TENTATIVE DATA

EITEL-McCULLOUGH, INC.
SAN BRUNO, CALIFORNIA

4PR60A

PULSE TETRODE MODULATOR AMPLIFIER

The Eimac 4PR60A is a high vacuum tetrode intended for pulse modulator service in circuits employing inductive or resistive loads.

Cooling of the 4PR60A is accomplished by radiation from the plate which has a maximum dissipation rating of 60 watts and by air circulation around the envelope.

GENERAL CHARACTERISTICS

ELECTRICAL

Cathode: Oxide-coated, Unipotential		
Heater Voltage	26.0	volts
Heater Current	2.25	amperes
Minimum Heating Time	3	minutes
Direct Interelectrode Capacitances (Average)		
Grid-Plate (without shielding)	0.3	$\mu\mu$fd
Input	43.0	$\mu\mu$fd
Output	9.0	$\mu\mu$fd

MECHANICAL

Minimum Shock Test	200g
Base	Fits E. F. Johnson Co. Socket Number 124-234 or equivalent
Mounting Position	Any
Cooling	Radiation and Convection
Maximum Overall Dimensions	
Length	6 inches
Diameter	3 1/16 inches
Net Weight	9 ounces
Shipping Weight (approx.)	1.75 pounds

RATINGS

MAXIMUM RATINGS—Pulse Modulator Service (Per Tube)

D-C PLATE VOLTAGE	20 MAX. KILOVOLTS
D-C SCREEN VOLTAGE[1]	1.5 MAX. KILOVOLTS
D-C GRID VOLTAGE	—1.0 MAX. KILOVOLT
PEAK POSITIVE GRID VOLTAGE	300 MAX. VOLTS
PEAK PLATE CURRENT	18 MAX. AMPERES
PEAK POSITIVE PLATE VOLTAGE	25 MAX. KILOVOLTS
PLATE DISSIPATION (AVERAGE)	60 MAX. WATTS
SCREEN DISSIPATION (AVERAGE)	8 MAX. WATTS
SEAL TEMPERATURES	200 MAX. DEG. C

DUTY

For peak plate currents in excess of 5 amperes, the duty shall not exceed 0.001, and the product of peak current in amperes and pulse duration in microseconds shall not exceed 40. The tube shall not be operated for longer than 5 microseconds in any 100 microsecond interval.

For peak plate current values of less than 5 amperes, the pulse duration-current factor of 40 applies, and the plate dissipation rating of 60 watts determines the maximum permissible duty.

TYPICAL OPERATION
Pulse Modulator (Per tube)

D-C Plate Voltage	20.0	Kilovolts
Pulse Plate Current	15.0	Amperes
D-C Screen Voltage	1.25	Kilovolts
Pulse Screen Current	3.0	Amperes
D-C Control Grid Voltage	—800	Volts
Pulse Control Grid Current	2.0	Amperes
Pulse Positive Grid Voltage	225	Volts
Load: Resistance	1050	Ohms
Shunt Inductance	10	Milihenries
Duty	0.001	
Pulse Length	2	Microseconds
Peak Positive Plate Voltage	25	Kilovolts
Pulse Power Input	300	Kilowatts
Pulse Power Output	270	Kilowatts
Pulse Plate Dissipation	30	Kilowatts
Useful Pulse Plate Output Voltage	18	Kilovolts

[1]Screen grid series protective resistance shall be 20,000 ohms, minimum.

(Effective 3-1-51)

Printed in U. S. A. 1-A1-46890

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APPLICATION

MECHANICAL

Mounting—The 4PR60A may be mounted and operated in any position. A flexible connecting strap should be provided between the plate terminal and the external plate circuit.

Adequate ventilation must be provided so that the seals and envelope under operating conditions do not exceed 200° C.

ELECTRICAL

Heater Voltage—The heater voltage, as measured directly at the heater pins, should be the rated value of 26.0 volts. Unavoidable variations in heater voltage must be kept within the range from 23.4 to 28.6 volts.

Screen Dissipation—The average power dissipated by the screen of the 4PR60A must not exceed eight watts. A protective series resistance of not less than 20,000 ohms must be inserted in the screen-voltage supply circuit and the screen should be adequately bypassed directly to the cathode by means of a suitable capacitor.

Plate Voltage—The plate-supply voltage for the 4PR60A should not exceed 20 kilovolts. In circuits employing inductive loading, the peak instantaneous plate voltage should not exceed 25 kilovolts.

Plate Dissipation—Under normal operating conditions, the plate dissipation of the 4PR60A should not be allowed to exceed 60 watts. Plate dissipation in excess of maximum rating is permissible for short periods of time, such as during adjustment procedures.