



ELECTRONIC TUBE REFERENCE

5639

Voltage Pentode electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
PENTODE

Rugged premium subminiature pentode developed for broadband radar and video amplification in military, airborne, and industrial equipment.

GENERAL CHARACTERISTICS

BASE DESIGNATION	8DL	BASE PINS	8
NOMINAL HEATER	6.3 V / 450 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

8DL - TERMINAL PINOUT

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

SECTION RATINGS

SECTION1 Pentode	
PLATE RESISTANCE	50000 Ω
TRANSCONDUCTANCE	0.009 S
MAXIMUM PLATE VOLTAGE	165 V
MAXIMUM SCREEN VOLTAGE	155 V
MAXIMUM PLATE DISSIPATION	4 W
MAXIMUM SCREEN DISSIPATION	1 W
MAXIMUM CATHODE CURRENT	40 mA
<i>Premium ruggedized broadband pentode; maximum DC cathode current 40 mA.</i>	

Ruggedized subminiature pentode for broadband radar and video-amplifier service.



SOURCE OPERATING CONDITIONS

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1950 Sylvania

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

1950 SYLVANIA

Section 1 · Pentode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterOrFilamentVoltage	6.3 V	—
HeaterOrFilamentCurrent	450 mA	—



SOURCE OPERATING CONDITIONS

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1958 Compagnie General

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1958 COMPAGNIE GENERAL

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Dissipation	3.5 W	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Resistance	50000 ohm	—
Transconductance	9000 uS	—



195X General Electric Essential Characteristics

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195X GENERAL ELECTRIC ESSENTIAL CHARACTERISTICS

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage	150 V	ClassA
Screen Voltage	100 V	ClassA
Cathode Resistor	100 ohm	ClassA
Plate Current	21 mA	ClassA
Screen Current	4 mA	ClassA

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Input Capacitance	9.5 pF	—
Output Capacitance	7.5 pF	—
Grid-to-Plate Capacitance	0.1 pF	—



SOURCE DATA APPENDIX

1960 RCA Industrial and Communications Types

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1960 RCA INDUSTRIAL AND COMMUNICATIONS TYPES

Section 1 · Pentode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cutoff characteristic	Sharp cutoff	—

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	High-gain wide-band amplifier	—



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

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1961 Tung Sol

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1961 TUNG SOL

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	—
Heater current	450 mA	—
Maximum altitude	60000 ft	—
Life expectancy	5000 h	30CAmbient
Power output	0.76 W	2VrmsSignal;9kLoad

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid #4 voltage for 40 mA plate current	-14 V	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum grid #4-to-plate capacitance	0.18 pF	WithoutShield
Maximum grid #4-to-plate capacitance	0.13 pF	WithShield
Input capacitance rated	9 pF	—
Output capacitance rated	4.6 pF	WithoutShield
Output capacitance rated	8 pF	WithShield

SOURCE OPERATING CONDITIONS

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1963 Philips Electron Tubes Handbook V1

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1963 PHILIPS ELECTRON TUBES HANDBOOK V1

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	150 V	—
Screen voltage	100 V	—
Cathode resistor	100 ohm	—
Plate voltage	150 V	ClassA; AFPowerAmplifier
Screen voltage	100 V	ClassA; AFPowerAmplifier
Load resistance	9 kOhm	ClassA; AFPowerAmplifier
Power output	1 W	ClassA; AFPowerAmplifier

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate current	14–28 mA	NewTubeRange
Screen current	2–6 mA	NewTubeRange
Transconductance	7500–10500 uS	—
Plate resistance	50 kOhm	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Control-grid capacitance	8–10 pF	—
Anode capacitance	7–9 pF	—
Anode-to-grid capacitance	—0.13 pF	Maximum

1963 Philips Electron Tubes Handbook V3

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1963 PHILIPS ELECTRON TUBES HANDBOOK V3

Section 1 · Pentode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	150 V	Section1
Screen voltage	100 V	Section1
Cathode resistor	100 Ω	Section1
Plate current	21 mA	Section1
Screen current	4 mA	Section1
Transconductance	9000 μ S	Section1
Plate resistance	50000 Ω	Section1
Cutoff grid voltage	-14 V	Section1
Transconductance variation after 1000 hours maximum	20 %	LifeTest

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Shock/vibration service	Special quality	Section1
Application	Output pentode and video amplifier	Section1



SOURCE DATA APPENDIX

1966 Tung Sol Electronic Tubes 3 of 4

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1966 TUNG SOL ELECTRONIC TUBES 3 OF 4

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	150 V	Typical
Grid #2 voltage	100 V	Typical
Cathode resistor	100 ohm	Typical
Plate current	21 mA	Typical
Grid #2 current	4 mA	Typical
Maximum heater-cathode voltage	200 V	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	9000 uS	Typical
Plate resistance	50000 ohm	Typical
Grid #1 voltage at 10 uA plate current	-14 V	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Input capacitance	9 pF	—
Output capacitance	8 pF	—



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

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1999 Philips 0-D

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1999 PHILIPS 0-D

Section 1 · Pentode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Typical plate voltage	150 V	—
Typical screen voltage	100 V	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Typical cathode resistor	100 ohm	—
Typical plate current	21 mA	—
Typical screen current	4 mA	—
Transconductance	9000 uS	—
Plate resistance	50 kohm	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Input capacitance	9 pF	—
Output capacitance	8 pF	—
Plate-grid capacitance	0.13 pF	Maximum

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Audio load resistance	9 kohm	ClassA
Audio input voltage	2 V	ClassA
Audio output power	1 W	ClassA
Maximum plate voltage	165 V	—
Maximum screen voltage	155 V	—
Maximum plate dissipation	4 W	—
Maximum screen dissipation	1 W	—
Maximum cathode current	40 mA	—
Maximum heater-cathode voltage	200 V	—