



ELECTRONIC TUBE REFERENCE

6BD4A

Triode - HV Shunt Regulator electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

Sharp-cutoff beam triode for high-voltage shunt regulation; 27 kV maximum plate voltage, 25 W dissipation, μ 1650.

GENERAL CHARACTERISTICS

BASE DESIGNATION	6BD4	BASE PINS	7
NOMINAL HEATER	6.3 V / 600 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Triode	
AMPLIFICATION FACTOR	1650
MAXIMUM PLATE VOLTAGE	27000 V
MAXIMUM PLATE DISSIPATION	25 W
MAXIMUM CATHODE CURRENT	1.5 mA
Sharp-cutoff beam triode for HV shunt regulation. Maximum DC plate 27 kV, unregulated supply 55 kV, plate current 1.5 mA, plate dissipation 25 W. Amplification factor 1650. Heater-to-cathode peak voltage ± 180 V. Grid-to-plate capacitance 1.0 pF; output capacitance ≤ 0.04 pF. Grid circuit resistance maximum 4 MΩ when supply equivalent resistance ≥ 8 MΩ; otherwise see manufacturer curve. Effective grid-plate transconductance 138 or 116 μmhos depending on circuit example, not intrinsic gm. X-rays possible above approximately 16 kV; shielding may be needed.	

The 6BD4A is a sharp-cutoff beam triode for high-voltage, low-current shunt-regulator service, not a general-purpose RF receiving triode. It uses an indirectly heated 6.3 V, 0.6 A cathode, with maximum DC plate voltage 27 kV, maximum unregulated supply voltage 55 kV, maximum DC plate current 1.5 mA and maximum plate dissipation 25 W. Published amplification factor is 1650. RCA and Sylvania document two shunt-regulator circuit examples, peak heater-cathode limits of ± 180 V, and an X-ray shielding warning above approximately 16 kV plate voltage.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1950 Sylvania

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1950 SYLVANIA

Section 1 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode Coated Unipotential low current supplies. The 6BD4A	Sylvania descriptive OCR fragment; not an electrical value.	Cathode Coated Unipotential low current supplies. The 6BD4A
Heater or filament current	600 mA	Nominal heater current 600 mA; corrected OCR error
DC Voltage . .o . 29800 36300 Volts PRODUCTS INC.	29800–36300 V	Unregulated supply DC voltage for two typical shunt-regulator examples
Equivalent Resistance . 8 8 Megohms	8 Megohm	Equivalent Resistance . 8 8 Megohms
Equivalent Resistance . 1000 1000 Ohms APRIL 1955	1000 Ohms	Equivalent Resistance . 1000 1000 Ohms APRIL 1955
For Load Current of 0 Ma 10_?’5 pa	Typical DC plate current at zero load: see RCA original, OCR uncertain.	For Load Current of 0 Ma 10_?’5 pa
For Load Current of 1 Ma 100 pa	Typical DC plate current at 1 mA load: see RCA original, OCR uncertain.	For Load Current of 1 Ma 100 pa
For Load Current of 0 Ma . 20000 27000 Volts	20000–27000 V	Regulated output voltage at 0 mA load: example A 20000 V, example B 27000 V
For Load Current of 1 Ma . 19700 26500 Volts	19700–26500 V	Regulated output voltage at 1 mA load: example A 19700 V, example B 26500 V

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
voltage or 16,000 volts, whichever is less.	16000 V	X-ray shielding warning: above approximately 16000 V plate voltage; corrected OCR 16 V
Amplification Factor	1650	Amplification factor, sharp-cutoff beam triode
Heater-Cathode Voltage	180 V	Maximum peak heater-to-cathode voltage ± 180 V, both polarities
Grid Circuit Resistance	4 MΩ	Maximum grid circuit resistance when unregulated supply equivalent resistance ≥ 8 M Ω ; otherwise consult curve
Transconductance	138 μmho	Effective grid-plate transconductance, circuit example A, 29,800 V unregulated supply
Transconductance	116 μmho	Effective grid-plate transconductance, circuit example B, 36,300 V unregulated supply

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage . 6.3 Volts age rating and plate dissipation	6.3 V	Heater Voltage . 6.3 Volts age rating and plate dissipation
DC Plate Voltage. . . . 27000 Volts Max.	27000 V	DC Plate Voltage. . . . 27000 Volts Max.
Unregulated D C Supply Voltage . 55000 Volts Max.	55000 V	Unregulated D C Supply Voltage . 55000 Volts Max.
D C Plate Current 1.5 Ma Max.	1.5 mA	D C Plate Current 1.5 Ma Max.
Plate Dissipation . 25 Watts Max.	25 W	Plate Dissipation . 25 Watts Max.



195X General Electric Essential Characteristics

Published test conditions and operating points. Values on this page are preserved as reported by this source.

195X GENERAL ELECTRIC ESSENTIAL CHARACTERISTICS

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum unregulated DC supply voltage	55000 V	HighVoltageShuntRegulator
Maximum DC plate current	1.5 mA	HighVoltageShuntRegulator
Maximum plate dissipation	25 W	HighVoltageShuntRegulator