

ELECTRONIC TUBE REFERENCE

ECC86

Voltage - Triode (under 100V) electronic tube

CONSOLIDATED TECHNICAL DATA

2 SECTIONS

CONSTRUCTION

TRIODE-TRIODE

Low-voltage RF double triode designed for RF amplification and self-oscillating mixer service from 6-, 12-, or 24-volt battery supplies, enabling tuner operation without conventional high plate voltage.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9DE	BASE PINS	9
NOMINAL HEATER	6.3 V / 330 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

9DE - TERMINAL PINOUT

TERMINAL	SECTION	ELEMENT	STATUS
PIN1 – 2P	B	P – Plate (Anode)	CONNECTED
PIN2 – 2G1	B	G1 – Control Grid	CONNECTED
PIN3 – 2K	B	K – Cathode	CONNECTED
PIN4 – H	–	H – Heater	CONNECTED
PIN5 – H	–	H – Heater	CONNECTED
PIN6 – 1P	A	P – Plate (Anode)	CONNECTED
PIN7 – 1G1	A	G1 – Control Grid	CONNECTED
PIN8 – 1K	A	K – Cathode	CONNECTED
PIN9 – IS	A	IS – Internal Screen	CONNECTED

SECTION RATINGS

SECTION1 Triode	
PLATE RESISTANCE	5000 Ω
TRANSCONDUCTANCE	0.0026 S
AMPLIFICATION FACTOR	14
MAXIMUM PLATE VOLTAGE	30 V
MAXIMUM PLATE DISSIPATION	0.6 W
MAXIMUM CATHODE CURRENT	20 mA
<i>Electrically identical triode sections; compressed to one section row.</i>	

SECTION2 Triode	
PLATE RESISTANCE	5000 Ω
TRANSCONDUCTANCE	0.0026 S
AMPLIFICATION FACTOR	14
MAXIMUM PLATE VOLTAGE	30 V
MAXIMUM PLATE DISSIPATION	0.6 W
MAXIMUM CATHODE CURRENT	20 mA
<i>Second physical triode restored.</i>	

Low-voltage RF double triode for RF amplification or self-oscillating mixer service from 6 V, 12 V, or 24 V battery supplies.



SOURCE OPERATING CONDITIONS

1953 Amperex

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

1953 AMPEREX

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater/Filament Voltage	6.3 V	—
Heater/Filament Current	330 mA	—
Maximum Plate Voltage	30 V	—
Maximum Plate Dissipation	0.6 W	—

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	2600 μ S	—
Amplification Factor	14	—



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	Published heater rating
Heater current	330 mA	Published heater rating
Amplification factor	14	RFAmplifier
Plate resistance	2100 ohm	RFAmplifier

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Mixer amplification factor	5	MixerSection
Mixer transconductance	2000 μ S	MixerSection

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
RF-amplifier grid voltage	0 V	RFAmplifier
RF-amplifier plate current	7.5 mA	RFAmplifier
Mixer plate voltage	25 V	MixerSection
Mixer plate current	2.6 mA	MixerSection



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

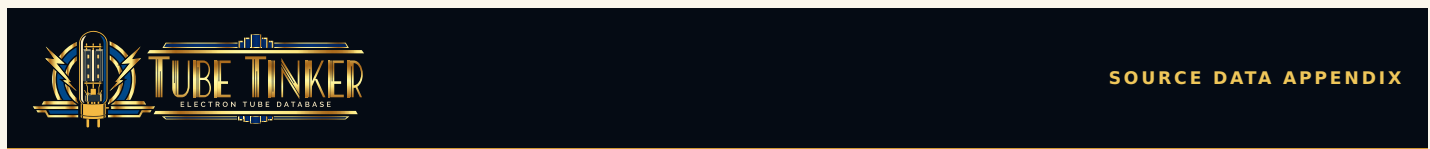
Section 1 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	6.3 V	EachSection
Plate current	0.9 mA	EachSection
Grid voltage	-0.4 V	EachSection
Transconductance	2.6 mA/V	EachSection
Amplification factor	14	EachSection
Equivalent noise resistance	1 k Ω m	EachSection

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	12.6 V	RFAmplifier
Plate current	2.5 mA	RFAmplifier
Transconductance	4.6 mA/V	RFAmplifier

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	25 V	RFAmplifier
Plate current	7.5 mA	RFAmplifier
Maximum plate voltage	30 V	EachSection
Maximum plate dissipation	0.6 W	EachSection
Maximum cathode current	20 mA	EachSection

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode-to-grid capacitance	1.3 pF	EachSection
Input capacitance	3 pF	EachSection
Output capacitance	1.8 pF	EachSection



SOURCE OPERATING CONDITIONS

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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

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	6.3 V	EachSection
Plate current	0.9 mA	EachSection
Grid voltage	-0.4 V	EachSection
Transconductance	2.6 mA/V	EachSection
Amplification factor	14	EachSection
Equivalent noise resistance	1 k0hm	EachSection

