsten mesh
- Voltage: 7.5 volts
- Current: 100 amperes
- Capacitances (grounded filament): Base: Special, concentric
- Max. Envelope Temp: 250 °C
- Max. Anode Core Temp: 250 °C
- Max. Height: 9.125 inches
- Max. Diameter: 4.038 inches
- Net Weight: 9.5 pounds

**Max. Ratings**
- Plate Voltage: 5000 volts
- Plate Current: 250 amperes
- Grid Voltage: 500 volts
- Grid Current: 250 amperes

**Typical Operation**
- Plate Voltage: 1250 volts
- Plate Current: 1.9 amperes


**8170W/4CX5000R**
A ruggedized version of the 4CX5000R power tetrode, the 4CX5000R incorporates a sturdy mesh cathode construction. Electrically identical to the "A" version, it is an excellent choice for high power applications in severe environments.

**PLATE DISSIPATION**
5000 watts

**COOLING FREQUENCY FOR MAXIMUM RATINGS**
30 MHz

**CHARACTERISTICS**
- Filament: Thoria-lined tungsten
- Voltage: 7.5 volts
- Current: 73 to 78 amperes
- Capacitances (grounded filament): Base: Special, concentric
- Max. Envelope Temp: 250 °C
- Max. Anode Core Temp: 250 °C
- Max. Height: 9.125 inches
- Max. Diameter: 4.038 inches
- Net Weight: 9.5 pounds

**Max. Ratings**
- Plate Voltage: 5000 volts
- Plate Current: 250 amperes
- Grid Voltage: 500 volts
- Grid Current: 250 amperes

**Typical Operation**
- Plate Voltage: 1250 volts
- Plate Current: 1.9 amperes

*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 ratings, which are 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. The 4CX10,000D is recommended for use in new equipment design.

PLATE DISSIPATION: 10,000 watts
FREQUENCY FOR MAXIMUM RATINGS: 30 MHz

CHARACTERISTICS
- Filament: Thoriated tungsten
- Voltage: 7.5 volts
- Current: 153 amperes
- Capacitors (Grounded Filament): Input 195 pf, Output 149 pf
- Feed Through: 7.0 pf
- Max. Height: 9.46 inches
- Max. Diameter: 7.58 inches
- Net Weight: 12.8 pounds

Maximum Ratings
- Plate Voltage (watts): 15,000
- Screen Voltage (watts): 750

Typical Operation
- Plate Current (amps): 4.00
- Screen Current (amps): 12.00

8281/4CX15,000A
A versatile addition to the Eimac line of ceramic metal power tetrodes, the 4CX15,000A is similar to the 4CX10,000D but features higher plate voltage and current and greater plate dissipation. These increased capabilities allow it to operate at full ratings through the FM broadcast band. The 4CX15,000A is recommended for use in new equipment design.

PLATE DISSIPATION: 15,000 watts
FREQUENCY FOR MAXIMUM RATINGS: 110 MHz

CHARACTERISTICS
- Filament: Thoriated tungsten
- Voltage: 9.5 volts
- Current: 152 to 164 amperes
- Capacitors (Grounded Filament): Input 148.5 to 161.5 pf, Output 27.8 to 27.5 pf
- Feed Through: 7.0 pf
- Max. Height: 9.46 inches
- Max. Diameter: 7.58 inches
- Net Weight: 12.8 pounds

Maximum Ratings
- Plate Voltage (watts): 15,000
- Screen Voltage (watts): 750

Typical Operation
- Plate Current (amps): 4.00
- Screen Current (amps): 12.00

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
FREQUENCY FOR MAXIMUM RATINGS: 300 MHz

CHARACTERISTICS
- Filament: Thoriated tungsten
- Voltage: 7.5 volts
- Current: 153 amperes
- Capacitors (Grounded Filament): Input 195 pf, Output 149 pf
- Feed Through: 7.0 pf
- Max. Height: 9.375 inches
- Max. Diameter: 7.560 inches
- Net Weight: 12.8 pounds

Maximum Ratings
- Plate Voltage (watts): 15,000
- Screen Voltage (watts): 750

Typical Operation
- Plate Current (amps): 6.00
- Screen Current (amps): 15.00

8349/4CX35,000C
Eimac's largest, forced air cooled power tetrode has a plate dissipation rating of 30 kilowatts and is capable of 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
FREQUENCY FOR MAXIMUM RATINGS: 300 MHz

CHARACTERISTICS
- Filament: Thoriated tungsten
- Voltage: 10.0 volts
- Current: 300 amperes
- Capacitors (Grounded Filament): Input 465 pf, Output 55.0 pf
- Feed Through: 2.45 pf
- Max. Height: 17.0 inches
- Max. Diameter: 9.75 inches
- Net Weight: 50 pounds

Maximum Ratings
- Plate Voltage (watts): 35,000
- Screen Voltage (watts): 1,500

Typical Operation
- Plate Current (amps): 15.00
- Screen Current (amps): 6.97

*Two tubes.
4X500A

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

**PLATE DISSIPATION**

**FREQUENCY FOR MAXIMUM RATINGS**

<table>
<thead>
<tr>
<th>COOLING</th>
<th>Maximum Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLATE</td>
<td>170 MHz — class C NW</td>
</tr>
<tr>
<td>500 watts</td>
<td></td>
</tr>
</tbody>
</table>

**CHARACTERISTICS**

- **Filament:** Throated tungsten
- **Voltage:** 5.5 volts
- **Current:** 10 to 13.7 amperes
- **Capacitance:** (Grounded Cathode): 8.9 to 14.4 pf
- **Output:** 4.9 to 6.8 pf
- **Feed-Through:** 0.1 pf
- **Base:** 4-pin special
- **Socket:** Eimac SK-250
- **Max. Anode Temp.:** 175 °C
- **Max. Plate Temp.:** 175 °C
- **Diode:** Max. Diameter: 7/8 inches
- **Net Weight:** 3.5 pounds

**EXTERNAL ANODE IF WATER COOLED**

4CW800B and 4CW800F

The 4CW800B/F is a ceramic metal, liquid-cooled radial beam tetrode. Its low-medium-ohmic input, low output capacitance, small size, and ease of use in distributed amplifiers for which it was especially designed. Rugged construction, a large, extra-cool end, and direct mounting to the chassis make the tube suitable for severe shock and vibration environments.

