



# EIMAC

A Division of Varian Associates  
SAN CARLOS, CALIFORNIA

## 6C21 PULSE TRIODE • MODULATOR AMPLIFIER

The Eimac 6C21 is a high-vacuum power triode designed for pulse-modulator service at d-c plate voltages up to 30 kilovolts and peak plate currents as high as 15 amperes.

The 6C21 is forced-air and radiation cooled, has a maximum plate-dissipation rating of 300 watts, and, in pulse modulator service, will deliver up to 375 kilowatts to a resistive load with 7.5 kilowatts of driving power.

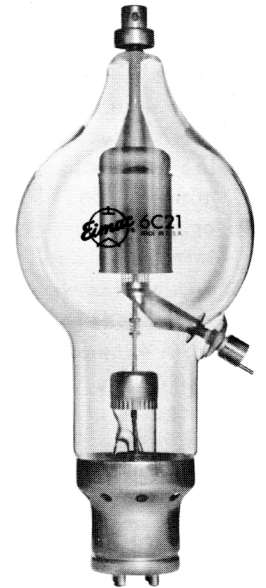
### GENERAL CHARACTERISTICS

#### ELECTRICAL

|   |                       |
|---|-----------------------|
| Filament: Thoriated Tungsten                                  |                       |
| Voltage   | 8.2 volts             |
| Current   | 17.0 amperes          |
| Amplification Factor (Average)                                | 30                    |
| Direct Interelectrode Capacitances (Average)                  |                       |
| Grid-Plate  | 4.3 $\mu\text{mf}$    |
| Input   | 9.5 $\mu\text{mf}$    |
| Output  | 0.7 $\mu\text{mf}$    |
| Transconductance ( $I_b=100 \text{ ma.}, E_b=2000\text{v.}$ ) | 6100 $\mu\text{mhos}$ |

#### MECHANICAL

|  |  |
|--|--|
| Base   | 50-watt jumbo 4-pin  |
| Connections  | See drawing  |
| Socket   | E. F. Johnson Co. 123-211,<br>National Co. XM-50 or<br>equivalent. |
| Mounting Position                                      | Vertical, base down or up  |
| Cooling  | Forced Air and Radiation   |
| Maximum Temperature of Grid & Plate Seals              | 225° C.  |
| Recommended Heat Dissipating Plate and Grid Connectors | Eimac HR-8   |
| Maximum Overall Dimensions:                            |  |
| Length   | 12- $\frac{5}{8}$ inches   |
| Diameter   | 5- $\frac{1}{8}$ inches  |
| Net Weight   | 1.3 pounds   |
| Shipping Weight  | 5.8 pounds   |



#### MAXIMUM RATINGS

|                                    |                     |
|------------------------------------|---------------------|
| Pulse Modulator Service (Per Tube) |                     |
| D-C PLATE VOLTAGE                  | 30 MAX. KILOVOLTS   |
| D-C GRID VOLTAGE                   | -2.0 MAX. KILOVOLTS |
| PEAK POSITIVE PLATE VOLTAGE        | 35 MAX. KILOVOLTS   |
| PEAK POSITIVE GRID VOLTAGE         | 1.6 MAX. KILOVOLTS  |
| PEAK PLATE CURRENT                 | 15 MAX. AMPERES     |
| AVERAGE GRID DISSIPATION           | 50 MAX. WATTS       |
| AVERAGE PLATE DISSIPATION          | 300 MAX. WATTS      |

#### TYPICAL OPERATION

|                             |                |
|-----------------------------|----------------|
| D-C Plate Voltage           | 28 kilovolts   |
| D-C Grid Voltage            | -1.5 kilovolts |
| Pulse Plate Current         | 15 amperes     |
| Pulse Grid Current*         | 3.0 amperes    |
| Pulse Positive Grid Voltage | 1000 volts     |
| Pulse Grid Driving Power*   | 7.5 kilowatts  |
| Load: Resistive             | 1650 ohms      |
| Duty                        | .002           |
| Pulse Voltage Output        | 25 kilovolts   |
| Pulse Power Input           | 420 kilowatts  |
| Pulse Plate Dissipation     | 45 kilowatts   |
| Pulse Power Output          | 375 kilowatts  |
| *Approximate values.        |                |



## APPLICATION

**Mounting**—The 6C21 must be mounted vertically, base down or up. The leads to the plate and grid terminals should be flexible, and the tube must be protected from vibration and shock.

