



ELECTRONIC TUBE REFERENCE

EBF89

Voltage - Radio Detector Converter electronic tube

CONSOLIDATED TECHNICAL DATA

3 SECTIONS

CONSTRUCTION

DIODE-DIODE-PENTODE

Double-diode variable-mu pentode for radio IF amplification, detection, and automatic gain control. The pentode provides controllable gain while paired diodes handle detector and control-voltage rectification.

GENERAL CHARACTERISTICS

BASE DESIGNATION	NOVAL	BASE PINS	9
NOMINAL HEATER	6.3 V / 300 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Common cathode	SECTION CONSTRUCTION	Dissimilar

SECTION RATINGS

SECTION1 Pentode	
PLATE RESISTANCE	900000 Ω
TRANSCONDUCTANCE	0.0045 S
AMPLIFICATION FACTOR	20
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM SCREEN VOLTAGE	300 V
MAXIMUM PLATE DISSIPATION	2.25 W
MAXIMUM SCREEN DISSIPATION	0.45 W
MAXIMUM CATHODE CURRENT	16.5 mA
Pentode section; representative characteristic point uses 250 V plate and 100 V screen.	

SECTION2 Diode	
MAXIMUM CATHODE CURRENT	0.8 mA
PEAK INVERSE VOLTAGE	200 V
NOMINAL OUTPUT CURRENT	0.8 mA
PEAK FORWARD CURRENT	5 mA
MAXIMUM HEATER-CATHODE VOLTAGE	100 V
<i>Detector diode I.</i>	

SECTION3 Diode	
MAXIMUM CATHODE CURRENT	0.8 mA
PEAK INVERSE VOLTAGE	200 V
NOMINAL OUTPUT CURRENT	0.8 mA
PEAK FORWARD CURRENT	5 mA
MAXIMUM HEATER-CATHODE VOLTAGE	100 V
<i>Detector diode II.</i>	

Dual-diode pentode for detection and RF or IF amplification; source also designates 6DC8.

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195X Tesla

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

195X TESLA

Section 1 · Pentode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Interelectrode capacitances	Published	See source sheet for electrode-specific capacitance values

195X TESLA

Section 2 · Diode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Interelectrode capacitances	Published	See source sheet for electrode-specific capacitance values

195X TESLA

Section 3 · Diode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Interelectrode capacitances	Published	See source sheet for electrode-specific capacitance values

SOURCE OPERATING CONDITIONS

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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

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cutoff characteristic	Variable-mu	—

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	RF / IF amplifier	—

1961 FERRANTI TECHNICAL HANDBOOK

Section 2 · Diode

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	AM detector	—



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1963 Amperex Condensed

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1963 AMPEREX CONDENSED

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	250 V	IFAmplifier
Screen voltage	100 V	IFAmplifier
Control-grid bias	-2 V	IFAmplifier
Plate current	9 mA	IFAmplifier
Screen current	2.7 mA	IFAmplifier

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Amplification factor	20	IFAmplifier
Plate resistance	1000000 ohm	IFAmplifier

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	Published heater rating
Heater current	300 mA	Published heater rating



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1963 Philips Electron Tubes Handbook V1a

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1963 PHILIPS ELECTRON TUBES HANDBOOK V1A

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	250 V	RFIFAmplifier
Screen voltage	100 V	RFIFAmplifier
Control-grid voltage	-2 V	RFIFAmplifier
Plate current	9 mA	RFIFAmplifier
Screen current	2.7 mA	RFIFAmplifier

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	3800 μ S	Section1
Plate resistance	1000000 Ω	Section1

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate capacitance	5.2 pF	Section1
Grid capacitance	5 pF	Section1
Grid-to-plate capacitance maximum	0.0025 pF	Section1

Section 2 · Diode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Diode capacitance	2.5 pF	Diode1

Section 3 · Diode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Diode capacitance	2.5 pF	Diode2



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1967 Mullard Receiving and Amplifying Valves

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

Section 1 · Pentode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Current	9 mA	Va=250V;Vg2=100V
Screen Current	2.7 mA	Va=250V;Vg2=100V
Transconductance	3800 uS	Va=250V;Vg2=100V
Plate Resistance	1 Mohm	Va=250V;Vg2=100V
Control-to-Screen Amplification Factor	20	Va=250V;Vg2=100V
Plate Resistance	1000000 ohm	—
Transconductance	3800 uS	—
Amplification Factor	20	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate Voltage	300 V	—
Maximum Screen Voltage	300 V	—
Maximum Plate Dissipation	2.25 W	—
Maximum Screen Dissipation	0.45 W	—
Maximum Cathode Current	16.5 mA	—
Interelectrode Capacitance Data Published	1	SourceTablePresent

1967 MULLARD RECEIVING AND AMPLIFYING VALVES

Section 2 · Diode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Anode Current	800 uA	EachDiode
Maximum Peak Anode Current	5 mA	EachDiode
Peak Inverse Voltage	200 V	—
Nominal Output Current	0.8 mA	—
Peak Forward Current	5 mA	—
Interelectrode Capacitance Data Published	1	SourceTablePresent



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1968 Mazda Belvu

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1968 MAZDA BELVU

Section 1 · Pentode

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	RF_IF_Amplifier text	—

1968 MAZDA BELVU

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	Detector text	—



SOURCE OPERATING CONDITIONS

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1972 Philips Receiving Tubes

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1972 PHILIPS RECEIVING TUBES