**PLATE DISSIPATION**

**FREQUENCY FOR MAXIMUM RATINGS**

<table>
<thead>
<tr>
<th>COOLING</th>
<th>Maximum Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLATE</td>
<td>800 MHz</td>
</tr>
</tbody>
</table>

**CHARACTERISTICS**

- **Cathode:** Oxide coated, unipotential
- **Heater:** 4CW800B 4CW800F
- **Voltage:** 6.0 volts
- **Current:** 4.7 to 5.5 amperes
- **Capacitance:** (Grounded Cathode): 48 to 50 pf max.
- **Output:** 0.00 to 0.05 pf max.
- **Feed-Through:** 0.15 pf
- **Base:** Special
- **Socket:** Special
- **Max. Plate Temp.:** 150 °C
- **Max. Diode Diameter:** 3.0 inches
- **Net Weight:** 7.0 pounds

8244/4CW2000A

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

**PLATE DISSIPATION**

**FREQUENCY FOR MAXIMUM RATINGS**

<table>
<thead>
<tr>
<th>COOLING</th>
<th>Maximum Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLATE</td>
<td>2000 watts</td>
</tr>
</tbody>
</table>

**CHARACTERISTICS**

- **Cathode:** Oxide coated, unipotential
- **Heater:** 4CW2000A
- **Voltage:** 8.1 to 9.0 volts
- **Current:** 6.0 to 6.5 amperes
- **Capacitance:** (Grounded Cathode): 77 to 80 pf
- **Output:** 11 to 13 pf
- **Feed-Through:** 0.02 pf
- **Base:** Special
- **Socket:** Eimac SK-800 series
- **Max. Plate Temp.:** 250 °C
- **Max. Diode Diameter:** 3.660 inches
- **Net Weight:** 1.5 pounds

4CW10.000A

Electrically identical to the 4CW5000A except for its plate dissipation rating, the 4CW10.000A is intended for use where water cooling is preferred or where the extra plate dissipation is necessary. It may be used at maximum ratings to 30 MHz and at slightly reduced ratings through the FM broadcast band.

**PLATE DISSIPATION**

**FREQUENCY FOR MAXIMUM RATINGS**

<table>
<thead>
<tr>
<th>COOLING</th>
<th>Maximum Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLATE</td>
<td>12,000 watts</td>
</tr>
</tbody>
</table>

**CHARACTERISTICS**

- **Filament:** Throated tungsten
- **Voltage:** 7.0 volts
- **Current:** 7.7 to 9.9 amperes
- **Capacitance:** (Grounded Filament): 108 to 126 pf
- **Output:** 8 to 23 pf
- **Feed-Through:** 1.0 pf
- **Base:** Special
- **Socket:** Eimac SK-200A
- **Max. Plate Temp.:** 250 °C
- **Max. Diameter:** 4.46 inches
- **Net Weight:** 3.5 pounds

**EXTERNAL ANODE IF FORCED-AIR COOLED**
4CW25,000A

The 4CW25,000A is a liquid-cooled, general purpose tetrode with the same basic characteristics as the air-cooled 4CW25,000. 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: Thoria-impregnated Base Type: Special
Voltage: 6.7 volts Max. Voltage: 25,000 volts
Current: 160 amperes Max. Current: 100 amperes
Capacitance: (GroundedFilament): 300 pf Max. Diameter: 4.6 inches
Input: 155 pf Max. Height: 12 inches
Output: 24 pf Max. Diameter: 4.6 inches
Feed Through: Less than 2.0 pf Net Weight: 13.5 pounds

4CW25,000EA

The 4CW25,000EA is a ceramic, liquid-cooled power tetrode intended for use at the 50 to 100 kW output power level. It is recommended for use as a Class C RF amplifier or oscillator, a Class AB RF linear amplifier, or a Class AB push-pull AF amplifier or modulator. The tube is also useful as a plate and screen modulated Class C RF amplifier.

PLATE DISSIPATION: 25,000 watts
FREQUENCY FOR MAXIMUM RATINGS: 110 MHz
COOLING: Water and Forced Air

CHARACTERISTICS

Filament: Thoria-impregnated Base Type: Special
Voltage: 12 volts Max. Voltage: 2500 volts
Current: 220 amperes Max. Current: 100 amperes
Capacitance: (GroundedFilament): 1000 Series 300 pf Max. Diameter: 7.5 inches
Input: 300 pf Max. Height: 17 inches
Output: 24 pf Max. Diameter: 4.6 inches
Feed Through: 1.0 pf Net Weight: 35 pounds

*Shown with SK-2050 water jacket.

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 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: Thoria-impregnated Base Type: Special
Voltage: 10 volts Max. Voltage: 100000 volts
Current: 1500 amperes Max. Current: 1500 amperes
Capacitance: (GroundedFilament): 1500 Series 470 pf Max. Height: 8 inches
Input: 470 pf Max. Diameter: 8 inches
Output: 60 pf Max. Diameter: 8 inches
Feed Through: 3.7 pf Net Weight: 60 pounds

4CW100,000E

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

PLATE DISSIPATION: 100,000 watts
COOLING: Liquid and Forced Air

CHARACTERISTICS

Filament: Thoria-impregnated Base Type: Special
Voltage: 16 volts Max. Voltage: 100000 volts
Current: 2300 amperes Max. Current: 2300 amperes
Capacitance: (GroundedFilament): 2300 Series 400 pf Max. Height: 14 inches
Input: 400 pf Max. Height: 14 inches
Output: 60 pf Max. Diameter: 9 inches
Feed Through: 0.9 pf Net Weight: 18 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 kHz output power range.

PLATE DISSIPATION
750,000 watts

FREQUENCY FOR MAXIMUM RATINGS
50 MHz

COOLING
Liquid

CHARACTERISTICS
Filament: Thoriated tungsten
Vacuum: 120 volts
Current: 660 amperes
Capacitances (Grounded Plate): Max Height 29.5 inches
Input: 775 pf
Output: 130 pf
Feed-Through: 6.6 pf

*Shown with SK-1720 water jacket

8249 / 4W300B

A general-purpose radial beam tetrode with electrical characteristics similar to those of the Eimac 4X250B, this water cooled version is intended for use where severe dissipation is desired or where the use of a water jet is inconvenient. Maximum ratings apply to frequencies as high as 500 MHz.

PLATE DISSIPATION
300 watts

FREQUENCY FOR MAXIMUM RATINGS
500 MHz

COOLING
Water and Forced Air

CHARACTERISTICS
Cathode: Oxide coated, unipotential
Grid: 6.0 volts
Current: 75 to 95 amperes
Capacitances (Grounded Cathode): Max Height 8.4 inches
Input: 14 to 17.5 pf
Output: 4.0 to 5.0 pf
Feed-Through: 0.06 pf

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 750 MHz. A single 8173/4W20,000A operating as a half wave diode RF amplifier will deliver a synchronizing power output of 26 watts at 250 MHz with 5 MHz bandwidth. The coaxial construction of the tube is ideal for cavity circuits.

PLATE DISSIPATION
20,000 watts

FREQUENCY FOR MAXIMUM RATINGS
220 MHz

COOLING
Water and Forced Air

CHARACTERISTICS
Cathode: Unipotential thoriated filament heated by electron bombardment
DC Voltage: 1500 volts
DC Current: 25 amperes
Filament: Thoriated tungsten
Vacuum: 10 volts
Current: 25 amperes

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 intercircuit. The low distortion characteristics make the 4CV1500B especially suitable for RF and AF linear amplifier service.

