



ELECTRONIC TUBE REFERENCE

E180CC

Voltage - Dual Triode (similar) electronic tube

CONSOLIDATED TECHNICAL DATA

2 SECTIONS

CONSTRUCTION

TRIODE-TRIODE

Special-quality double triode with separate cathodes designed for computer circuits and prolonged cutoff operation, with long-life characteristics for professional switching and control equipment.

GENERAL CHARACTERISTICS

BASE DESIGNATION	Noval	BASE PINS	—
NOMINAL HEATER	12.6 V / 200 mA	PARALLEL HEATER	6.3 V / 400 mA
HEATING	Indirect	SERIES OPERATION	Capable
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Triode	
PLATE RESISTANCE	7200 Ω
TRANSCONDUCTANCE	0.0064 S
AMPLIFICATION FACTOR	46
MAXIMUM PLATE VOLTAGE	600 V
MAXIMUM PLATE DISSIPATION	2 W
<i>Special-quality double triode; identical triode sections are compressed to one representative electrical section.</i>	

SECTION2 Triode	
PLATE RESISTANCE	7200 Ω
TRANSCONDUCTANCE	0.0064 S
AMPLIFICATION FACTOR	46
MAXIMUM PLATE VOLTAGE	600 V
MAXIMUM PLATE DISSIPATION	2 W
<i>Second physical triode section; electrically identical twin section.</i>	

Special-quality double triode with separate cathodes for computer circuits and long-life cutoff service.



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 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	150 V	EachUnit
Plate current	8.5 mA	EachUnit
Grid voltage	-1.85 V	EachUnit

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	6400 μ S	EachUnit
Amplification factor	46	EachUnit
Plate resistance	7.2 k Ω m	EachUnit



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1963 Philips Electron Tubes Handbook V3

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

1963 PHILIPS ELECTRON TUBES HANDBOOK V3

Section 1 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Published electrical value	20 mA	1) Cathode positive >100 20 MA

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	V _f = 6.3 V V _f = 12.6 V
Heater current	400 mA	I _f = 400 mA I _f = 200 mA
Heater voltage	6.3 V	C _a =0.5 0.3-0.7 pF V _f =6.3 V
Plate capacitance	0.5 pF	C _a =0.5 0.3-0.7 pF V _f =6.3 V
Heater current	400 mA	C _g = 3.5 3.0-4.0 pF I _f =400 380-420 380- mA
Grid capacitance	3.5 pF	C _g = 3.5 3.0-4.0 pF I _f =400 380-420 380- mA
Grid-to-plate capacitance	2.2 pF	C _{ag} = 2.2 1.8-2.6 pF 420
Plate supply voltage	150 V	C _{kf} = 3.5 V _{ba} = 150 V
Cathode-heater capacitance	3.5 pF	C _{kf} = 3.5 V _{ba} = 150 V
Cathode resistor	220 ohm	C _a . =0.45 0.25-0.65 pF R _k =220 0
Plate voltage	150 V	V _a = 150 V
Plate voltage	150 V	V _a = 150 V V _g =7.5 V
Plate current	150 mA	V _g =-1.85 V I _a < 150 150 μA
Plate current	8.5 mA	I _a =8.5 mA
Plate voltage	100 V	S =6. mA/V V _a = 100 V
Transconductance	6 mA/V	S =6. mA/V V _a = 100 V
Amplification factor	46	μ = 46 V _{bg} = 100 V
Plate current	17.8 mA	I _a =17.8 13.6-22.0 9.5 mA
Plate current	8.5 mA	I _a =8.5 mA I _a =I _a '=0.15 mA
Transconductance	7.8 mA/V	S =7.8 mA/V V _g -V _g '= <2 2V
Cathode-heater voltage	1 V	R _i = 654 kΩ V _{kf1} = 200
Plate resistance	654 kohm	R _i = 654 kΩ V _{kf1} = 200
Heater voltage	6.5 V	V _f =6.5 V
Load resistance	2.6 kohm	R _a = 2.6 kΩ

