

ELECTRONIC TUBE REFERENCE

6AK5

Voltage Pentode - Sharp Cutoff (single) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

PENTODE

Miniature high-frequency pentode designed for low-noise RF and IF voltage amplification. Its compact construction and reduced noise make it particularly useful in sensitive receiver front-end signal stages.

GENERAL CHARACTERISTICS

BASE DESIGNATION	7BD	BASE PINS	7
NOMINAL HEATER	6.3 V / 175 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

7BD - TERMINAL PINOUT

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

SECTION RATINGS

SECTION1 Pentode	
PLATE RESISTANCE	300000 Ω
TRANSCONDUCTANCE	0.005 S
MAXIMUM PLATE VOLTAGE	180 V
MAXIMUM SCREEN VOLTAGE	140 V
MAXIMUM PLATE DISSIPATION	1.7 W
MAXIMUM SCREEN DISSIPATION	0.5 W
MAXIMUM CATHODE CURRENT	18 mA
<i>Promoted fields mapped from printed maximum-rating and characteristic headings; additional published values preserved in parameter rows.</i>	

Miniature high-frequency pentode for low-noise RF and IF voltage amplification.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1956 Western Electric Tubes

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

1956 WESTERN ELECTRIC TUBES

Section 1 · Pentode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterOrFilamentVoltage	6.3 V	—
HeaterOrFilamentCurrent	175 mA	—
Transconductance	5000 μ S	Typical



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1958 Brimar Radio Valve No 7

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

1958 BRIMAR RADIO VALVE NO 7

Section 1 · Pentode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Operating Frequency Maximum	400 MHz	Amplifier use

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage	180 V	—
Plate Current	7.7 mA	—
Screen Voltage	120 V	—



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 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate voltage	180 V	Published handbook rating
Maximum screen voltage	140 V	Published handbook rating
Plate voltage	180 V	ClassA
Screen voltage	120 V	ClassA
Plate current	7.7 mA	ClassA
Screen current	2.4 mA	ClassA

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate resistance	500000 ohm	Published handbook characteristic
Transconductance	5100 μS	Published handbook characteristic
Heater voltage	6.3 V	Published heater rating
Heater current	175 mA	Published heater rating

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Input capacitance	4 pF	Published capacitance column
Output capacitance	2.8 pF	Published capacitance column
Grid-to-plate capacitance	0.02 pF	Published capacitance column



TUBE TINKER
ELECTRON TUBE DATABASE

SOURCE DATA APPENDIX

1961 Ferranti Technical Handbook

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

1961 FERRANTI TECHNICAL HANDBOOK

Section 1 · Pentode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterOrFilamentVoltage	6.3 V	—
HeaterOrFilamentCurrent	175 mA	—
MaximumOperatingFrequency	400 MHz	WideBandAmplifier



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

1963 Amperex Condensed

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

1963 AMPEREX CONDENSED

Section 1 · Pentode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	Published rating
Heater current	175 mA	Published rating
Transconductance	5000 μ S	Published table
Published characteristic value	340	Published table

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	120 V	Published table
Screen voltage	120 V	Published table
Cathode resistor	100 ohm	Published table
Published current value	2.5 mA	Published table



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1966 Tung Sol Electronic Tubes 1 of 4

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

1966 TUNG SOL ELECTRONIC TUBES 1 OF 4

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	120 V	ClassA
Screen voltage	120 V	ClassA
Plate current	7.5 mA	ClassA
Screen current	2.5 mA	ClassA
Application	Sharp-cutoff high-frequency voltage amplifier	Section1

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate resistance	0.3 MΩ	Condition1
Transconductance	5000 μS	Condition1
Plate resistance	0.5 MΩ	Condition2
Transconductance	5100 μS	Condition2



SOURCE OPERATING CONDITIONS

1967 Mullard Receiving and Amplifying Valves

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

1967 MULLARD RECEIVING AND AMPLIFYING VALVES

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
(in 4.0	4 pF	Published in approved EF95 target datasheet entry; Section1
Cout 2.2	3.1 pF	Published in approved EF95 target datasheet entry; Section1
(a - g'! 23 <	0.02 pF	Published in approved EF95 target datasheet entry; Section1
Ch- k 2	2 pF	Published in approved EF95 target datasheet entry; Section1
Cin 2.7	2.8 pF	Published in approved EF95 target datasheet entry; Section1
Cou t 4.2	5.1 pF	Published in approved EF95 target datasheet entry; Section1
((a- g 1.4	1.4 pF	Published in approved EF95 target datasheet entry; Section1
gm 5.0	5.1 mA	Published in approved EF95 target datasheet entry; Section1
Pg2 max	500 mW	Published in approved EF95 target datasheet entry; Section1
T h ul h max	170 °C	Published in approved EF95 target datasheet entry; Section1