PLATE DISSIPATION
1500 watts

FREQUENCY FOR MAXIMUM RATINGS
30 MHz

COOLING
Vapor and Forced Air

CHARACTERISTICS
Cathode: Oxide coated, unipotential
Heater Voltage: 6.0 volts
Current: 11.3 amperes
Capacitances (Grounded Cathode): Max Height 35.5 inches
Input: 88 pf
Output: 17.8 pf
Feed-Through: 3.03 pf

Class of Operation Type of Service

Maximum Ratings

Typical Operation

<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>RF Amplifier or Oscillator</td>
<td>20,000</td>
<td>40 250,000</td>
<td>1500</td>
</tr>
<tr>
<td>RF Amplifier or Oscillator</td>
<td>17,500</td>
<td>30 167,000</td>
<td>1500</td>
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<tr>
<td>AB Amplifier or Modulator</td>
<td>20,000</td>
<td>40 250,000</td>
<td>1500</td>
</tr>
<tr>
<td>AB Amplifier or Modulator</td>
<td>20,000</td>
<td>40 250,000</td>
<td>1500</td>
</tr>
</tbody>
</table>

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

4CV1500B

Class of Operation Type of Service

Maximum Ratings

Typical Operation

<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>Plate</td>
<td>Screen</td>
<td>Plate</td>
<td>Screen</td>
</tr>
<tr>
<td>Voltage</td>
<td>Current</td>
<td>Diss.</td>
<td>Diss.</td>
</tr>
<tr>
<td>Voltage</td>
<td>Current</td>
<td>Drive</td>
<td>Output</td>
</tr>
<tr>
<td>(volts)</td>
<td>(amps)</td>
<td>(watts)</td>
<td>(watts)</td>
</tr>
<tr>
<td>AB Amplifier or Modulator</td>
<td>1500</td>
<td>30 20,000</td>
<td>12 2</td>
</tr>
</tbody>
</table>

*Two tetrodes
### 4CV8000A

The vapor-cooled version of Eimac's 4CV3000A offers a conservative plate dissipation rating of 8000 watts. It is recommended for Class AB or B, and ratio of frequencies applications as well as Class C RF amplifier service. A full complement of vapor cooling apparatus is available for this and all other Eimac vapor-cooled tube types.

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

**COOLING**
- **4CV8000A**: With forced air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filament type</td>
<td>Tharated tungsten, 11/16&quot; dia.</td>
</tr>
<tr>
<td>Voltage</td>
<td>8.0 volts</td>
</tr>
<tr>
<td>Current</td>
<td>43.5 to 48.5 amperes</td>
</tr>
<tr>
<td>Capacitance (grounded filament)</td>
<td>110 to 140 pf</td>
</tr>
<tr>
<td>Output</td>
<td>103 to 14 in.</td>
</tr>
<tr>
<td>Feed Through</td>
<td>14 in.</td>
</tr>
<tr>
<td>Weight</td>
<td>50 pounds</td>
</tr>
</tbody>
</table>

**RATINGS**

<table>
<thead>
<tr>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Net Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
<td>3.25</td>
<td>25</td>
</tr>
<tr>
<td>1250</td>
<td>3.25</td>
<td>12</td>
</tr>
<tr>
<td>2500</td>
<td>3.25</td>
<td>60</td>
</tr>
</tbody>
</table>

*Two tubes*

### 4CV20.000A

A vapor-cooled version of the popular 4CV5000A, 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 apparatus is available for this and all other Eimac vapor-cooled tube types.

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

**COOLING**
- **4CV20.000A**: With forced air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filament type</td>
<td>Tharated tungsten, 11/16&quot; dia.</td>
</tr>
<tr>
<td>Voltage</td>
<td>8.0 volts</td>
</tr>
<tr>
<td>Current</td>
<td>43.5 to 48.5 amperes</td>
</tr>
<tr>
<td>Capacitance (grounded filament)</td>
<td>110 to 140 pf</td>
</tr>
<tr>
<td>Output</td>
<td>103 to 14 in.</td>
</tr>
<tr>
<td>Feed Through</td>
<td>14 in.</td>
</tr>
<tr>
<td>Weight</td>
<td>50 pounds</td>
</tr>
</tbody>
</table>

**RATINGS**

<table>
<thead>
<tr>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Net Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
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<td>1250</td>
<td>3.25</td>
<td>12</td>
</tr>
<tr>
<td>2500</td>
<td>3.25</td>
<td>60</td>
</tr>
</tbody>
</table>

*Two tubes*

### 4CV35.000A

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

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

**COOLING**
- **4CV35.000A**: With forced air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filament type</td>
<td>Tharated tungsten, 11/16&quot; dia.</td>
</tr>
<tr>
<td>Voltage</td>
<td>8.0 volts</td>
</tr>
<tr>
<td>Current</td>
<td>43.5 to 48.5 amperes</td>
</tr>
<tr>
<td>Capacitance (grounded filament)</td>
<td>110 to 140 pf</td>
</tr>
<tr>
<td>Output</td>
<td>103 to 14 in.</td>
</tr>
<tr>
<td>Feed Through</td>
<td>14 in.</td>
</tr>
<tr>
<td>Weight</td>
<td>50 pounds</td>
</tr>
</tbody>
</table>

**RATINGS**

<table>
<thead>
<tr>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Net Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
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<td>25</td>
</tr>
<tr>
<td>1250</td>
<td>3.25</td>
<td>12</td>
</tr>
<tr>
<td>2500</td>
<td>3.25</td>
<td>60</td>
</tr>
</tbody>
</table>

*Two tubes*

### 4CV50.000E *

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

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

**COOLING**
- **4CV50.000E**: With forced air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filament type</td>
<td>Tharated tungsten mesh, 11/16&quot; dia.</td>
</tr>
<tr>
<td>Voltage</td>
<td>8.0 volts</td>
</tr>
<tr>
<td>Current</td>
<td>43.5 to 48.5 amperes</td>
</tr>
<tr>
<td>Capacitance (grounded filament)</td>
<td>110 to 140 pf</td>
</tr>
<tr>
<td>Output</td>
<td>103 to 14 in.</td>
</tr>
<tr>
<td>Feed Through</td>
<td>14 in.</td>
</tr>
<tr>
<td>Weight</td>
<td>50 pounds</td>
</tr>
</tbody>
</table>

**RATINGS**

<table>
<thead>
<tr>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Net Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
<td>3.25</td>
<td>25</td>
</tr>
<tr>
<td>1250</td>
<td>3.25</td>
<td>12</td>
</tr>
<tr>
<td>2500</td>
<td>3.25</td>
<td>60</td>
</tr>
</tbody>
</table>

*Shown with BR 700 boiler.*
TETRODES

EXTERNAL ANODE II VAPOR COOLED

4CV75,000A *

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

**PLATE DISSIPATION**
75,000 watts

**FREQUENCY FOR MAXIMUM RATINGS**
30 MHz

**COOLING**
Vapor Phase and Forced Air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Filament Throat Diameter</th>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Capacitance (Grounded Grid)</th>
<th>Input</th>
<th>Output</th>
<th>Feed Through</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0 volts</td>
<td>100 amperes</td>
<td></td>
<td>Max. Temp.</td>
<td>410 psi</td>
<td>35 psi</td>
<td>23 psi</td>
</tr>
</tbody>
</table>

*Shown with BR 320 boiler.