OTHER

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	V _f = 6.3 V t 5~



SOURCE DATA APPENDIX

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 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
The maximum variation of heater current at $V_h = 6.3V$ is	20 mA	Published in approved E180CC.pdf target datasheet; Section1
at $V_{II} = 12.6V$ is	10 mA	Published in approved E180CC.pdf target datasheet; Section1
$C_{a'-g'} 1.8 \text{ } 2.2$	2.6 pF	Published in approved E180CC.pdf target datasheet; Section1
* $C_{ill} 3.0 \text{ } 3.5$	4 pF	Published in approved E180CC.pdf target datasheet; Section1
$C_{out'} 300 \text{ } 500$	0.7 pF	Published in approved E180CC.pdf target datasheet; Section1
* C_{h-k}	3.5 pF	Published in approved E180CC.pdf target datasheet; Section1
$C_{a \sim - g''} 1.9 \text{ } 2.3$	2.7 pF	Published in approved E180CC.pdf target datasheet; Section1
$C_{a' - a''}$	1.3 pF	Published in approved E180CC.pdf target datasheet; Section1
$c_{g _ g}$	0.06 pF	Published in approved E180CC.pdf target datasheet; Section1
8.5	8.5 mA	Published in approved E180CC.pdf target datasheet; Section1
at $V_a - c = 150V$, $R_k = 220\Omega$ 8.5 6.3 to 10.7	5 mA	Published in approved E180CC.pdf target datasheet; Section1
$R_g = 500 \text{ } \Omega$ 17.8 13.6 to 22	9.5 mA	Published in approved E180CC.pdf target datasheet; Section1
at $V_a - e = 150V$, $R_k = 220\Omega$ 6.4 5.3 to 8.1	4 mA	Published in approved E180CC.pdf target datasheet; Section1
$t_{iglPk} \text{) max}$	50 mA	Published in approved E180CC.pdf target datasheet; Section1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
I _g max	2 mA	Published in approved E180CC.pdf target datasheet; Section1
t _{ik(pk)} max	200 mA	Published in approved E180CC.pdf target datasheet; Section1
I _k max	20 mA	Published in approved E180CC.pdf target datasheet; Section1
**T _{bulb} max	170 °C	Published in approved E180CC.pdf target datasheet; Section1



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage V _i	6.3 V	Heating
Heater current I _e	400 mA	Heating
Heater voltage (pin	9 V	Characteristics
Heater current I _f	380–420 mA	Characteristics
Heater voltage (pin	4 A	Characteristics
Heater current I _y	200 mA	Characteristics
cathode and heater I _t max	15 uA	Characteristics
and heater V _{ig} =	200 V	Characteristics
Anode supply voltage V _{ba}	150 v	Life
Grid resistor	1.5 uA	Life
Voltage between cathode and heater (k pos)	200 v	Life
Grid current max	2 mA	Limiting Values
Grid, peak current max	50 mA	Limiting Values
Cathode current max	20 mA	Limiting Values

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode, peak current $I_{x \text{ max}}$	200 mA	Limiting Values
Cathode negative (k neg.) $V_{it \text{ max}}$	100 v	Limiting Values
Heater voltage: The average heater voltage should be	6.3 V	Limiting Values
Variations of the heater voltage exceeding the range of	6 V	Limiting Values
Maximum plate voltage	600 V	Promoted published datasheet value

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode voltage V_g ,	150 A	Characteristics
Grid voltage $-V_g$	1.85 v	Characteristics
Anode current I ,	8.5 mA	Characteristics
Mutual conductance S	6.4 mA	Characteristics
Internal resistance R_i ;	7.2 kΩ	Characteristics
Anode voltage V ,	150 V	Characteristics
Cathode resistor R_y	220 Ω	Characteristics
Mutual conductance S	415.3–8.1 mA	Characteristics
Negative grid current $-I_{g \text{ max}}$	0.2 μA	Characteristics
Cut off voltage $-V_g$	7.5 v	Characteristics
Anode voltage V_a	150 A	Characteristics
Anode current I , max	150 μA	Characteristics
Anode current	1 mA	Characteristics
Grid voltage $-V_g$	0.8 v	Characteristics
Mutual conductance S	7.8 mA	Characteristics
Internal resistance R_y	6.4 kΩ	Characteristics
Anode voltage V_a	100 v	Characteristics
Grid supply voltage $+V_{bg}$	100 A	Characteristics
Grid resistor R_g	0.5 MΩ	Characteristics
Anode current I ,	113.6–22 mA	Characteristics
Plate resistance	7200 Ω	Promoted published datasheet value
Transconductance	6400 μS	Promoted published datasheet value

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Amplification factor	46	Promoted published datasheet value

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode to cathode and heater Ca/xs	0.3–0.7 pF	Capacitances
Anode to cathode and heater Ca /k's	0.25–0.65 pF	Capacitances
Grid to cathode and heater Cg/xt	3–4 pF	Capacitances
to grid Cag	1.8–2.6 pF	Capacitances
Anode to grid Cayg	1.9–2.7 pF	Capacitances
Cathode to heater Cxg	3.5 pF	Capacitances
Anode to anode other section Caa' max	1.3 pF	Capacitances
Grid to grid other section Cgg' max	0.06 pF	Capacitances

TUBE TINKER

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

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