



ELECTRONIC TUBE REFERENCE

ECH84

Voltage - Triode (with diode, heptode or hexode) electronic tube

CONSOLIDATED TECHNICAL
DATA

2 SECTIONS
CONSTRUCTION
HEXODE-TRIODE

Triode-hexode combination developed primarily for television synchronizing-pulse separation and amplification. Its multi-grid section processes sync pulses while the triode provides an associated amplification or pulse-processing stage.

GENERAL CHARACTERISTICS

BASE DESIGNATION	B9A	BASE PINS	9
NOMINAL HEATER	6.3 V / 300 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Dissimilar

SECTION RATINGS

SECTION1 Triode	
PLATE RESISTANCE	13500 Ω
TRANSCONDUCTANCE	0.0037 S
AMPLIFICATION FACTOR	50
MAXIMUM PLATE VOLTAGE	550 V
MAXIMUM PLATE DISSIPATION	1.3 W
MAXIMUM CATHODE CURRENT	15 mA
<i>Published maximum ratings and typical characteristics promoted from the approved source.</i>	

SECTION2 Hexode	
PLATE RESISTANCE	400000 Ω
TRANSCONDUCTANCE	0.0022 S
AMPLIFICATION FACTOR	16
MAXIMUM PLATE VOLTAGE	550 V
MAXIMUM SCREEN VOLTAGE	250 V
MAXIMUM PLATE DISSIPATION	1.3 W
MAXIMUM SCREEN DISSIPATION	0.6 W
MAXIMUM CATHODE CURRENT	25 mA
<i>Published maximum ratings and typical characteristics promoted from the approved source.</i>	

Triode-heptode for separation and amplification of television synchronizing signals.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage	6.3 V	—
Heater Current	300 mA	—
Application	Time-base oscillator	Television

1961 FERRANTI TECHNICAL HANDBOOK

Section 2 · Hexode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	Synchronizing pulse separator	Television



SOURCE OPERATING CONDITIONS

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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 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Triode plate voltage	60 V	TriodeSection
Triode plate current	2 mA	TriodeSection

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Triode amplification factor	16	TriodeSection

1963 AMPEREX CONDENSED

Section 2 · Hexode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	Published heater rating
Heater current	300 mA	Published heater rating
Transconductance	2200 μ S	HeptodeSection

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heptode plate voltage	135 V	HeptodeSection
Heptode screen voltage	14 V	HeptodeSection
Heptode plate current	1.7 mA	HeptodeSection
Heptode screen current	0.9 mA	HeptodeSection



SOURCE OPERATING CONDITIONS

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1963 Philips Electron Tubes Handbook V1a

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

1963 PHILIPS ELECTRON TUBES HANDBOOK V1A

Section 1 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	Published heater rating
Heater current	300 mA	Published heater rating
Triode transconductance	3700 μ S	TriodeSection
Triode amplification factor	50	TriodeSection

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heptode plate voltage	135 V	HeptodeSection
Heptode screen voltage	14 V	HeptodeSection
Heptode plate current	1.7 mA	HeptodeSection
Heptode screen current	0.9 mA	HeptodeSection
Triode plate voltage	50 V	TriodeSection
Triode plate current	3 mA	TriodeSection



SOURCE OPERATING CONDITIONS

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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.

1967 MULLARD RECEIVING AND AMPLIFYING VALVES

Section 1 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage	50 V	TriodeSection
Plate Current	3 mA	TriodeSection
Transconductance	3700 μ S	TriodeSection
Amplification Factor	50	TriodeSection
Transconductance	3700 μ S	—
Amplification Factor	50	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate Voltage	250 V	—
Maximum Plate Dissipation	1.3 W	—
Maximum Cathode Current	10 mA	—
Interelectrode Capacitance Data Published	1	SourceTablePresent

Section 2 · Hexode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage	135 V	HeptodeSection
Screen Voltage	60 V	HeptodeSection
Plate Current	1.7 mA	HeptodeSection
Screen Current	0.9 mA	HeptodeSection
Transconductance	2200 uS	HeptodeSection
Transconductance	2200 uS	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate Voltage	250 V	—
Maximum Screen Voltage	250 V	—
Maximum Plate Dissipation	1.7 W	—
Maximum Screen Dissipation	0.8 W	—
Maximum Cathode Current	12.5 mA	—
Interelectrode Capacitance Data Published	1	SourceTablePresent



SOURCE DATA APPENDIX

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1968 Mazda Belvu

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1968 MAZDA BELVU
Section 1 · Triode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	Published nominal value
Heater current	300 mA	Published nominal value

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate dissipation	1.3 W	Published maximum rating

1968 MAZDA BELVU

Section 2 · Hexode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	Published nominal value
Heater current	300 mA	Published nominal value

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate dissipation	1.7 W	Published maximum rating
Application	Television synchronization separator/amplifier	Printed source application



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SOURCE OPERATING CONDITIONS

1972 Philips Receiving Tubes

SOURCE PDF

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

1972 PHILIPS RECEIVING TUBES

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterVoltageNominal	6.3 V	Nominal
HeaterCurrentNominal	300 mA	Nominal
Maximum Plate Voltage	550 V	—
Maximum Plate Dissipation	1.3 W	—
Maximum Cathode Current	15 mA	—