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode current I_a	9 mA	—
Transconductance S	4.5 mA/V	—
Heater voltage V_s	6.3 V	—
Heater current I_t	300 mA	—
Anode voltage V_{ao} max	—550 V	Maximum
Anode dissipation W , max	—2.25 W	Maximum
Grid No. 2 voltage V_{g20} max	—550 V	Maximum
at anode current I ; max	—4 mA	Maximum
at anode current I ; min	—8 mA	Maximum
Grid No. 2 dissipation W_{g2} max	—0.45 W	Maximum
Cathode current I_x max	—16.5 mA	Maximum

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode to all except grid No.1 $C_{a(gl)}$	5.2 pF	—
Grid No.1 to all except anode $C_{gl(a)}$	5 pF	—
Anode to grid No.1 C_{agl} max	—0.0025 pF	Maximum

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid No. 1 to heater Cglf max	—0.05 pF	Maximum
Diode No.1 to grid No.1 Ca)g; max	—0.0008 pF	Maximum
Diode No.2 to grid No.1 Cdzgl max	—0.001 pF	Maximum
Diode No.1 to anode Cdla max	—0.15 pF	Maximum
Diode No.2 to anode Cdza max	—0.025 pF	Maximum

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode voltage Va 250 250 200	170 V	—
Grid No. 2 voltage Vg, 100 80 100	100 V	—
Anode current I 9 9 11	12 mA	—
Grid No.2 current Ig, 2.7 2.7 3.3	4 mA	—
Transconductance S 3.8 4.5 4.5	5 mA/V	—
Internal resistance R; 1.0 0.9 0.6	0.4 MΩ	—
Supply voltage Vi 250 200	250 V	—
Grid No. 1 voltage Vg, =20 =20 -L5 -20 -1 ly	-20 v	—
Transconductance S 3.8 0.2 4.5 0.12 4.5	0.2 mA/V	—

1972 PHILIPS RECEIVING TUBES

Section 2 · Diode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Diode No.1 to all Cd1	2.5 pF	—
Diode No.2 to all Cd2	2.5 pF	—
Diode No.1 to diode No.2 Cdldz max	—0.25 pF	Maximum
Diode No.1 to heater Cdlf max	—0.015 pF	Maximum

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Diode No. 2 to heater Cdzf max	—0.003 pF	Maximum

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Diode voltage, negative peak 'Vdp max	—200 V	Maximum
Diode current, average Iq max	—0.8 mA	Maximum
peak Idp max	—5 mA	Maximum
Cathode to heater voltage Vs max	—100 V	Maximum
1) With supply from a storage battery and vibrator the max. voltage is	—250 V	Maximum


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1973 Mazda Valves Binder 2

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

1973 MAZDA VALVES BINDER 2

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterVoltageNominal	6.3 V	Nominal
HeaterCurrentNominal	300 mA	Nominal
Maximum Plate Voltage	300 V	—
Maximum Screen Voltage	300 V	—
Maximum Plate Dissipation	2.25 W	—
Maximum Screen Dissipation	0.45 W	—
Maximum Cathode Current	16.5 mA	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	3810 μ S	Typical
Amplification Factor	20	Typical
Plate Resistance	1010000 ohm	Typical

1973 MAZDA VALVES BINDER 2

Section 2 · Diode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterVoltageNominal	6.3 V	Nominal
HeaterCurrentNominal	300 mA	Nominal
Maximum Cathode Current	0.8 mA	—
Maximum Peak Inverse Voltage	200 V	—
Rectified Output Current	0.8 mA	—
PeakForwardCurrent	5 mA	—

1973 MAZDA VALVES BINDER 2

Section 3 · Diode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterVoltageNominal	6.3 V	Nominal
HeaterCurrentNominal	300 mA	Nominal
Maximum Cathode Current	0.8 mA	—
Maximum Peak Inverse Voltage	200 V	—
Rectified Output Current	0.8 mA	—
PeakForwardCurrent	5 mA	—



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1999 Philips E-Z

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

1999 PHILIPS E-Z

Section 1 · Pentode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	—
Heater current	300 mA	—
Typical plate voltage	250 V	—
Transconductance	4500 μ S	—
Plate resistance	0.9 Mohm	—
Screen-grid amplification factor	20	—
Plate current	9 mA	PlateVoltage=250V;ScreenVoltage=100V
Screen current	2.7 mA	PlateVoltage=250V;ScreenVoltage=100V
Transconductance	3800 μ S	PlateVoltage=250V;ScreenVoltage=100V
Plate resistance	1 Mohm	PlateVoltage=250V;ScreenVoltage=100V
Plate current	9 mA	PlateVoltage=250V;ScreenVoltage=80V
Screen current	2.7 mA	PlateVoltage=250V;ScreenVoltage=80V
Transconductance	4500 μ S	PlateVoltage=250V;ScreenVoltage=80V
Plate resistance	0.9 Mohm	PlateVoltage=250V;ScreenVoltage=80V
Plate current	11 mA	PlateVoltage=200V;ScreenVoltage=100V
Screen current	3.3 mA	PlateVoltage=200V;ScreenVoltage=100V
Transconductance	4500 μ S	PlateVoltage=200V;ScreenVoltage=100V
Plate resistance	0.6 Mohm	PlateVoltage=200V;ScreenVoltage=100V
Plate current	12 mA	PlateVoltage=170V;ScreenVoltage=100V
Screen current	4 mA	PlateVoltage=170V;ScreenVoltage=100V
Transconductance	5000 μ S	PlateVoltage=170V;ScreenVoltage=100V
Plate resistance	0.4 Mohm	PlateVoltage=170V;ScreenVoltage=100V

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate voltage	300 V	—
Maximum plate dissipation	2.25 W	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate output capacitance	5.2 pF	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid input capacitance	5 pF	—
Plate-grid capacitance maximum	0.0025 pF	—

1999 PHILIPS E-Z

Section 2 · Diode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum diode current	0.8 mA	—
Maximum diode peak current	5 mA	—

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