from JEDEC release #4833, Oct. 26, 1964

ELECTRONICS

6EA4

COMPACTRON BEAM TRIODE

DESCRIPTION AND RATING

The 6EA4 is a low-current, high-voltage, beam triode intended for use as a shunt regulator in the high-voltage power supply of color television receivers.

GENERAL

ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC*	6.3±0.6	Volts
Heater Current‡	0.2	Amperes
Direct Interelectrode Capacitances§		
Grid to Plate: (g to p)	0.036	pf
Input: g to (h + k)	1.9	pf
Output: p to (h + k)	0.63	pf

MECHANICAL

Operating Position - Any
Envelope - T-12, Glass
Base - E12-74, Button 12-Pin
Top Cap - C1-34, Small
Outline Drawing - EIA 12-90

Maximum Diameter	1.563	Inches
Maximum Over-all Length	4.375	Inches
Maximum Seated Height	4.000	Inches
Minimum Seated Height	3.750	Inches

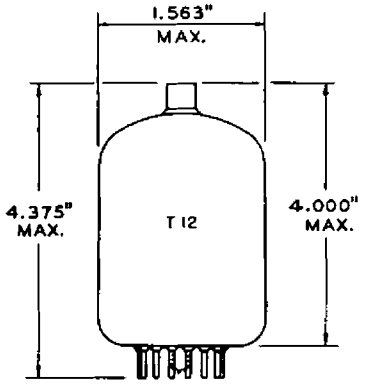
MAXIMUM RATINGS

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey electron tube of a specified type as defined by its published data and should not be exceeded under the worst probable conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube, making allowance for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of all other electron devices in the equipment.

PHYSICAL DIMENSIONS

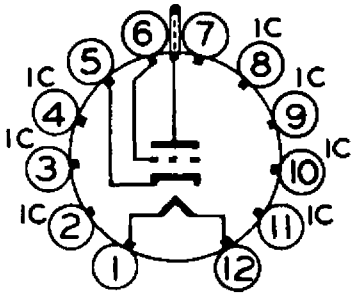


EIA 12-90

TERMINAL CONNECTIONS

Pin 1 - Heater
Pin 2 - Internal Connection - Do Not Use
Pin 3 - Internal Connection - Do Not Use
Pin 4 - Internal Connection - Do Not Use
Pin 5 - Cathode and Internal Shield
Pin 6 - Grid
Pin 7 - No Connection
Pin 8 - Internal Connection - Do Not Use
Pin 9 - Internal Connection - Do Not Use
Pin 10 - Internal Connection - Do Not Use
Pin 11 - Internal Connection - Do Not Use
Pin 12 - Heater
Cap - Plate

BASING DIAGRAM



EIA 12FA

GENERAL ELECTRIC

MAXIMUM RATINGS (Cont'd)

DESIGN-MAXIMUM VALUES

Plate-Supply Voltage, Unregulated	60000	Volts
Plate Voltage	27000	Volts
Negative DC Grid Voltage	135	Volts
Peak Negative Grid Voltage¶	440	Volts
Plate Dissipation	.30	Watts
DC Plate Current	1.6	Milliamperes
Heater-Cathode Voltage		
Heater Positive with Respect to Cathode	Not Recommended	
Heater Negative with Respect to Cathode	200	Volts
Grid-Circuit Resistance#	3.0	Megohms

CHARACTERISTICS AND TYPICAL OPERATION

SHUNT VOLTAGE REGULATOR SERVICE—See Circuit Diagram, Page 3

Unregulated DC Supply Voltage	36000	Volts
Equivalent Resistance of Unregulated Supply	.11	Megohms
DC Reference Voltage	200	Volts
Equivalent Resistance of Reference Supply	1000	Ohms
Effective Grid-Plate Transconductance	200	Micromhos
DC Plate Current for Zero Load Current	1000	Microamperes
DC Plate Current for Load Current of 1 Milliampere	.45	Microamperes
Regulated DC Output Voltage at Zero Load Current	25000	Volts
Regulated DC Output Voltage at Load Current of 1 Milliampere	24500	Volts

NOTES

* The equipment designer should design the equipment so that heater voltage is centered at the specified bogey value, with heater supply variations restricted to maintain heater voltage within the specified tolerance.