Characteristic		
Parameter	Published Value	Condition / Note
Transconductance	3700 μS	Typical
Amplification Factor	50	Typical
Plate Resistance	13500 ohm	Typical

1972 PHILIPS RECEIVING TUBES
Section 2 · Hexode

Other		
Parameter	Published Value	Condition / Note
HeaterVoltageNominal	6.3 V	Nominal
HeaterCurrentNominal	300 mA	Nominal
Maximum Plate Voltage	550 V	—
Maximum Screen Voltage	250 V	—
Maximum Plate Dissipation	1.3 W	—
Maximum Screen Dissipation	0.6 W	—
Maximum Cathode Current	25 mA	—

Characteristic		
Parameter	Published Value	Condition / Note
Transconductance	2200 μS	Typical
Plate Resistance	400000 ohm	Typical



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

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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 · Triode

Other		
Parameter	Published Value	Condition / Note
Heater Voltage Vh	63 V	—
Heater Current Ih	3 A	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Anode Dissipation pa(max) 13	17 W	—
Maximum Screen Grids Dissipation p82+\$4(max) —	8 W	—
Maximum Anode Supply Voltage Va(b)max 550	550 V	—
Maximum Anode Voltage Va(max) 250	250 V	—
Maximum Screen Grids Supply Voltage Vg_ iS4(b)max —	550 V	—
Maximum Screen Grids Voltage V82+ g4 (max) —	250 V	—
Maximum Peak Negative Grid 3 Voltage -v\$3(pk)max —	150 V	—
Maximum Cathode Current Ik(max) 10	125 mA	—
Maximum Heater to Cathode Voltage Vh-k(max) —	100 V	—
Maximum Negative Grid 3 Voltage (I\$3 = + 03A)	1.3 V	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Minimum Screen Grids Voltage Vg2+84(min)	10 V	—
Grid Voltage -v81(pk)max 200	150 V	—
Anode Heptode to Anode Triode cah-at <	25 pF	—
Anode Heptode to Grid Triode cah-gt <	9 pF	—
Grid 1 to Anode Triode C8i_at <	8 pF	—
Grid 1 to Grid Triode c8t_gt <	10 pF	—
Grid 3 to Anode Triode C83_at <	13 pF	—
Anode Heptode to Grid 1 cah- g1 <	9 pF	—
Triode Input Cin(t)	3 pF	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode Triode to Grid Triode cat_gt	11 pF	—
Anode Voltage Va 50	135 V	—
Screen Grids Voltage V\$2 g, —	14 V	—
Grid 3 Voltage V83 —	0 V	—
Control Grid Voltage V8i 0	0 V	—
Anode Current Ia 30	17 mA	—
Screen Grids Current I\$2+g4 —	9 mA	—
Mutual Conductance gm 3.7	2.2 mA	—
Grid 3 Voltage for l a = 20 μA Vg,,	-20 V	—
Control Grid Voltage for l a = 20 μA V8i — —	19 V	—
Anode Current (Va = 200 V, Vg = —	11 V	—



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

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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 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode voltage Va	0 V	Published datasheet value
Anode current Iy	3 mA	Published datasheet value
Transconductance S	3.7 mA/V	Published datasheet value
Anode voltage Va	135 V	Published datasheet value
Grids No.2 and	4 v	Published datasheet value
Grids No.2 and 4 voltage Vg2+4	14 V	Published datasheet value

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode current I ₃	1.7 mA	Published datasheet value
Grids No.2 and 4 current 12244	0.9 mA	Published datasheet value
Transconductance S	2.2 mA/V	Published datasheet value
Heater voltage V _e	6.3 V	Published datasheet value
Heater current I _g	300 mA	Published datasheet value

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid to all except anode C _{g(a)}	3 pF	Published datasheet value
Anode to grid C _{ag}	1.1 pF	Published datasheet value
Anode to grid No.1 C _{agl} max	0.009 pF	Published datasheet value
Grid triode to grid No. 1 heptode C _{nglH} max	0.1 pF	Published datasheet value
Anode triode to grid No.1 heptode C _{aTng} max	0.08 pF	Published datasheet value
Anode triode to grid No. 3 heptode C _{aTg3H} max	0.13 pF	Published datasheet value
Grid triode to anode heptode C _{gTaH} max	0.09 pF	Published datasheet value
Anode triode to anode heptode C _{aTaH} max	0.25 pF	Published datasheet value

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode voltage V _a	0 V	Published datasheet value
Grid voltage V _g	0 v	Published datasheet value
Anode current I _y	3 mA	Published datasheet value
Transconductance S	3.7 mA/V	Published datasheet value
Anode voltage V _a	200 V	Published datasheet value
Grid voltage V _g	-1 V	Published datasheet value
Anode current I, max	0.1 mA	Published datasheet value
Grid No	3 v	Published datasheet value
Grids No.2 and	4 v	Published datasheet value
Grid No	1 v	Published datasheet value

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grids No.2 +	4 v	Published datasheet value
Grids No.2 + 4 voltage V82-}	40 ma	Published datasheet value

TUBE TINKER

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and their source documents.

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