



ELECTRONIC TUBE REFERENCE

12BY7A

Voltage - Pentode Sharp Cutoff (single) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

PENTODE

Sharp-cutoff pentode designed for television video amplification. It belongs to the 12BY7A/12BV7/12DQ7 replacement family and provides high-transconductance wideband signal gain rather than ordinary audio power output.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9BF	BASE PINS	9
NOMINAL HEATER	12.6 V / 300 mA	PARALLEL HEATER	6.3 V / 600 mA
HEATING	Indirect	SERIES OPERATION	Capable
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

9BF - TERMINAL PINOUT

TERMINAL	SECTION	ELEMENT	STATUS
PIN1 – K	A	K – Cathode	CONNECTED
PIN2 – G1	A	G1 – Control Grid	CONNECTED
PIN3 – G3	A	G3 – Suppressor Grid	CONNECTED
PIN4 – H	–	H – Heater	CONNECTED
PIN5 – H	–	H – Heater	CONNECTED
PIN6 – HCT	–	HCT – Heater Center Tap	CONNECTED
PIN7 – P	A	P – Plate (Anode)	CONNECTED
PIN8 – G2	A	G2 – Screen Grid	CONNECTED
PIN9 – G3	A	G3 – Suppressor Grid	CONNECTED

SECTION RATINGS

SECTION1 Pentode	
PLATE RESISTANCE	93000 Ω
TRANSCONDUCTANCE	0.011 S
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM SCREEN VOLTAGE	180 V
MAXIMUM PLATE DISSIPATION	6.5 W
MAXIMUM SCREEN DISSIPATION	1.1 W
<i>Promoted values are limited to values explicitly present in this supplied 12-V datasheet block; additional published values are retained in parameter rows.</i>	

Sharp-cutoff pentode used as a television video amplifier; 12BY7A, 12BV7, and 12DQ7 are handled as the source-stated replacement family.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1961 Tung Sol

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

1961 TUNG SOL

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	12.6 V	Nominal
Heater current	300 mA	Nominal
Plate voltage	250 V	Typical operating conditions
Screen voltage	180 V	Typical operating conditions
Plate current	26 mA	Typical operating conditions



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1965 Westinghouse Data Book

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

1965 WESTINGHOUSE DATA BOOK

Section 1 · Pentode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Series heater voltage	12.6 V	SeriesHeater
Series heater current	300 mA	SeriesHeater
Parallel heater voltage	6.3 V	ParallelHeater
Parallel heater current	600 mA	ParallelHeater
Transconductance	11000 μ S	—
Plate resistance	93000 ohm	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Typical plate voltage	250 V	—
Heater-cathode voltage maximum	200 V	—

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	Video amplifier	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-to-plate capacitance	0.063 pF	—
Input capacitance	10.2 pF	—
Output capacitance	3.5 pF	—



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1966 Tung Sol Electronic Tubes 2 of 4

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

1966 TUNG SOL ELECTRONIC TUBES 2 OF 4

Section 1 · Pentode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
GRID #1 TO PLATE: G1 TO P	0.063 pF	Published datasheet
INPUT: G	1 pF	Published datasheet; operating column 1
INPUT: G	15 pF	Published datasheet; operating column 2
INPUT: G	10.2 pF	Published datasheet; operating column 3

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
TOTAL DC AND PEAK	200 V	Published datasheet
MAXIMUM PLATE SUPPLY VOLTAGE	3 V	Published datasheet

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
MAXIMUM NEGATIVE	0 V	Published datasheet; operating column 1
MAXIMUM NEGATIVE	55 V	Published datasheet; operating column 2
MAXIMUM POSITIVE DC GRID #1 VOLTAGE	0 V	Published datasheet
MAXIMUM GRID #2 VOLTAGE –i	190 V	Published datasheet
MAXIMUMA PLATE DISSIPATION – ►	6.5 W	Published datasheet
MAXIMUM GRID #2 DISSIPATION --►	1.2 W	Published datasheet
MAXIMUM GRID #1 CIRCUIT RESISTANCE	0 Mohm	Published datasheet
MA FIXED BIAS	0 Mohm	Published datasheet; operating column 1
MA FIXED BIAS	0.25 Mohm	Published datasheet; operating column 2
CATHODE BIAS	0 Mohm	Published datasheet; operating column 1
CATHODE BIAS	1 Mohm	Published datasheet; operating column 2
HEATER WARM– UP TIME ~APPROX.)	11 s	Published datasheet
CATHODE RESISTOR	100 ohm	Published datasheet; operating column 1
CATHODE RESISTOR	0 ohm	Published datasheet; operating column 2

