



ELECTRONIC TUBE REFERENCE

EH90

Heptode electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

HEPTODE

Dual-control heptode for television pulse, gated-amplifier, and frequency-conversion circuits, with separate grids allowing effective signal gating and mixing.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	7
NOMINAL HEATER	6.3 V / 300 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Heptode	
PLATE RESISTANCE	1000000 Ω
TRANSCONDUCTANCE	0.0011 S
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM SCREEN VOLTAGE	300 V
MAXIMUM PLATE DISSIPATION	1 W
MAXIMUM SCREEN DISSIPATION	1 W
MAXIMUM CATHODE CURRENT	14 mA
Promoted ratings and characteristics are taken from the printed target-tube entry in the approved PDF.	

Dual-control heptode for television-receiver applications.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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 · Heptode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	Published heater rating
Heater current	200 mA	Published heater rating
Transconductance	1200 μ S	DualControl
Plate resistance	900000 ohm	DualControl

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	100 V	DualControl
Screen voltage	30 V	DualControl
Plate current	0.75 mA	DualControl
Screen current	1.1 mA	DualControl
Maximum plate voltage	300 V	Published limit
Maximum plate dissipation	1 W	Published limit
Maximum screen voltage	100 V	Published limit

1967 Mullard Receiving Tubes for Maintenance

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

1967 MULLARD RECEIVING TUBES FOR MAINTENANCE

Section 1 · Heptode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	100 V	—
Screen-grid voltage	30 V	—
Control-grid 1 voltage	0 V	—
Control-grid 3 voltage	-1 V	—
Plate current	0.8 mA	—
Screen-grid current	4 mA	—
Transconductance grid3-to-anode	1.55 mA/V	—
Plate resistance	400 kOhm	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate voltage	300 V	—
Maximum plate dissipation	1 W	—
Maximum screen-grid voltage	100 V	—
Maximum screen-grid dissipation	1 W	—
Maximum cathode current	14 mA	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Input capacitance grid1	5.5 pF	—
Input capacitance grid3	7 pF	—
Output capacitance	7.5 pF	—

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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 · Heptode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage Vh	63 V	—
Heater Current Ih	3 A	—
Maximum Anode Dissipation pa(max)	10 W	—
Maximum Screen Grids Dissipation pg2-_g4(max)	10 W	—
Maximum Anode Voltage Va(max)	300 V	—
Maximum Anode Supply Voltage Va(b)max	550 V	—
Maximum Screen Grids Voltage Vg2 ,...g4(max)	100 V	—
Maximum Screen Grids Supply Voltage Vg2+ g4(b)max	300 V	—
Maximum Cathode Current Ik(max)	14 mA	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
For V52 54	30 V	—
Cathode Positive	200 V	—
Cathode Negative	100 V	—
Anode to Grid 1 ca g1 <	7 pF	—
Anode to Grid 3 ca_g3 <	36 pF	—
Grid 1 Input Cin(g1)	5.5 pF	—
Output cot	75 pF	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid 1 to Grid 3 $c_{g1_g3} <$	22 pF	—
Anode Voltage V_a 10 100	100 V	—
Screen Grids Voltage V_{g2_g4} 30 30	30 V	—
Control Grid Voltage V_{g1} 0 0 -1	0 V	—
Grid 3 Voltage V_{g3} 0 -1 0	0 V	—
Anode Current I_a 20 08	75 mA	—
Screen Grids Current I_{g2_g4} 35 40 1'	1 mA	—
Anode) $g_m(g1-a) - - 1$	2 mA	—
Control Grid Voltage ($I_a=50\mu A$) $V_{g1} - -$	25 V	—
$V_{g1+g2} =$	30 V	—
192+	9 a	—
$V_{g3} =$	-2.5 V	—
$V_{g1} +9,$	730 V	—
$r_{p1} -0$	5 V	—



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

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1981 Russian Tubes Katsnelson and Larionov

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

1981 RUSSIAN TUBES KATSNELSON AND LARIONOV

Section 1 · Heptode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	Published nominal/basic-parameter heater condition.
Heater current	300 mA	Published heater current.
Plate current	0.8 mA	Published basic-parameter operating point.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Screen current	4 mA	Published basic-parameter operating point.
Transconductance	1100 μ S	Published basic-parameter value; normalized to μ S.
Plate resistance	1000000 Ω	Published internal/plate resistance.
Control-grid-1 transconductance	1100 μ S	Published in the filename-designated tube entry.
Control-grid-3 transconductance	1250 μ S	Published in the filename-designated tube entry.

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate voltage	300 V	Published limiting operating value.
Maximum screen voltage	300 V	Published limiting operating value.
Maximum cathode current	14 mA	Published limiting cathode-current value.
Maximum plate dissipation	1 W	Published limiting plate-dissipation value.
Maximum screen dissipation	1 W	Published limiting screen-dissipation value.



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 · Heptode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Chauffage: indirecttpar C.A. ou C.C. Ve	6.3 V	—
rallele Ir	300 mA	—
alimentation série ou pa- Ve	6.3 V	—
rallele T,	300 mA	—
Ry = -- 0,7	1 K0	—
Vg1 (12 [1])	50 pa	—
Vg1 (12 [2])	-2.5 v	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Wgoiga = max	1 W	—
Ik = max	14 mA	—
Rgy (Vgouga &	30 V	—
Vi (k pos.; f neg.) = max	200 V	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cag1	< 0.07 pF	—
Cagy '¢	0.36 pF	—
Cg3- (k+f+gl+g2+84485)	7 pF	—
Ca- (k+f+gleg2+g3+g4+g5)	725 PF	—
Cglg3 ¢	0.22 pF	—
Cags	< 0.36 PF	—
Cgl- (k+f+g2483+84+85)	5.5 pF	—
Cgz- (k+f+gl+g2+g4+85)	7 pF	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Vo = 10 100	100 V	—
Vgoepd = 30 30	30 V	—
Ve = G o	-1 v	—
I, = 1,2 0,8	0.75 ma	—
152+5* = 4,1 4,0	1.1 ma	—
gl = ~	0.95 ma/v	—
v, = maX	550 V	—
Va = max	300 V	—
¥y = maX	1 W	—
V(g2+a4)o = pax	550 V	—
Veoses = max	100 V	—

TUBE TINKER

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

