

ELECTRONIC TUBE REFERENCE

E280F

Voltage Pentode electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
PENTODE

Special-quality high-slope pentode for wide-band amplifier service requiring stable characteristics and long life. Manufacturer documentation emphasizes professional broadband amplification with extended operating reliability.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9EQ	BASE PINS	9
NOMINAL HEATER	6.3 V / 315 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

9EQ - TERMINAL PINOUT

TERMINAL	SECTION	ELEMENT	STATUS
PIN1	–	K – Cathode	CONNECTED
PIN2	–	G1 – Control Grid	CONNECTED
PIN3	–	K – Cathode	CONNECTED
PIN4	–	H – Heater	CONNECTED
PIN5	–	H – Heater	CONNECTED
PIN6	–	–	IC
PIN7	–	P – Plate (Anode)	CONNECTED
PIN8	–	G3 – Suppressor Grid	CONNECTED
PIN8	–	IS – Internal Screen	CONNECTED
PIN9	–	G2 – Screen Grid	CONNECTED

SECTION RATINGS

SECTION1 Pentode	
PLATE RESISTANCE	100000 Ω
TRANSCONDUCTANCE	0.026 S
MAXIMUM PLATE VOLTAGE	220 V
MAXIMUM SCREEN VOLTAGE	180 V
MAXIMUM PLATE DISSIPATION	4 W
MAXIMUM SCREEN DISSIPATION	1.1 W
MAXIMUM CATHODE CURRENT	30 mA
WARM-UP TIME	120 s
<i>Pentode-mode values promoted; triode-connected characteristics retained as parameters.</i>	

Special-quality high-slope pentode for wide-band amplifier service requiring stable characteristics and long life.

SOURCE OPERATING CONDITIONS

1960 CBS Hytron

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

1960 CBS HYTRON

Section 1 · Pentode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Input capacitance	9.3 pF	—
Output capacitance	2.1 pF	—
Grid-to-plate capacitance	0.035 pF	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate supply voltage	190 V	PentodeConnection

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate current	20 mA	PentodeConnection
Screen-grid current	6 mA	PentodeConnection
Transconductance	26000 uS	PentodeConnection
Plate resistance	100 kOhm	PentodeConnection
Plate current	24.5 mA	TriodeConnection
Transconductance	33000 uS	TriodeConnection
Plate resistance	1800 Ohm	TriodeConnection
Amplification factor	60 ratio	TriodeConnection

1963 Siemens

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

1963 SIEMENS
Section 1 · Pentode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Typical Plate Voltage	190 V	PentodeConnection
Typical Screen Voltage	160 V	PentodeConnection
Typical Plate Current	20 mA	PentodeConnection



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 · Pentode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
I"	315 mA	Published in approved E280F.pdf target datasheet; Section1
Mutual co nductance 26 22 to 30 > 17	5 mA	Published in approved E280F.pdf target datasheet; Section1