8351/4CV100,000C

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

**PLATE DISSIPATION**
100,000 watts

**FREQUENCY FOR MAXIMUM RATINGS**
30 MHz

**COOLING**
Vapor and Forced Air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Filament Throat Diameter</th>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Capacitance (Grounded Grid)</th>
<th>Input</th>
<th>Output</th>
<th>Feed Through</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.0 volts</td>
<td>100 amperes</td>
<td></td>
<td>Max. Temp.</td>
<td>410 psi</td>
<td>35 psi</td>
<td>23 psi</td>
</tr>
</tbody>
</table>

4CV100,000E *

The 4CV100,000E is a ceramic metal, vapor cooled power tetrode intended for use at the 100 to 250 kW CW and 300 to 500 kW pulse output power level. Its low grid-to-grid capacitance and high transconductance make the tube ideal for broadcast grid drive 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**

<table>
<thead>
<tr>
<th>Filament Throat Diameter</th>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Capacitance (Grounded Grid)</th>
<th>Input</th>
<th>Output</th>
<th>Feed Through</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.0 volts</td>
<td>100 amperes</td>
<td></td>
<td>Max. Temp.</td>
<td>410 psi</td>
<td>35 psi</td>
<td>23 psi</td>
</tr>
</tbody>
</table>

*Shown with BR 800 boiler.

4CV250,000A and 4CV250,000V

The 4CV250,000A and V are ceramic metal, vapor cooled power tetrodes. The tubes are recommended for use as a Class C 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**

<table>
<thead>
<tr>
<th>Filament Throat Diameter</th>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Capacitance (Grounded Grid)</th>
<th>Input</th>
<th>Output</th>
<th>Feed Through</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.0 volts</td>
<td>100 amperes</td>
<td></td>
<td>Max. Temp.</td>
<td>410 psi</td>
<td>35 psi</td>
<td>23 psi</td>
</tr>
</tbody>
</table>

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

**PLATE DISSIPATION**

75 watts

**FREQUENCY FOR MAXIMUM RATINGS**

125 watts

**COOLING**

Radiation and Forced Air

**CHARACTERISTICS**

Filament: Thoriated filament
Voltage: 5.0 volts
Current: 0.10 watts
Capacitances: Grounded Filament
Input: 0.10 pf
Output: 0.10 pf

Filament: Thori...
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.

**PLATE DISSIPATION**

**COOLING**

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Cathode: Oxide coated, unipotential</th>
<th>7 pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater Voltage</td>
<td>6.0 volts</td>
</tr>
<tr>
<td>Current</td>
<td>0.2 amperes</td>
</tr>
<tr>
<td>Capacitances: Input</td>
<td>42 pf</td>
</tr>
<tr>
<td>Output</td>
<td>25 pf</td>
</tr>
<tr>
<td>Feed Through</td>
<td>0.09 pf</td>
</tr>
</tbody>
</table>

**Max Capacity**

- Plate: Forced Air
- Grid: 1000 watts
- Supp: 1000 watts
- Screen: 500 watts

**Screen (volts)**

- Max: 175 
- Max: 5.15 inches
- Max Diameter: 4.032 inches
- Net Weight: 3.6 pounds

**Typical Operation**

- C: RF Amplifier or Oscillator
- 3000 1.0 1000 30 5
- 2500 500 0.840 2.1 1440

- AB1: Linear RF Amplifier
- 1000 0.800 1000 30 5
- 2500 500 0.800 1260

8295A
The 8295A is an air-cooled, ceramic-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.

**PLATE DISSIPATION**

**COOLING**

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Cathode: Oxide coated, unipotential</th>
<th>7 pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater Voltage</td>
<td>6.0 volts</td>
</tr>
<tr>
<td>Current</td>
<td>0.2 amperes</td>
</tr>
<tr>
<td>Capacitances: 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>
</tbody>
</table>

**Max Capacity**

- Plate: Forced Air
- Grid: 1000 watts
- Supp: 3000 watts
- Screen: 500 watts

**Screen (volts)**

- Max: 500 
- Max: 3.53 inches
- Max Diameter: 4.032 inches
- Net Weight: 3.6 pounds

**Typical Operation**

- C: RF Amplifier or Oscillator
- 3000 1.0 1000 30 5
- 2500 500 0.800 1280

- AB1: Linear RF Amplifier
- 3000 0.800 1000 30 5
- 2500 500 0.800 1260

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**

**COOLING**

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Cathode: Oxide coated, unipotential</th>
<th>7 pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater Voltage</td>
<td>6.0 volts</td>
</tr>
<tr>
<td>Current</td>
<td>0.2 amperes</td>
</tr>
<tr>
<td>Capacitances: 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>
</tbody>
</table>

**Max Capacity**

- Plate: Forced Air
- Grid: 1000 watts
- Supp: 3000 watts
- Screen: 500 watts

**Screen (volts)**

- Max: 500 
- Max: 3.53 inches
- Max Diameter: 4.032 inches
- Net Weight: 3.6 pounds

**Typical Operation**

- C: RF Amplifier or Oscillator
- 3000 1.0 1000 30 5
- 2500 500 0.800 1280

- AB1: Linear RF Amplifier
- 3000 0.800 1000 30 5
- 2500 500 0.800 1260

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 sideband service.

**PLATE DISSIPATION**

**FREQUENCY FOR MAXIMUM RATINGS**

**COOLING**

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Filament: Thermiated tungsten mesh</th>
<th>Special</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>5.0 volts</td>
</tr>
<tr>
<td>Current</td>
<td>43 amperes (max)</td>
</tr>
<tr>
<td>Capacitances: Input</td>
<td>78 pf (max)</td>
</tr>
<tr>
<td>Output</td>
<td>18.9 pf (max)</td>
</tr>
<tr>
<td>Feed Through</td>
<td>0.25 pf</td>
</tr>
</tbody>
</table>

**Max Capacity**

- Plate: Forced Air
- Grid: 1500 watts
- Supp: 110 MHz
- Screen: 2500 watts

**Screen (volts)**

- Max: 75 
- Max: 8.5 inches
- Max Diameter: 4.032 inches
- Net Weight: 3.6 pounds

**Typical Operation**

- C: RF Power Amplifier or Oscillator
- 5000 1.0 1500 25 75 25
- 4000 500 0.800 6.5 2350

- C: Plate Modulated RF Power Amplifier
- 2500 0.8 1000 25 75 25
- 2000 500 0.800 10 1958

- AB: RF Amplifier or Modulator
- 4000 1.0 1500 25 75 25
- 3800 500 1.33 1220

- AB: RF Linear Amplifier
- 4000 1.0 1500 25 75 25
- 3000 500 0.600 1785

*Two tubes*
PENTODES

5CX3000A
The 5CX3000A is a ceramic metal beam pentode designed for Class AB linear amplifier AF and RF applications. Its low inter-modulation distortion characteristics make it especially suitable for single sideband service.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATINGS
COOLING

CHARACTERISTICS
Filament: Thoriated Tungsten
Voltage: 9.0 volts
Current: 42.5 amperes (max)
Capacitance: (Grounded Filament) 24 pf
Input: 145 pt
Feed Through: 0.50 pf