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

SOURCE PDF

1968 Mazda Belvu

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

1968 MAZDA BELVU

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterVoltageNominal	6.3 V	Nominal
HeaterCurrentNominal	175 mA	Nominal
Maximum Plate Voltage	200 V	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Screen Voltage	155 V	—
Maximum Plate Dissipation	1.7 W	—
Maximum Screen Dissipation	0.55 W	—
Maximum Cathode Current	20 mA	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	5000 μ S	Typical
Plate Resistance	340000 ohm	Typical



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
100 /iA	-5.4 V	Published in approved EF95 target datasheet entry; Section1
For fixed-bias operation 0.5	0.1 M Ω	Published in approved EF95 target datasheet entry; Section1
For cathode-bias operation 1	0.25 M Ω	Published in approved EF95 target datasheet entry; Section1
7BD cies up to	400 MHz	Published in approved EF95 target datasheet entry; Section1
Heater Voltage (ac/dc)	6.3 V	Published in approved EF95 target datasheet entry; Section1
Heater Current	175 mA	Published in approved EF95 target datasheet entry; Section1
Plate Voltage	180 V	Published in approved EF95 target datasheet entry; Section1
Grid-No.2 Supply Voltage	180 V	Published in approved EF95 target datasheet entry; Section1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-No.1 Voltage, Positive-bias value	0 V	Published in approved EF95 target datasheet entry; Section1
Plate Dissipation	1.7 W	Published in approved EF95 target datasheet entry; Section1
For grid-No. 2 voltages up to	90 V	Published in approved EF95 target datasheet entry; Section1
For grid-No. 2 voltages up to 90 volts	0.5 W	Published in approved EF95 target datasheet entry; Section1
For grid-No.2 voltages between 90 and	180 V	Published in approved EF95 target datasheet entry; Section1
Cathode Current	18 mA	Published in approved EF95 target datasheet entry; Section1
Grid-No.2 Supply Voltage 120	120 V	Published in approved EF95 target datasheet entry; Section1

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Internal Shield	4 pF	Published in approved EF95 target datasheet entry; Section1
Internal Shield	2.8 pF	Published in approved EF95 target datasheet entry; Section1

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode- Bias Resistor 180	180 Ω	Published in approved EF95 target datasheet entry; Section1
Plate Resistance (Approx.) 0.3	0.5 M Ω	Published in approved EF95 target datasheet entry; Section1
Transconductance 5000	5100 μ S	Published in approved EF95 target datasheet entry; Section1
Plate Current 7.5	7.7 mA	Published in approved EF95 target datasheet entry; Section1
Grid-No. 2 Current 2.5	2.4 mA	Published in approved EF95 target datasheet entry; Section1



SOURCE DATA APPENDIX

2026 Western Electric 400s

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

2026 WESTERN ELECTRIC 400S
Section 1 · Pentode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Current . . E, = E., =	120 volts	Plate Current . . E, = E., = 120 volts; . 7.5 milliamperes
Transconductance . { Cathode-Bias Resistor =	200 micromhos	Transconductance . { Cathode-Bias Resistor = 200 chms } . . 5000 micromhos
Heater Voltage, A-CorD-C	6.3 volts	Heater Voltage, A-CorD-C. 6.3 volts
Heater Current	175 milliamperes	Heater Current 175 milliamperes
Plate Voltage	180 volts	Plate Voltage 180 volts
Screen Grid Voltage	140 volts	Screen Grid Voltage 140 volts
Cathode Current	18 milliamperes	Cathode Current 18 milliamperes
Bulb Temperature	120 centigrade	Bulb Temperature. 120 centigrade
Plate Voltage	120 volts	Plate Voltage 120 150 180 volts
Screen Grid Voltage	120 volts	Screen Grid Voltage 120 140 120 volts
Cathode-Bias Resistor	200 ohms	Cathode-Bias Resistor 200 330 200 ohms
Plate Current	75 milliamperes	PlateCurrent. 75 6.6 7.7 milliamperes
Screen Grid Current	25 milliamperes	Screen Grid Current. 25 2.1 24 milliamperes .
Plate Resistance	0.3 megohm	Plate Resistance 0.30 6.40 045 megohm
Transconductanee	5000 micromhos	Transconductanee 5000 4500 5100 micromhos
Plate Current of	10 Microamperes	Plate Current of 10 Microamperes —6.8 —7.8 —06.9 volts
SCREEN GRID VOLTAGE=	120 VOLTS	SCREEN GRID VOLTAGE=120 VOLTS . SCREEN GRID VOLTAGE=120 VOLTS

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Dissipation	1.7 watts	Plate Dissipation 1.7 watts
Sereen Grid Dissipation	0.5 watt	Sereen Grid Dissipation 0.5 watt