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
PLATE VOLTAGE	250 V	Published datasheet
GRID #2 VOLTAGE	180 V	Published datasheet
PLATE CURRENT	26 mA	Published datasheet
GRID #2 CURRENT	5.7 mA	Published datasheet
PLATE RESISTANCE	93 ohm	Published datasheet; operating column 1
PLATE RESISTANCE	0 ohm	Published datasheet; operating column 2
TRANSCONDUCTANCE	11 uS	Published datasheet; operating column 1



SOURCE DATA APPENDIX

1968 General Electric Co

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

1968 GENERAL ELECTRIC CO

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Current	26 mA	ClassA
Screen Current	5.75 mA	ClassA



SOURCE DATA APPENDIX

1971 RCA HB3 Binder 5 of 7

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

1971 RCA HB3 BINDER 5 OF 7

Section 1 · Pentode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Voltage (AC or DC) – published value 1	12.6 V	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Voltage (AC or DC) – published value 2	10 V	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Voltage (AC or DC) – published value 3	6.3 V	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Current – published value 1	4.3 A	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Current – published value 2	600 mA	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Current – published value 3	6 A	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Grid No.1 to plate	0.063	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
and heater	10.2	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
and heater	3.5	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Plate Supply Voltage	250 V	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Grid-No.2 Supply Voltage	180 V	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Cathode Resistor	100 ohm	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Plate Resistance (Approx)	93000 ohm	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Transconductance	11000	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Plate Current	26 mA	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-No.2 Current	5.75 mA	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
plate μ a = 20 – published value 1	20 V	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
plate μ a = 20 – published value 2	-11.6 V	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Pin 1 -Cathode – published value 1	1	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Pin 1 -Cathode – published value 2	6	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Pin 2 -Grid No.1 – published value 1	2	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Pin 2 -Grid No.1 – published value 2	7	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Pin 3 -Grid No.3, – published value 1	3	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Pin 3 -Grid No.3, – published value 2	8	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Internal	9	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.
Pin 4 -Heater	4	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Pin 5 -Heater	5	Published value from the filename-designated RCA datasheet block; multiple numbers on one row represent separate limits or heater arrangements.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1975 RCA RC30

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

1975 RCA RC30

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage (ac/dc) 12.6	6.3 V	Published in approved 12BY7A target entry; Section1
Heater Current 0.3	600 mA	Published in approved 12BY7A target entry; Section1
Heater Warm-up Time (Average)	11 seconds	Published in approved 12BY7A target entry; Section1
Plate Supply Voltage	330 V	Published in approved 12BY7A target entry; Section1
Grid-No.3 (Suppressor-Grid) Voltage, Positive value	0 V	Published in approved 12BY7A target entry; Section1
Grid-No.2 (Screen-Grid) Voltage	190 V	Published in approved 12BY7A target entry; Section1
Negative-bias value	65 V	Published in approved 12BY7A target entry; Section1
Positive-bias value	0 V	Published in approved 12BY7A target entry; Section1
Plate Dissipation	6.5 W	Published in approved 12BY7A target entry; Section1
Grid-No.2 Input	1.2 W	Published in approved 12BY7A target entry; Section1
grid-no	2 V	Published in approved 12BY7A target entry; Section1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
For fixed-bias operation	0.25 MΩ	Published in approved 12BY7A target entry; Section1
For cathode-bias operation	1 MΩ	Published in approved 12BY7A target entry; Section1
Heater Voltage (ac/dc) 6.3 16.8	25.3 V	Published in approved 12BY7A target entry; Section1
Heater Current 0.6 0.45	300 mA	Published in approved 12BY7A target entry; Section1
Heater Warm-up Time {Average} 11 11	11 seconds	Published in approved 12BY7A target entry; Section1

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid No.1 to Plate	0.063 pF	Published in approved 12BY7A target entry; Section1
and Internal Shield	10.2 pF	Published in approved 12BY7A target entry; Section1
Plate to Cathode, Heater, Grid No.2, and Internal Shield	3.5 pF	Published in approved 12BY7A target entry; Section1
Plate to Cathode and Heater	12 pF	Published in approved 12BY7A target entry; Section1

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Supply Voltage	250 V	Published in approved 12BY7A target entry; Section1
Grid-No.2 Supply Voltage	180 V	Published in approved 12BY7A target entry; Section1
Cathode-Bias Resistor	100 Ω	Published in approved 12BY7A target entry; Section1
Plate Resistance (Approx.)	93000 Ω	Published in approved 12BY7A target entry; Section1
Plate Current	26 mA	Published in approved 12BY7A target entry; Section1
Grid-No.2 Current B	75 mA	Published in approved 12BY7A target entry; Section1
Grid-No.1 Voltage (Approx.) for plate current of 20 j tA	11.6 V	Published in approved 12BY7A target entry; Section1



TUBE TINKER

An independent reference for electronic tubes, vacuum tubes,
and their source documents.

[Catalog](#) [Tube types](#) [Full books](#) [Blog](#) [Feedback & corrections](#)

© 2026 Tube Tinker