

Premium-quality E180F/6688 broad-band amplifier pentode. Multiple professional manufacturer sources document high-performance wideband signal amplification with special-quality construction for reliable, stable service.

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	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Pentode	
PLATE RESISTANCE	90000 Ω
TRANSCONDUCTANCE	0.0165 S
MAXIMUM PLATE VOLTAGE	210 V
MAXIMUM SCREEN VOLTAGE	175 V
MAXIMUM PLATE DISSIPATION	3 W
MAXIMUM SCREEN DISSIPATION	0.9 W
MAXIMUM CATHODE CURRENT	25 mA
Representative characteristics and published operating limits from the special-quality E180F sheet.	

Premium-quality E180F/6688 broad-band amplifier pentode.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1953 AEG

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

1953 AEG

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Typical Plate Voltage	190 V	—
Typical Screen Voltage	160 V	—
Typical Plate Current	13 mA	—
Typical Screen Current	3.3 mA	—



SOURCE OPERATING CONDITIONS

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1958 Amperex Industrial

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

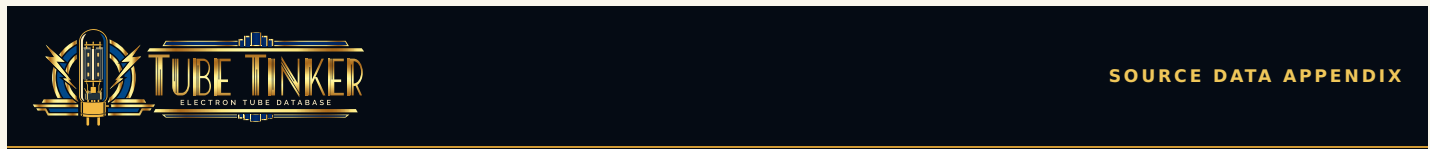
1958 AMPEREX INDUSTRIAL

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate voltage	2100 V	Published table
Plate voltage	160 V	Published table
Screen voltage	190 V	Published table
Plate current	25 mA	Published table

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate resistance	16500 ohm	Published table
Transconductance	3300 μ S	Published table

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Amplification factor	50	Published table
Heater/filament voltage	6.3 V	Published rating
Heater/filament current	300 mA	Published rating



SOURCE OPERATING CONDITIONS

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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



SOURCE OPERATING CONDITIONS

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 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate dissipation	3 W	—
Plate voltage	175 V	—
Screen voltage	160 V	—
Plate current	13 mA	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate resistance	3.3 k0hm	—
Transconductance	16500 uS	—
Amplification Factor	50	—



SOURCE DATA APPENDIX

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 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	180 V	Pentode
Screen voltage	150 V	Pentode
Plate current	13 mA	Pentode
Plate voltage	180 V	TriodeConnection
Plate current	16.5 mA	TriodeConnection

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	16500 uS	Pentode
Transconductance	21000 uS	TriodeConnection
Amplification factor	50	TriodeConnection

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate capacitance	3 pF	—
Grid capacitance	7.5 pF	—

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 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Published electrical value	6.3 V	1)The maximum deviation of If at Vf = 6.3 V s ± 15 mA.
Published electrical value	15 mA	1)The maximum deviation of If at Vf = 6.3 V s ± 15 mA.
Heater voltage	6.3 V	Die Hochstabweichung von If bei Vf = 6.3 V 1st t 15 mA
Plate supply voltage	190 V	Vba = 190 180V
Grid-3 voltage	0 V	Vg3 0 CV
Screen-grid supply voltage	160 V	Vbg2 = 160 150 V
Cathode resistor	630 ohm	Rk = 630 1000
Plate current	13 mA	+ Ia = 13*0.85) 11.5 mA
Screen-grid current	-0.4 mA	Ig2 -0.4
Grid resistor	0.1 mA	Vba -Igl(Rg1=0.1 Ma) = max.o.55) µA
Plate resistance	90 kohm	Ri 90 - kO
Plate voltage	180 V	Va = 180V -Vg1 (Ia = 0.8 mA) = max.4.5 V
Plate current	0.8 mA	Va = 180V -Vg1 (Ia = 0.8 mA) = max.4.5 V
Screen-grid voltage	150 V	Vg2 = 150 V
Grid-3 voltage	0 V	Vg3 = 0V -V81 (Ig1= +0.3 µA) = max.0.5
Plate supply voltage	160 V	Vba = 160 V
Cathode resistor	620 ohm	a Rk = 620 0
Plate current	16.5 mA	V6g. Ia = 16.5 mA
Transconductance	18.5 mA/V	S = 18.5 mA/V