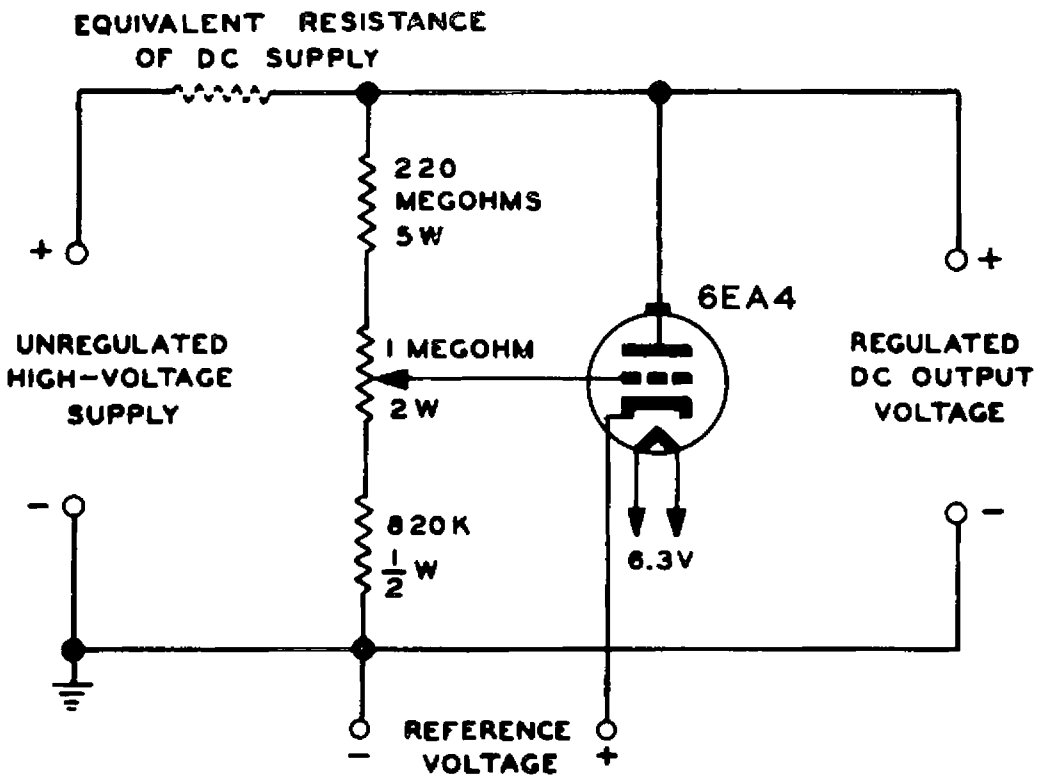
‡ Heater current of a bogey tube at Ef = 6.3 volts.

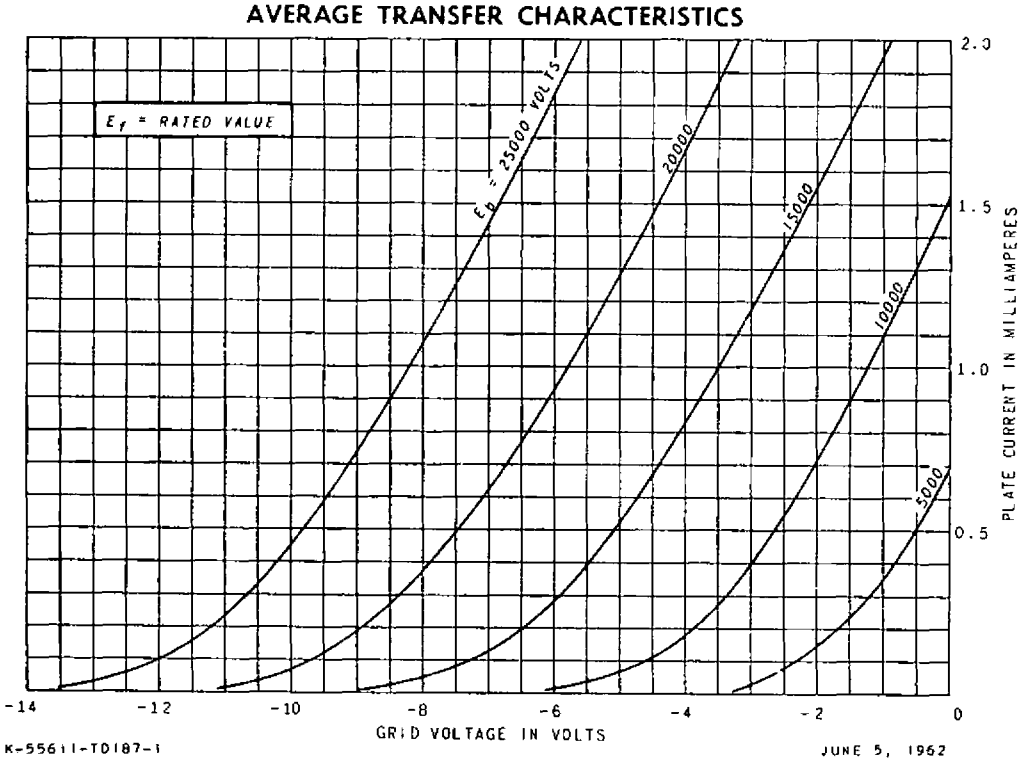
§ Without external shield.

¶ Peak value for duration of 20 seconds maximum during equipment warm-up.

\# With flyback transformer high-voltage supply.

Note: High voltage operation of the 6EA4 can result in the production of x-rays which can constitute a health hazard unless these tubes are adequately shielded. The need for this precaution should be considered in equipment design. Relatively simple shielding should prove adequate.


EQUIVALENT RESISTANCE
OF DC SUPPLY
220
MEGOHMS
5W
6EA4
UNREGULATED
HIGH-VOLTAGE
SUPPLY
1 MEGOHM
2W
REGULATED
DC OUTPUT
VOLTAGE
820K
1/2 W
6.3V
REFERENCE
VOLTAGE


AVERAGE TRANSFER CHARACTERISTICS
E_f = RATED VALUE
E_b = 25000 VOLTS
20000
15000
10000
5000
2.0
1.5
1.0
0.5
PLATE CURRENT IN MILLIAMPERES
-14
-12
-10
-8
-6
-4
-2
0
GRID VOLTAGE IN VOLTS
K-5561I-TD187-1
JUNE 5, 1962