3000 watts
150 MHz
Forced Air

Typical Ratings
Plate: 7000
Screen: 4000
Cathode: 1000
Grid: 1000
Current Limits
Input: 1.06
Output: 1.64

Maximum Ratings
Plate Voltage Current Diss. (watts)
Screen Voltage Current Diss. (watts)
Cathode Voltage Current Diss. (watts)
Grid Voltage Current Diss. (watts)

Typical Operation
Plate Voltage Current Power Diss. (watts)
Screen Voltage Current Power Diss. (watts)
Cathode Voltage Current Power Diss. (watts)
Grid Voltage Current Power Diss. (watts)

8576/264
The 8576/264 is a ceramic metal beam pentode with exceptionally low input capacitance for its power-handling capability. The tube is especially suited for use in broadband linear amplifiers, but will also provide outstanding performance in other Class AB, amplifier applications.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATINGS
COOLING

CHARACTERISTICS
Cathode: Oxide-coated, single potential Base
Heater: 6.0 volts
Current: 17 amperes
Capacitance: (Grounded Cathode) 33 pf
Input: 57 pt
Feed Through: 0.16 pf

3000 watts
Forced Air

Typical Ratings
Plate: 5000
Screen: 3000
Cathode: 500
Grid: 500
Current Limits
Input: 1.06
Output: 1.64

Maximum Ratings
Plate Voltage Current Diss. (watts)
Screen Voltage Current Diss. (watts)
Cathode Voltage Current Diss. (watts)
Grid Voltage Current Diss. (watts)

Typical Operation
Plate Voltage Current Power Diss. (watts)
Screen Voltage Current Power Diss. (watts)
Cathode Voltage Current Power Diss. (watts)
Grid Voltage Current Power Diss. (watts)

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

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATINGS
COOLING

CHARACTERISTICS
Cathode: Oxide-coated, single potential Base
Heater: 6.0 volts
Current: 17 amperes
Capacitance: (Grounded Cathode) 33 pf
Input: 57 pt
Feed Through: 0.16 pf

5000 watts
Forced Air

Typical Ratings
Plate: 6000
Screen: 5000
Cathode: 500
Grid: 500
Current Limits
Input: 1.06
Output: 1.64

Maximum Ratings
Plate Voltage Current Diss. (watts)
Screen Voltage Current Diss. (watts)
Cathode Voltage Current Diss. (watts)
Grid Voltage Current Diss. (watts)

Typical Operation
Plate Voltage Current Power Diss. (watts)
Screen Voltage Current Power Diss. (watts)
Cathode Voltage Current Power Diss. (watts)
Grid Voltage Current Power Diss. (watts)

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.
## 6C21
A high-vacuum triode designed for pulse-modulator service and incorporating a pyroac plate and a non-emitting grid. It is recommended for use where long-pulse requirements rule out the use of tubes employing oxide-coated cathodes. 

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAXIMUM PLATE VOLTAGE</strong></td>
<td>30 kilovolts</td>
</tr>
<tr>
<td><strong>MAXIMUM PULSE PLATE CURRENT</strong></td>
<td>15 amperes</td>
</tr>
<tr>
<td><strong>COOLING</strong></td>
<td>Radiation and Forced Air</td>
</tr>
</tbody>
</table>

## 8252 / 4PR60B
The Eimac 4PR60B is a high-vacuum, radial beam tetrode intended for pulse-modulator service in circuits employing resistive loads. The 4PR60A superserves the 4PR60A and unilaterally replaces the 715C and 5D21. It is recommended for use in equipment of new design. 

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAXIMUM PLATE VOLTAGE</strong></td>
<td>20 kilovolts</td>
</tr>
<tr>
<td><strong>MAXIMUM PULSE PLATE CURRENT</strong></td>
<td>18 amperes</td>
</tr>
<tr>
<td><strong>COOLING</strong></td>
<td>Radiation and Convection</td>
</tr>
</tbody>
</table>

## 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 superserves the 4PR60A and unilaterally replaces the 715C and 5D21. It is recommended for use in equipment of new design. 

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAXIMUM PLATE VOLTAGE</strong></td>
<td>20 kilovolts</td>
</tr>
<tr>
<td><strong>MAXIMUM PULSE PLATE CURRENT</strong></td>
<td>18 amperes</td>
</tr>
<tr>
<td><strong>COOLING</strong></td>
<td>Radiation and Convection</td>
</tr>
</tbody>
</table>

## 8187 / 4PR65A
A compact, high-vacuum, radial-beam tetrode incorporating a pyroac plate and non-emitting grids, intended for pulse-modulator service. It is recommended for use in new equipments wherever long pulse durations, high duty factors, or high voltages preclude the use of tubes employing oxide-coated cathodes. 

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAXIMUM PLATE VOLTAGE</strong></td>
<td>15 kilovolts</td>
</tr>
<tr>
<td><strong>MAXIMUM PULSE PLATE CURRENT</strong></td>
<td>1 ampere</td>
</tr>
<tr>
<td><strong>COOLING</strong></td>
<td>Radiation and Convection</td>
</tr>
</tbody>
</table>

## 8247 / 4PR125A
A compact, high-vacuum, radial-beam tetrode incorporating a pyroac plate and non-emitting grids, 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. 

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAXIMUM PLATE VOLTAGE</strong></td>
<td>18 kilovolts</td>
</tr>
<tr>
<td><strong>MAXIMUM PULSE PLATE CURRENT</strong></td>
<td>1.8 amperes</td>
</tr>
<tr>
<td><strong>COOLING</strong></td>
<td>Radiation and Forced Air</td>
</tr>
</tbody>
</table>

## 8252 / 4PR60B
The Eimac 4PR60B is a high-vacuum, radial beam tetrode intended for pulse-modulator service in circuits employing resistive loads. The 4PR60B superserves the 4PR60A and unilaterally replaces the 715C and 5D21. It is recommended for use in equipment of new design. 

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAXIMUM PLATE VOLTAGE</strong></td>
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</tr>
<tr>
<td><strong>MAXIMUM PULSE PLATE CURRENT</strong></td>
<td>18 amperes</td>
</tr>
<tr>
<td><strong>COOLING</strong></td>
<td>Radiation and Convection</td>
</tr>
</tbody>
</table>

## 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 superserves the 4PR60A and unilaterally replaces the 715C and 5D21. It is recommended for use in equipment of new design. 

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</tr>
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<tbody>
<tr>
<td><strong>MAXIMUM PLATE VOLTAGE</strong></td>
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</tr>
<tr>
<td><strong>MAXIMUM PULSE PLATE CURRENT</strong></td>
<td>18 amperes</td>
</tr>
<tr>
<td><strong>COOLING</strong></td>
<td>Radiation and Convection</td>
</tr>
</tbody>
</table>

## 8187 / 4PR65A
A compact, high-vacuum, radial-beam tetrode incorporating a pyroac plate and non-emitting grids, intended for pulse-modulator service. It is recommended for use in new equipments wherever long pulse durations, high duty factors, or high voltages preclude the use of tubes employing oxide-coated cathodes. 