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Amplification factor	50	$\mu = 50$
Cathode-heater voltage	60 V	Isolement k-f ($V_{kf} = 60 \text{ V}$) $r_{kf} = \text{min. } 4 \text{ MR}$

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	$V_f = 6.3$
Plate current	11.5 mA	$I_a < 11.5 \text{ mA}$
Transconductance	11 mA/V	$S \text{ } 11 \text{ mA/V}$
Grid resistor	0.1 kohm	$-I_{g1} (R_{g1} = 0.1 \text{ MO}) ? 1.0 \mu\text{A}$

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate capacitance	3 pF	$C_a = 3.0 \pm 0.5 \text{ Cag.}$
Heater voltage	6.3 V	1)The maximum deviation of I_f at $V_f = 6.3 \text{ V}$ s $\pm 15 \text{ mA}$.


SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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	13 mA	PentodeConnection


SOURCE DATA APPENDIX

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 Vvt	6.3 V	Heating
Heater current Is	300 mA	Heating
Anode current Ia	13 mA	Heating
Mutual conductance S	16.5 mA	Heating
Heater voltage Vi	6.3 A	Characteristics
Heater current I	285–315 mA	Characteristics
cathode and heater Inf max	15 uA	Characteristics
and heater Vyç =60 V	60 V	Characteristics

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode supply voltage Vba	190 v	Characteristics
Grid No.3 voltage Vg3	3 A	Characteristics
Grid No.2 supply voltage Vbg2	2 A	Characteristics
Grid No.1 supply voltage Vbg1	9 v	Characteristics
Cathode resistor Ry	630 Ω	Characteristics
Anode current I	13112.2–13.8 mA	Characteristics
Grid No.2 current Igz	2.9–3.7 mA	Characteristics
Mutual conductance S	14.2–18.8 mA	Characteristics
Internal resistance Rj	90 kΩ	Characteristics
Equivalent noise resistance Req	330 Ω	Characteristics
Negative grid No.1 current - Igl max	0.5 uA	Characteristics
Grid resistor Rgl =0.5 MQ -	0.5 MΩ	Characteristics

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode supply voltage Vba	180 A	Characteristics
Grid No.2 supply voltage Vbg2	2 v	Characteristics
Cathode resistor Ry	100 Ω	Characteristics
Anode current I,	11.5 mA	Characteristics
Grid No.2 current Ig2	2 mA	Characteristics
Mutual conductance S	15.5 mA	Characteristics
Cut -off voltage _Vgl max.4.5 V	4.5 V	Characteristics
Anode voltage V,	180 V	Characteristics
Grid No.3 voltage VgS	3 A	Characteristics
Anode current I	0.8 mA	Characteristics
Start of grid No.1 current - Vgl max.0.5 V	0.5 V	Characteristics
Input resistance g,	2000 Ω	Characteristics
Frequency =	100 MHz	Characteristics
Frequency =	50 MHz	Characteristics
Grid No.3 voltage Vgs	3 v	Characteristics
Cathode resistor Ry	620 Ω	Characteristics
Anode current I,	16.5 mA	Characteristics
Mutual conductance S	21 mA	Characteristics
Internal resistance Rj	2.4 kΩ	Characteristics

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