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Th e ma x imum va r iat ion of he at e r current at V" = 6.3 V is	16 mA	Published in approved E280F.pdf target datasheet; Section1
(in 8.3 9.3 10	3 pF	Published in approved E280F.pdf target datasheet; Section1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
$C_{ih}'' I (I_k =$	26 mA	Published in approved E280F.pdf target datasheet; Section1
$C_{ih}'' I (I_k = 26mA)$	15.5 pF	Published in approved E280F.pdf target datasheet; Section1
2.3 2.6	2.9 pF	Published in approved E280F.pdf target datasheet; Section1
$C_{a \sim e l}$	0.03 pF	Published in approved E280F.pdf target datasheet; Section1
$(i_{ll} 8.4 9.4$	1004 pF	Published in approved E280F.pdf target datasheet; Section1
$C_{i,,}'' I (I_k =$	26 mA	Published in approved E280F.pdf target datasheet; Section1
$C_{i,,}'' I (I_k = 26mA) 1$	5.6 pF	Published in approved E280F.pdf target datasheet; Section1
$C_{OllI} 3.2 3.6$	4 pF	Published in approved E280F.pdf target datasheet; Section1
$V, \sim 150 V la$	24.5 mA	Published in approved E280F.pdf target datasheet; Section1
$V' I -1 .6 V gJU$	33 mA	Published in approved E280F.pdf target datasheet; Section1
I''	20 mA	Published in approved E280F.pdf target datasheet; Section1
$I, \sim$	6 mA	Published in approved E280F.pdf target datasheet; Section1
g_{ill}	26 mA	Published in approved E280F.pdf target datasheet; Section1
$g_m 26 23 19 22$	20 mA	Published in approved E280F.pdf target datasheet; Section1
$*r_{gl} (f =$	100 MHz	Published in approved E280F.pdf target datasheet; Section1
$j<:j; C_{in} (w) 15.5 15 14.3 14.8$	14.8 pF	Published in approved E280F.pdf target datasheet; Section1
$t_{GB} 180 162 138 156$	142 MHz	Published in approved E280F.pdf target datasheet; Section1
$I''! \max$	5 mA	Published in approved E280F.pdf target datasheet; Section1
$i, \max$	30 mA	Published in approved E280F.pdf target datasheet; Section1
$Th_{ul} b \max$	180 °C	Published in approved E280F.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 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage V_i	6.3 V	Heating
Heater current I_{ϕ}	315 mA	Heating
Anode current I_a	20 mA	Heating
Transconductance S	26 mA	Heating
Heater current I	299–331 mA	Characteristics
Anode voltage V_{ao} max	400 V	Limiting Values
Anode dissipation W , max	4 W	Limiting Values
Grid No.2 voltage V_{g2} max	2 V	Limiting Values
Grid No.2 dissipation W_{g2} max	2 W	Limiting Values
Cathode current I_x max	30 mA	Limiting Values
Grid No.1 current I_{g1} max. S mA	1 mA	Limiting Values
Grid No.1 voltage negative – V_{g1} max	1 V	Limiting Values
Grid No.1 resistor R_{g1} max	0.5 M Ω	Limiting Values
cathode positive $V_{kf}(k \text{ pos})$ max	120 V	Limiting Values
cathode negative $V_{if}(k \text{ neg})$ max	60 V	Limiting Values
Heater voltage: The average heater voltage should be	6.3 V	Limiting Values
Anode supply voltage V_{ba}	190 V	Operating Characteristics
Grid No.3 voltage V_{g3}	3 v	Operating Characteristics

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid No.2 supply voltage Vbg2	2 V	Operating Characteristics
Grid No.1 supply voltage +Vbgl	8 V	Operating Characteristics
Anode current I	20 mA	Operating Characteristics
Grid No.2 current Ig2	2 mA	Operating Characteristics
Mutual conductance S	26 mA	Operating Characteristics
Internal resistance R	100 kΩ	Operating Characteristics
resistance Req	220 Ω	Operating Characteristics
Frequency =	100 MHz	Operating Characteristics
Maximum plate voltage	400 V	Promoted published datasheet value
Maximum screen voltage	400 V	Promoted published datasheet value
Maximum plate dissipation	4 W	Promoted published datasheet value
Maximum screen dissipation	1.1 W	Promoted published datasheet value

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode supply voltage Vba	190 A	Characteristics
Grid No.2 supply voltage Vbg2	2 A	Characteristics
Grid No.1 supply voltage +Vbgl	1 v	Characteristics
Cathode resistor Ry	370 Ω	Characteristics
Anode current I	18.8–21.2 mA	Characteristics
Grid No.2 current Ig2	5.3–6.7 mA	Characteristics
Mutual conductance S	22–30 mA	Characteristics
Frequency	100 MHz	Characteristics
Anode supply voltage Vba	180 v	Characteristics
Grid No.3 voltage Vg3	3 A	Characteristics
Cathode resistor Rk	80 Ω	Characteristics
Anode current I,	17 mA	Characteristics
Mutual conductance S	24.5 mA	Characteristics
Anode supply voltage V,	160 V	Characteristics
Grid No.1 supply voltage +Vbgl	1 V	Characteristics

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode current I,	24 mA	Characteristics
Mutual conductance S	33 mA	Characteristics
Plate resistance	100 Ω	Promoted published datasheet value
Transconductance	26000 μS	Promoted published datasheet value
Amplification factor	60	Promoted published datasheet value

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
heater and screen cgl/gZgSkfs	318.3–10.3 pF	Capacitances
heater and screen Ca/gZgSkfs	12.3–2.9 pF	Capacitances
Anode to grid No.1 Cagl max	1 mpF	Capacitances
heater and screen Cgl/gZgSkfs	15.5 pF	Capacitances