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</tr>
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<tbody>
<tr>
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<td>15 kilovolts</td>
</tr>
<tr>
<td><strong>MAXIMUM PULSE PLATE CURRENT</strong></td>
<td>1 ampere</td>
</tr>
<tr>
<td><strong>COOLING</strong></td>
<td>Radiation and Convection</td>
</tr>
</tbody>
</table>

## 8247 / 4PR125A
A compact, high-vacuum, radial-beam tetrode incorporating a pyroac plate and non-emitting grids, 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. 

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAXIMUM PLATE VOLTAGE</strong></td>
<td>18 kilovolts</td>
</tr>
<tr>
<td><strong>MAXIMUM PULSE PLATE CURRENT</strong></td>
<td>1.8 amperes</td>
</tr>
<tr>
<td><strong>COOLING</strong></td>
<td>Radiation and Forced Air</td>
</tr>
</tbody>
</table>
### 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 kilowatts to a resistive load. It is recommended for use in new equipments.**

**MAXIMUM PLATE VOLTAGE**
- 50 kilovolts

**MAXIMUM PULSE CURRENT**
- 4 amperes

**CHARACTERISTICS**
- Filament: Thoriated tungsten, Voltage: 5.0 volts, Current: 13.5 to 17.7 amperes
- Capacitances: Input: 31.0 to 15.0 ufd, Output: 2.7 to 3.9 ufd, Feed-Through: 0.015 ufd
- Socket: Eimac SK-400
- Max. Plate Temp: 450°C
- Max. Length: 7.5 inches
- Max. Diameter: 3.5 inches
- Net Weight: 12.5 ounces

**MAXIMUM RATINGS**
- DC Plate Voltage: 50 kilovolts
- DC Screen Voltage: 2 kilovolts
- Peak Plate Current: 4 amperes
- Plate Dissipation: 250 watts
- Screen Dissipation: 25 watts
- Grid Dissipation: 5 watts

### 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 CURRENT**
- 4 amperes

**CHARACTERISTICS**
- Filament: Thoriated tungsten, Voltage: 5.0 volts, Current: 13.5 to 17.7 amperes
- Capacitances (Grounded Cathode): Input: 10.2 to 14.5 ufd, Output: 6.8 to 9.4 ufd, Feed-Through: 0.035 ufd
- Base: 5 pin metal shell
- Socket: Eimac SK-500
- Max. Base Temp: 150°C
- Max. Plate Temp: 200°C
- Maximum Length: 9.63 inches
- Maximum Diameter: 5.25 inches
- Net Weight: 1.5 pounds

**MAXIMUM RATINGS**
- DC Plate Voltage: 20 kilovolts
- DC Screen Voltage: 1.5 kilovolts
- Peak Plate Current: 4 amperes
- Plate Dissipation: 400 watts
- Screen Dissipation: 75 watts
- Grid Dissipation: 10 watts

### 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 voltages, high current, or high duty preclude the use of tubes employing oxide-coated cathodes.**

**MAXIMUM PLATE VOLTAGE**
- 30 kilovolts

**MAXIMUM PULSE CURRENT**
- 8 amperes

**CHARACTERISTICS**
- Filament: Thoriated tungsten, Voltage: 7.5 volts, Current: 20.0 to 27.7 amperes
- Capacitances (Grounded Cathode): Input: 23.8 to 32.4 ufd, Output: 6.8 to 9.4 ufd, Feed-Through: 0.035 ufd
- Base: 5 pin metal shell
- Socket: Eimac SK-500
- Max. Base Temp: 150°C
- Max. Plate Temp: 200°C
- Maximum Length: 9.63 inches
- Maximum Diameter: 5.25 inches
- Net Weight: 1.5 pounds

**MAXIMUM RATINGS**
- DC Plate Voltage: 30 kilovolts
- DC Screen Voltage: 1.5 kilovolts
- Peak Plate Current: 8 amperes
- Plate Dissipation: 1000 watts
- Screen Dissipation: 75 watts
- Grid Dissipation: 75 watts

### 8189 / 4PR1000B

**The Eimac 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 voltages, high current, or high duty preclude the use of tubes employing oxide-coated cathodes.**

**MAXIMUM PLATE VOLTAGE**
- 30 kilovolts

**MAXIMUM PULSE CURRENT**
- 8 amperes

**CHARACTERISTICS**
- Filament: Thoriated tungsten, Voltage: 7.5 volts, Current: 20.0 to 27.7 amperes
- Capacitances (Grounded Cathode): Input: 23.8 to 32.4 ufd, Output: 6.8 to 9.4 ufd, Feed-Through: 0.035 ufd
- Base: 5 pin metal shell
- Socket: Eimac SK-500
- Max. Base Temp: 150°C
- Max. Plate Temp: 200°C
- Maximum Length: 9.63 inches
- Maximum Diameter: 5.25 inches
- Net Weight: 1.5 pounds

**MAXIMUM RATINGS**
- DC Plate Voltage: 30 kilovolts
- DC Screen Voltage: 1.5 kilovolts
- Peak Plate Current: 8 amperes
- Plate Dissipation: 1000 watts
- Screen Dissipation: 75 watts
- Grid Dissipation: 75 watts

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**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 voltages, high current or high duty factor is encountered.**

**PLATE DISSIPATION**
- 1000 watts

**FREQUENCY FOR MAXIMUM RATINGS**
- 30 MHz

**CHARACTERISTICS**
- Filament: Thoriated tungsten, Voltage: 7.5 volts, Current: 20 to 22.7 amperes
- Capacitances (Grounded Cathode): Input: 0.5 to 7.2 ufd, Feed-Through: 0.35 to max.
- Base: 5 pin special socket
- Plate: 350°C, Maximum Diameter: 5.250 inches
- Net Weight: 1.5 pounds

**MAXIMUM RATINGS**
- Plate Voltage: 45 kilovolts
- Peak Plate Current: 8 amperes
- Plate Dissipation: 1000 watts
- Screen Dissipation: 75 watts
- Grid Dissipation: 75 watts

**TYPICAL OPERATIONS**
- Capacitive Load: 37 kilowatts
- Plate Load: Plate Current: 1000 watts
- Screen: 4 kilowatts
- Peak Output Power: 4.2 kilowatts

- Resistive Load: 12 kilowatts
- Plate Voltage: 1500 volts
- Peak Current: 320 watts
- Screen Voltage: 55 kilowatts
- Peak Drive Power: 55 kilowatts
- Peak Output Power: 55 kilowatts