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	12.6 V	RFAmplifier

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate current	2.5 mA	RFAmplifier
Transconductance	4.6 mA/V	RFAmplifier
Plate voltage	25 V	RFAmplifier
Plate current	7.5 mA	RFAmplifier
Maximum plate voltage	30 V	EachSection
Maximum plate dissipation	0.6 W	EachSection
Maximum cathode current	20 mA	EachSection

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode-to-grid capacitance	1.3 pF	EachSection
Input capacitance	3 pF	EachSection
Output capacitance	1.8 pF	EachSection


SOURCE DATA APPENDIX

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 $V_{r_}$	6.3 V	Heater voltage $V_{r_} = 6.3$ V
Heater current I_p	330 mA	Heater current $I_p = 330$ mA
except anode C_g	3 pF	except anode $C_g = 0C_{g'} = 3.0$ pF
except grid C_a	1.8 pF	except grid $C_a = 2C_{a'} = 1.8$ pF
Anode to grid $C_{ag} = C_{a'g'} =$	1.3 pF	Anode to grid $C_{ag} = C_{a'g'} = 1.3$ pF
Anode to anode of other section $C_{ag'} <$	0.05 pF	Anode to anode of other section $C_{ag'} < 0.05$ pF
Grid to grid of other section $C_{gg'} <$	0.005 pF	Grid to grid of other section $C_{gg'} < 0.005$ pF

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode to grid of other section $C_{ag} \leq$	0.005 pF	Anode to grid of other section $C_{ag} \leq 0.005 \text{ pF}$
Anode voltage V_g	6.3 V	Anode voltage $V_g = 6.3\text{V}$
Anode current I_a	0.9 mA	Anode current $I_a = 0.9 \text{ mA}$
Grid voltage $V_g = \sim 0.4\text{V}$	0.4 V	Grid voltage $V_g = \sim 0.4\text{V}$
Anode voltage V_a	25 V	Anode voltage $V_a = 6.3 \text{ } 12.6 \text{ } 25\text{V}$
Grid resistor R_g	100	Grid resistor $R_g = 100 \text{ } 100 \text{ } 100 \text{ k}\Omega$
Anode current I_a	7.5 mA	Anode current $I_a = 0.9 \text{ } 2.5 \text{ } 7.5 \text{ mA}$
Anode supply voltage V_{pa}	25 V	Anode supply voltage $V_{pa} = 6.3 \text{ } 1 \text{ } 2.6 \text{ } 25 \text{ }\phi$
Anode resistor R_y	500 A	Anode resistor $R_y = 500 \text{ } 500 \text{ } 500 \text{ }\Omega$
Grid resistor R_G	220	Grid resistor $R_G = 220 \text{ } 220 \text{ } 220 \text{ k}\Omega$
Oscillator voltage $V_{osc} =$	1.5 V	Oscillator voltage $V_{osc} = 0.7 \text{ } 1.0 \text{ } 1.5 \text{ V(RMS)}$
Anode current I_g	2.6 mA	Anode current $I_g = 0.4 \text{ } 1.0 \text{ } 2.6 \text{ mA}$
Anode voltage $V_a \text{ max.}$	30 V	Anode voltage $V_a \text{ max. } 30\text{V}$
Anode dissipation $A_a \text{ max.}$	0.6 mA	Anode dissipation $A_a \text{ max. } 0.6 \text{ W}$
Grid circuit resistance $R_s \text{ max.}$	1 mA	Grid circuit resistance $R_s \text{ max. } 1 \text{ M}\Omega$
Cathode current $I_k \text{ max.}$	20 mA	Cathode current $I_k \text{ max. } 20 \text{ mA}$
Voltage between heater and cathode $V_{kf} \text{ max.}$	30 V	Voltage between heater and cathode $V_{kf} \text{ max. } 30\text{V}$
and cathode $R_{kf} \text{ max.}$	20 A	and cathode $R_{kf} \text{ max.}, 20 \text{ k}\Omega$

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Mutual conductance S	2.6 mA/V	Mutual conductance $S = 2.6 \text{ mA/V}$
Amplification factor $@$	14 A	Amplification factor $@ = 14$
Mutual conductance	7.8 mA/V	Mutual conductance $S = 2.6 \text{ } 4.6 \text{ } 7.8 \text{ mA/V}$
Internal resistance R_y	2.1 kQ	Internal resistance $R_y = 5 \text{ } 3.4 \text{ } 2.1 \text{ k}\Omega$
Equivalent noise resistance R_{eq}	1 V	Equivalent noise resistance $R_{eq} = 1 \sim \text{k}\Omega$
Conversion conductance S_ϕ	2 mA/V	Conversion conductance $S_\phi = 0.8 \text{ } 1.3 \text{ } 2.0 \text{ ma/v}$
Internal resistance $R\{$	5.3 A	Internal resistance $R\{ = 11 \text{ } 8 \text{ } 5.3 \text{ k}\Omega$

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