**Cooling**—Forced-air cooling of the filament stem structure is required. Base cooling requires a minimum air flow of  $2\frac{1}{2}$  cubic feet per minute directed through the tube base toward the filament press. If the hole in the socket is at least 1 inch in diameter and the manifold is the same diameter, a static pressure of  $\frac{1}{4}$  inch of water is required at the manifold to provide the  $2\frac{1}{2}$  cubic feet per minute. Heat Dissipating Connectors (Eimac HR-8 or equivalent) must be used at the plate and grid terminals and unobstructed circulation of air around the tube is required in sufficient quantity to prevent the temperatures of grid and plate seals from exceeding  $225^{\circ}\text{C}$ . Forced ventilation of compartments or equipment in which the tube is located is always beneficial, though not necessarily required.

Tube temperatures may be measured with the aid of "Tempilaq", a temperature-sensitive lacquer manufactured by the Tempil Corporation, 132 West 22nd Street, New York 11, N. Y. For satisfactory results, Tempilaq must be sprayed on the surface to be measured in a thin coat, covering as small an area as will serve the purpose.

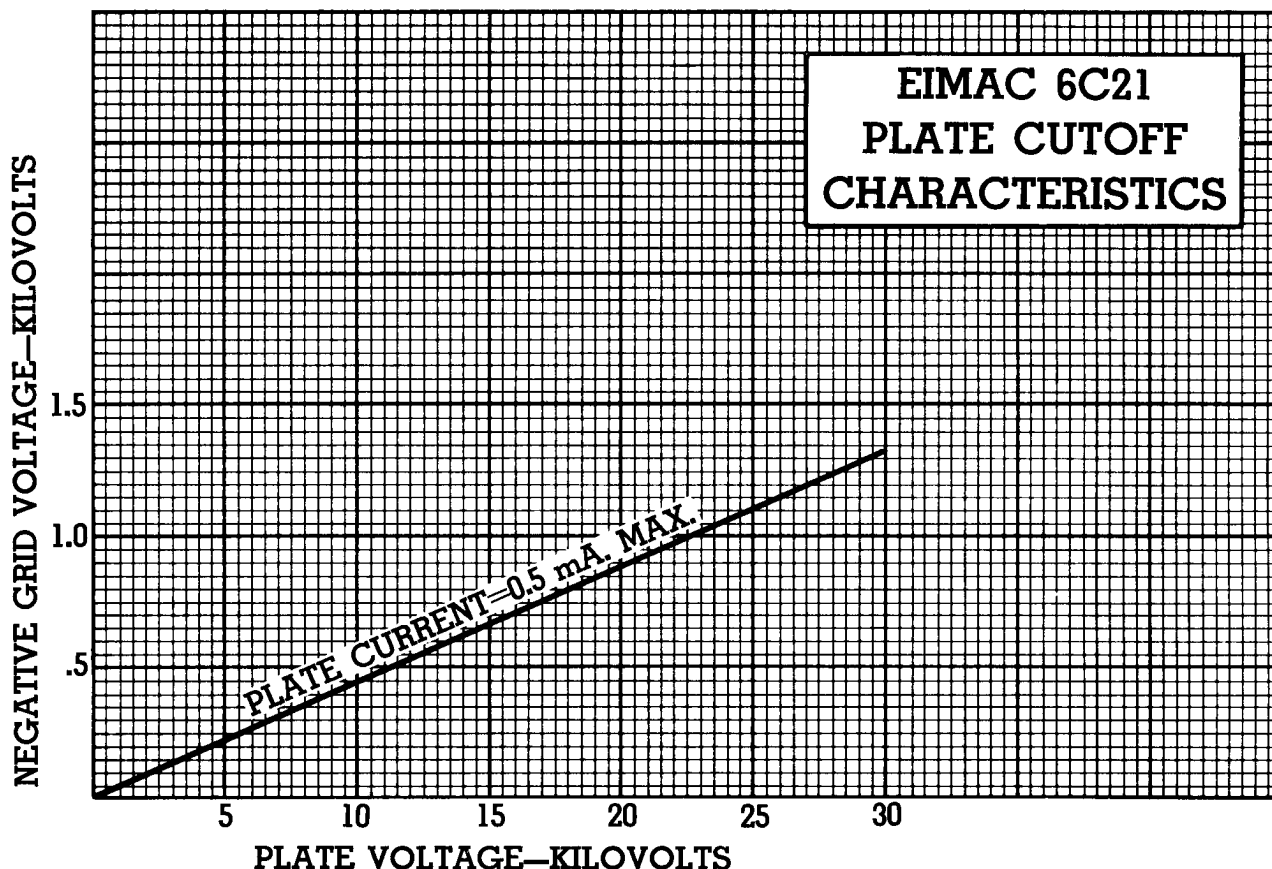
## ELECTRICAL

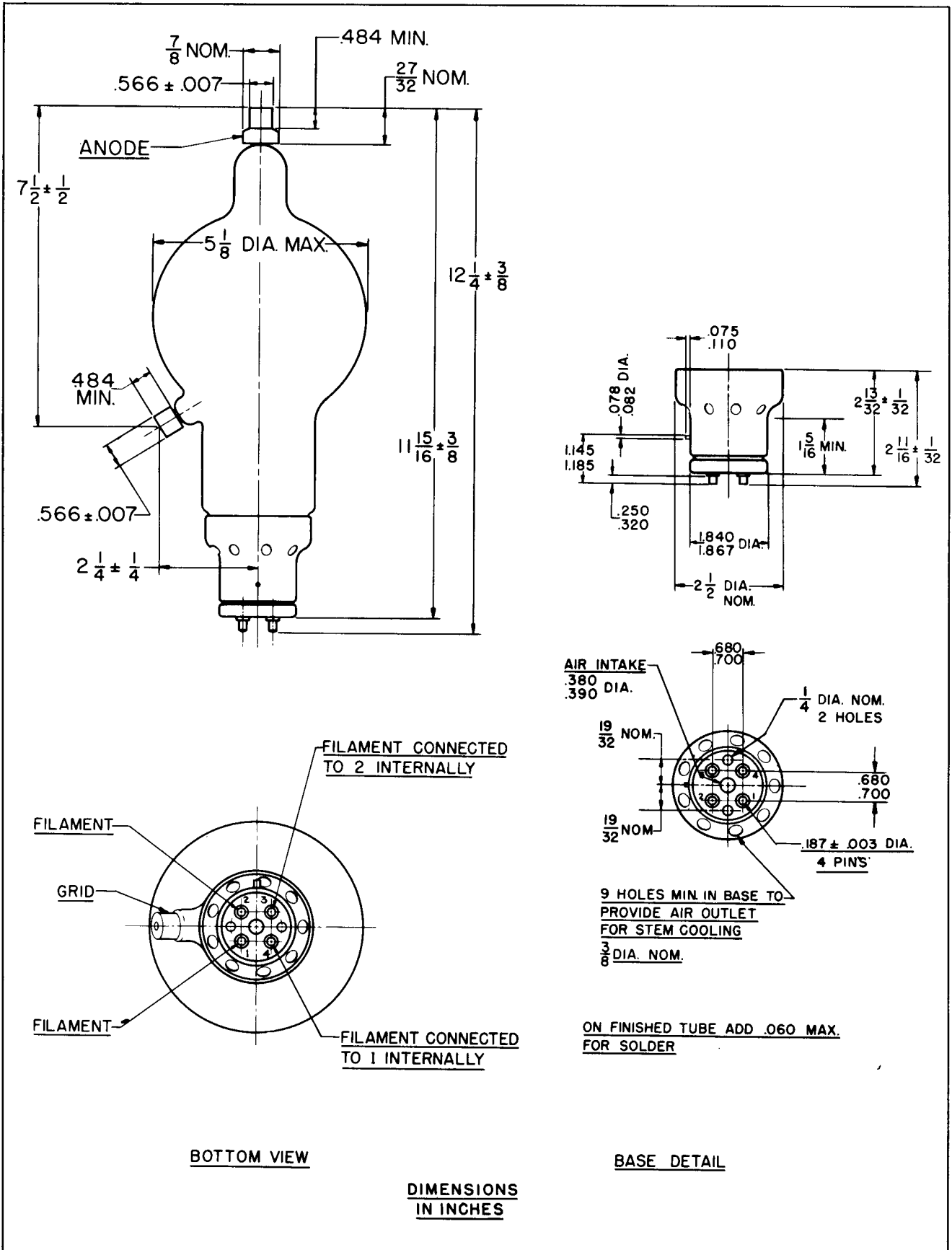
**Filament Voltage**—For optimum tube life the filament voltage, as measured directly at the base pins, should be the rated value of 8.2 volts. Variations should be kept within the range of 7.9 to 8.5 volts. All four socket terminals should be used, with two placed in parallel for each filament connection.

**Plate Dissipation**—Under normal operating conditions, the plate dissipation should not be allowed to exceed the maximum rating of 300 watts. Plate dissipation in excess of the maximum rating is permissible for short periods of time, such as during adjustment procedures.

**Operation**—The 6C21 may be operated with inductive or resistive loads, provided only that the maximum ratings are not exceeded. The ratings listed for pulse modulator service are for operation at peak plate currents of 15 amperes and pulse lengths up to 100 milliseconds. Further information on pulse operation, such as tube limitations under long (100 milliseconds or more) pulse conditions, is contained in "Pulse Service Notes" obtainable from Eimac Division of Varian on request. If it is desired to operate the 6C21 under conditions widely different from those given for pulse modulator service, write Eimac Division of Varian for information and recommendations.