---

**Pulse Modulators**
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>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-184</td>
<td>8299</td>
<td>2000</td>
<td>1000</td>
<td>screen suppl.</td>
<td>none</td>
<td>C-184</td>
</tr>
<tr>
<td>SK-186A</td>
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<td>2000</td>
<td>1000</td>
<td>screen suppl.</td>
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<td>C-184</td>
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<tr>
<td>SK-209B</td>
<td>8412</td>
<td>2000</td>
<td>1000</td>
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<td>none</td>
<td>C-209</td>
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<tr>
<td>SK-265A</td>
<td>264</td>
<td>2000</td>
<td>1000</td>
<td>screen none</td>
<td>none</td>
<td>C-265</td>
</tr>
<tr>
<td>SK-291A</td>
<td>290</td>
<td>2000</td>
<td>1000</td>
<td>screen none</td>
<td>none</td>
<td>C-290</td>
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<tr>
<td>SK-300</td>
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<td>SK-300</td>
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<tr>
<td>SK-300A</td>
<td>4CW25000A</td>
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<td>none</td>
<td>SK-300A</td>
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<tr>
<td>SK-306</td>
<td>4CX10000A</td>
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<td>SK-306</td>
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<tr>
<td>SK-400</td>
<td>4D21A</td>
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</tr>
<tr>
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<td>none</td>
<td>SK-410</td>
<td></td>
</tr>
<tr>
<td>SK-500</td>
<td>4PR125A</td>
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<td>SK-500</td>
<td></td>
</tr>
<tr>
<td>SK-510</td>
<td>4PR125A</td>
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<td>SK-510</td>
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<tr>
<td>SK-600</td>
<td>4CX15000A</td>
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<tr>
<td>SK-600A</td>
<td>4CX15000A</td>
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<td>SK-600A</td>
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<tr>
<td>SK-610</td>
<td>4CX15000A</td>
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<td>none</td>
<td>SK-610</td>
<td></td>
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<tr>
<td>SK-612A</td>
<td>4CX15000A</td>
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<td>1</td>
<td>none</td>
<td>SK-612A</td>
<td></td>
</tr>
</tbody>
</table>

* SK-300A has low pressure drop characteristic; recommended for new designs.
† Accessory screen bypass cap available as Y-433 (3600 pf, 1800 DCWV) for the SK-300 and SK-300A.
SOCKETS AND ACCESSORIES

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 benderize 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.

<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-610A*</td>
<td>1100</td>
<td>1000</td>
<td>screen</td>
<td>none</td>
<td>SK-626</td>
<td></td>
</tr>
</tbody>
</table>

* Bypass capacitor is encapsulated for moisture resistance.

| SK-620 | 4X150A | 4X150D | 4X150R | 4X150S | 4CX250B | 4CX250F | 4CX250FG | 4CX250K | 4CX250R | 4CX250A | 4CX250F | 760A | 4W300R | none | none | SK-626 |
| SK-630 | 1100 | 1000 | screen | cathode | none |

| SK-640 | 4X150A | 4X150D | 4X150R | 4X150S | 4CX250B | 4CX250F | 4CX250FG | 4CX250K | 4CX250R | 4CX250A | 4CX250F | 760A | 4W300R | none | none | SK-626 |
| SK-650 | 1100 | 1000 | screen | none | SK-626 |

<table>
<thead>
<tr>
<th>SK-660*</th>
<th>SK-660</th>
<th>SK-661**</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK-660A</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>SK-660B</td>
<td>none</td>
<td>none</td>
</tr>
</tbody>
</table>

* See 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-700 | 4CN15A | 4CR125C | 4CR125F | 4CR300A | 4CR300B | 1 hr | SK-606 |
| SK-710 | 1100 | 400 | screen | 1 hr & cath. | SK-626 |

| SK-714A* | 1 hr |
| SK-712A* | 1 hr |

* Bypass capacitor has long external arc path.

| SK-740 | 4CN15A | 4CR125C | 4CR125F | 4CR300A | 4CR300B | 4CR300Y | none | none | none |
| SK-760 | 1100 | 400 | screen | 1 hr & cath. | SK-626 |

| SK-770 | none | none | none |

* SK-761 is a low capacitance version of the SK-760.
## SOCKETS AND ACCESSORIES

<table>
<thead>
<tr>
<th>AIR SYSTEM SOCKET</th>
<th>TUBE</th>
<th>BYPASS CAPACITOR</th>
<th>GROUNDED CONTACTS</th>
<th>CHIMNEY</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK-800B</td>
<td>4CX1000A</td>
<td>3CX15,000A 3</td>
<td>none</td>
<td>SK-806</td>
</tr>
<tr>
<td>SK-810B</td>
<td>4CX1000A</td>
<td>3CX15,000A 3</td>
<td>none</td>
<td>SK-806</td>
</tr>
<tr>
<td>SK-806B*</td>
<td>4CW2500A</td>
<td>6CV2000A 6</td>
<td>none</td>
<td>SK-816</td>
</tr>
<tr>
<td>SK-820</td>
<td>4CX1000K</td>
<td>3CX15,000A 3</td>
<td>none</td>
<td>SK-806</td>
</tr>
<tr>
<td>SK-830A</td>
<td>4CX1000K</td>
<td>3CX15,000A 3</td>
<td>none</td>
<td>SK-806</td>
</tr>
<tr>
<td>SK-831</td>
<td>4CX1000K</td>
<td>3CX15,000A 3</td>
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<td>SK-806</td>
</tr>
<tr>
<td>SK-840</td>
<td>5CX1500A</td>
<td>none</td>
<td>none</td>
<td>SK-816</td>
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<tr>
<td>SK-860</td>
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<td>none</td>
<td>SK-816</td>
</tr>
<tr>
<td>SK-870</td>
<td>3CX1000A7</td>
<td>none</td>
<td>none</td>
<td>SK-816</td>
</tr>
</tbody>
</table>

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

### Custom Socket Design

For special applications which require features different from those 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, bypass capacitors, insulating materials, contact materials, and plating.
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.

**Table of Components**

<table>
<thead>
<tr>
<th>Tube Type</th>
<th>Tube Type</th>
<th>Maximum Plate Dissipation (kW)</th>
<th>Socket</th>
<th>Boiler</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-1400</td>
<td>BR-101</td>
<td>CB-102</td>
<td>RE-100</td>
<td>043028N</td>
<td>AF-100</td>
<td>AD-100</td>
</tr>
<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>043060N</td>
<td>AF-200</td>
<td>AD-200</td>
</tr>
<tr>
<td>3CV30,000A</td>
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<td>SK-1310</td>
<td>BR-200</td>
<td>CB-202</td>
<td>RE-200</td>
<td>043060N</td>
<td>AF-200</td>
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<td>043060N</td>
<td>AF-200</td>
<td>AD-200</td>
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<td>Triode</td>
<td>80</td>
<td>SK-1600</td>
<td>BR-400</td>
<td>CB-202</td>
<td>RE-200</td>
<td>043033N</td>
<td>AF-300</td>
<td>AD-300</td>
</tr>
<tr>
<td>4CV100,000C</td>
<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>
</tr>
<tr>
<td>4CV100,000E</td>
<td>Tetrode</td>
<td>100</td>
<td>SK-2000</td>
<td>BR-800</td>
<td></td>
<td>RE-200</td>
<td></td>
<td></td>
<td>AD-300</td>
</tr>
<tr>
<td>4CV250,000V</td>
<td>Tetrode</td>
<td>250</td>
<td>SK-1700</td>
<td>BR-605</td>
<td>CB-202</td>
<td></td>
<td>5 3/4&quot; OD</td>
<td></td>
<td>1 3/4&quot; OD</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 = 3 gal.
4. For multiple tube systems, these components are multiplied by the number of tubes used.
5. Includes water-cooled filament and grid connections.
6. 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</th>
<th>Dia.</th>
<th>Hole Dia.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR-1</td>
<td>11.16&quot;</td>
<td>1/2&quot;</td>
<td>.052&quot;</td>
</tr>
<tr>
<td>HR-2</td>
<td>11.16&quot;</td>
<td>1/2&quot;</td>
<td>.062&quot;</td>
</tr>
<tr>
<td>HR-3</td>
<td>11.16&quot;</td>
<td>1/2&quot;</td>
<td>.072&quot;</td>
</tr>
<tr>
<td>HR-4</td>
<td>7/8&quot;</td>
<td>3/4&quot;</td>
<td>.102&quot;</td>
</tr>
<tr>
<td>HR-5</td>
<td>7/8&quot;</td>
<td>3/4&quot;</td>
<td>.127&quot;</td>
</tr>
<tr>
<td>HR-6</td>
<td>7/8&quot;</td>
<td>3/4&quot;</td>
<td>.127&quot;</td>
</tr>
<tr>
<td>HR-7</td>
<td>1-11/32&quot;</td>
<td>1-3/8&quot;</td>
<td>.127&quot;</td>
</tr>
<tr>
<td>HR-8</td>
<td>1-11/32&quot;</td>
<td>1-3/8&quot;</td>
<td>.575&quot;</td>
</tr>
<tr>
<td>HR-9</td>
<td>4-11/32&quot;</td>
<td>1-3/8&quot;</td>
<td>.569&quot;</td>
</tr>
<tr>
<td>HR-10</td>
<td>1-11/32&quot;</td>
<td>1-3/8&quot;</td>
<td>.510&quot;</td>
</tr>
</tbody>
</table>