Useful information about pulse circuits may be obtained from such publications as "Pulse Generators," volume 5 of the MIT Radiation Laboratory Series, by McGraw-Hill, 1948.

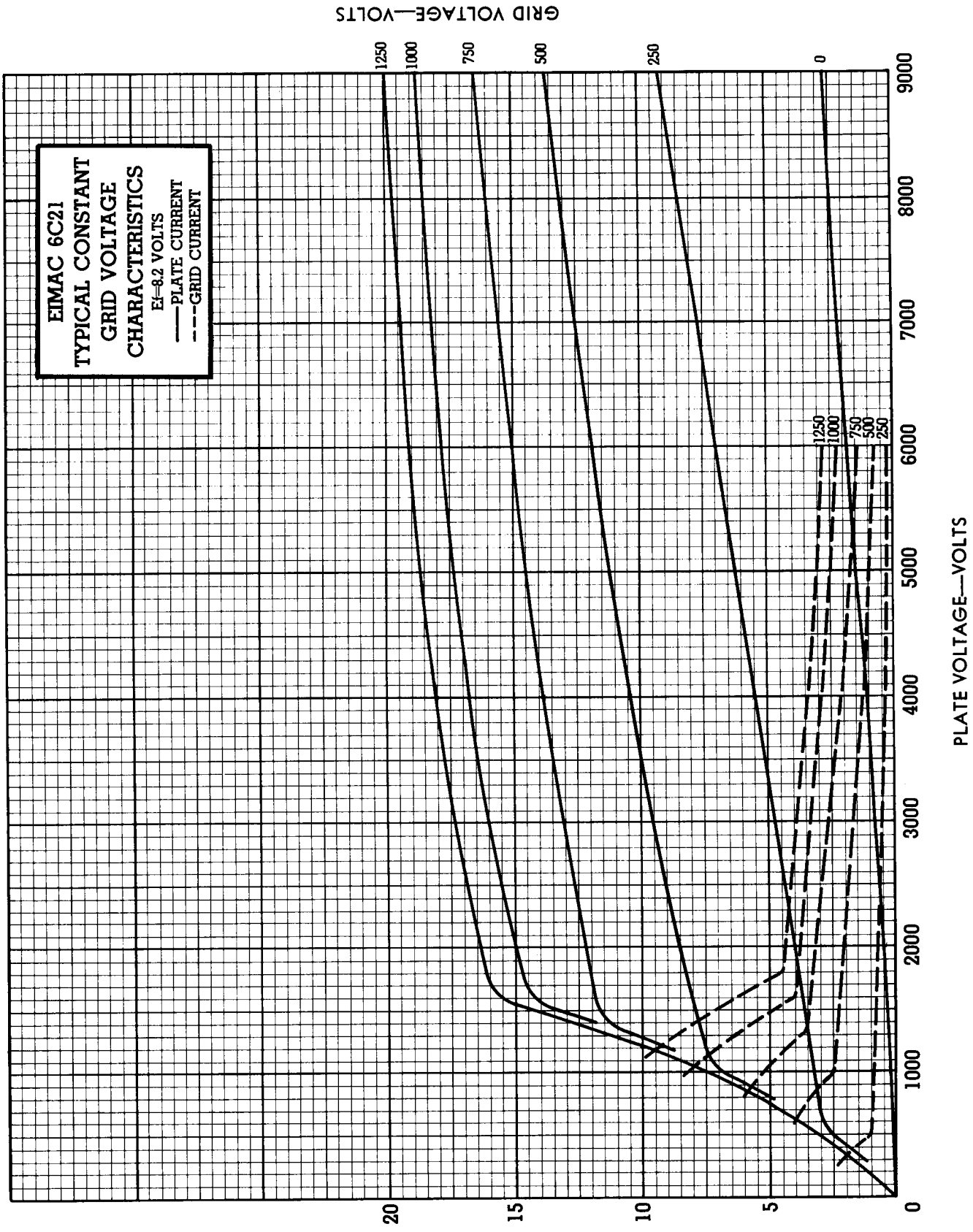






6C21

PLATE CURRENT—AMPERES  
GRID CURRENT—AMPERES



EIMAC 6C21  
TYPICAL CONSTANT  
GRID VOLTAGE  
CHARACTERISTICS  
 $E_f = 8.2$  VOLTS  
— PLATE CURRENT  
--- GRID CURRENT