*For marking per MIL-STD-130B add prefix "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 for making 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 treatment 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>9/32</td>
<td>spooned</td>
</tr>
<tr>
<td>CF-200</td>
<td>1/16</td>
<td>1/8</td>
<td>0.040</td>
<td>9/32</td>
<td>double-edged</td>
</tr>
<tr>
<td>CF-300</td>
<td>13/64</td>
<td>1/8</td>
<td>0.040</td>
<td>19/32</td>
<td>reverse radius</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>finger tip radius</td>
</tr>
<tr>
<td>CF-600</td>
<td>15/32</td>
<td>1/8</td>
<td>0.040</td>
<td>25/32</td>
<td>double-edged</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>
</tr>
<tr>
<td>CF-900</td>
<td>0.030</td>
<td>1/16</td>
<td>0.020</td>
<td>15/64</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 Glass 5a (30 MHz)</td>
<td>20 KV</td>
<td>12 V 24 V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VS-6</td>
<td>Pulse Glass 150a (Pulse)</td>
<td>22 KV</td>
<td>12 V 24 V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VS-8</td>
<td>Medical Defibrillator Glass</td>
<td>15 KV</td>
<td>30 V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VS-9</td>
<td>RF General Ceramic 4a (16 MHz)</td>
<td>4 KV</td>
<td>26 5 V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Please send me further information on the following Eimac products:

My application is ________________________________________

Special requirements ______________________________________

Name ___________________________________________________

Title or Position __________________________________________

Company ________________________________________________

Address _________________________________________________

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

Date ____________________________________________________

Please send me further information on the following Eimac products:

My application is ________________________________________

Special requirements ______________________________________

Name ___________________________________________________

Title or Position __________________________________________

Company ________________________________________________

Address _________________________________________________

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

Date ____________________________________________________

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Name ___________________________________________________

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Company ________________________________________________

Address _________________________________________________

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

Date ____________________________________________________

Please send me further information on the following Eimac products:

My application is ________________________________________

Special requirements ______________________________________

Name ___________________________________________________

Title or Position __________________________________________

Company ________________________________________________

Address _________________________________________________

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: 810-751-8369

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

BOSTON
400 Wymans 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) 825-6886
TWX: 910-253-1824

DAYTON
Southmoor Building
10 Southmoor Circle
Dayton, Ohio 45429
Telephone: (513) 298-7318
TWX: 810-439-1924

LONG ISLAND
Forte Suffolk Office Center
90 Walt Whitman Road
Melville, Long Island, New York 11746
Telephone: (516) 549-5422
TWX: 510-226-6987

LOS ANGELES
2901 Wilshire Boulevard
Santa Monica, California 90403
Telephone: (213) 828-5588
TWX: 910-343-6868

NEW YORK
25 Route 22
Springfield, New Jersey 07081
Telephone: (201) 376-6600
TWX: 710-983-4373

PHILADELPHIA
P.O. Box 256
1500 Kings Highway
Cherry Hill, New Jersey 08034
Telephone: (609) 428-6800
TWX: 710-896-0640

INTERNATIONAL SALES OFFICES

AUSTRALIA
Varian Pty. Ltd.
38 Oxlery Street
Crows Nest
Sydney, Australia
Telephone: 430-673
Telex: 790-20096

VARIAN
P.O. Box 89
811 South Central Expressway
Richardson, Texas 75081
Telephone: (214) 235-2385
TWX: 910-867-4712

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

BRAZIL
Varian Industria e Comercio Ltda.
Av. Paulista, 2073-18ª-conj. 1824
Sao Paulo - SP, Brazil
Telephone: 80 99 37
Cable: Varian Sao Paulo

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
France
Telephone: 783.91.00
Telex: 25 873

POWER GRID
Varian S.A.
Quartier de Courtabeuf
Boite Postale No. 12
91 Orsay
France
Telephone: 920-8312
Telex: 27 642

GERMANY
Varian GmbH
Breitwiesenstrasse 9
7 Stuttgart-Vaihingen
Germany
Telephone: (0711) 73 20 28
Telex: 7-255614

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

JOHN
87 West 3rd 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

SYRACUSE
113 Twin Oaks Drive
Syracuse, New York 13206
Telephone: (315) 437-2568
TWX: 710-541-1524

TAMPA
314 South Missouri
Suite 205
Clearwater, Florida 33516
Telephone: (813) 446-8513
TWX: 810-866-0434

WASHINGTON
714 Church Street
Alexandria, Virginia 22314
Telephone: (703) 549-8205
TWX: 710-832-9823

JAPAN
Marubun Co., Ltd.
1, 2-Chome, Odommacho
Nihombashi, Chuo-Ku
Tokyo, Japan
Telephone: 662-8151
Telex: 22-957
Cable: Marubun, Tokyo

SCANDINAVIA
Varian AB
Skytteholmsvagen 7D
P.O. Box 1099
Solna 1, Sweden
Telephone: (08) 82 00 30
Telex: 10 403

SWITZERLAND
Varian AG
Baarerstrasse 77
6300 Zug, Switzerland
Telephone: (042) 21 45 55
Telex: 78 841

UNITED KINGDOM AND IRELAND
Varian Associates Ltd.
Russell House
Molesley Road
Walton-on-Thames
Surrey, England
Telephone: Walton-on-Thames 2 87 66
Telex: 261 351
EIMAC division of varian

301 Industrial Way, San Carlos, California 94070
1678 South Pioneer Road, Salt Lake City, Utah 84104