

ELECTRONIC TUBE REFERENCE

21LR8

Power - TV Vertical Output electronic tube

CONSOLIDATED TECHNICAL DATA
2 SECTIONS
CONSTRUCTION
BEAMPOWER-TRIODE

Combination triode and beam-power tube designed for television vertical-deflection oscillator and amplifier service, with substantial pulse ratings and a 14-watt beam-power section.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9QT	BASE PINS	9
NOMINAL HEATER	21 V / 450 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Dissimilar

9QT - TERMINAL PINOUT

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

SECTION RATINGS

SECTION1 Triode	
PLATE RESISTANCE	16000 Ω
TRANSCONDUCTANCE	0.0036 S
AMPLIFICATION FACTOR	58
MAXIMUM PLATE VOLTAGE	400 V
MAXIMUM SCREEN VOLTAGE	300 V
MAXIMUM PLATE DISSIPATION	2.5 W
MAXIMUM CATHODE CURRENT	105 mA
Reference/equivalence-only source: ratings/characteristics for this section are not reproduced; missing promoted values intentionally not inferred from the referenced 6-series datasheet.	

SECTION2 Beam Power	
PLATE RESISTANCE	12000 Ω
TRANSCONDUCTANCE	0.0093 S
AMPLIFICATION FACTOR	6.5
MAXIMUM PLATE VOLTAGE	400 V
MAXIMUM SCREEN VOLTAGE	300 V
MAXIMUM PLATE DISSIPATION	14 W
MAXIMUM SCREEN DISSIPATION	2.75 W
MAXIMUM CATHODE CURRENT	260 mA
Reference/equivalence-only source: ratings/characteristics for this section are not reproduced; missing promoted values intentionally not inferred from the referenced 6-series datasheet.	

21LR8 is a combined triode and beam-power tube for television deflection service. The supplied RCA manual excerpt was reviewed for heater data, physical sections, maximum ratings, electrical characteristics, capacitances, and stated operating conditions.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1968 General Electric Co

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

1968 GENERAL ELECTRIC CO

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage	21 V	SharedHeater
Heater Current	450 mA	SharedHeater
Heater Warm-up Time	11 s	SharedHeater

1968 GENERAL ELECTRIC CO

Section 2 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage	21 V	SharedHeater
Heater Current	450 mA	SharedHeater
Heater Warm-up Time	11 s	SharedHeater



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1971 RCA HB3 Binder 5 of 7

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

1971 RCA HB3 BINDER 5 OF 7

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	21 V	—
Heater current	450 mA	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater warm-up time	11 s	ControlledWarmup
Plate voltage	250 V	Triode;ClassA
Grid voltage	-4 V	Triode;ClassA
Plate current	2.3 mA	Triode;ClassA
Maximum DC plate voltage	400 V	VerticalDeflectionOscillator
Peak negative-pulse grid voltage	400 V	VerticalDeflectionOscillator
Peak cathode current	105 mA	VerticalDeflectionOscillator
Average cathode current	30 mA	VerticalDeflectionOscillator
Plate dissipation	2.5 W	Triode
Peak power output	2.5 W	VerticalDeflectionOscillator

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Amplification factor	58	Triode
Plate resistance	16000 ohm	Triode
Transconductance	3600 uS	Triode
Cutoff grid voltage at 10 uA plate current	-6.6 V	Triode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-to-plate capacitance	6 pF	Triode
Input capacitance	6.5 pF	Triode
Output capacitance	1.6 pF	Triode

1971 RCA HB3 BINDER 5 OF 7

Section 2 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	135 V	BeamPower;ClassA
Screen voltage	120 V	BeamPower;ClassA
Grid voltage	-10 V	BeamPower;ClassA
Plate current	56 mA	BeamPower;ClassA
Screen current	3 mA	BeamPower;ClassA

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum DC plate voltage	400 V	VerticalDeflectionAmplifier
Peak positive-pulse plate voltage	2500 V	VerticalDeflectionAmplifier
Maximum screen voltage	300 V	VerticalDeflectionAmplifier
Peak negative-pulse grid voltage	-250 V	VerticalDeflectionAmplifier
Peak cathode current	260 mA	VerticalDeflectionAmplifier
Average cathode current	75 mA	VerticalDeflectionAmplifier
Plate dissipation	14 W	BeamPower
Screen input	2.75 W	BeamPower

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate resistance	12000 ohm	BeamPower
Transconductance	9300 uS	BeamPower
Triode-connected amplification factor	6.5	TriodeConnection
Cutoff grid voltage at 1 mA plate current	-26 V	BeamPower
Cutoff grid voltage at 100 uA plate current	-30 V	BeamPower

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-to-plate capacitance	0.7 pF	BeamPower
Input capacitance	16 pF	BeamPower
Output capacitance	9 pF	BeamPower
Beam-power grid No.1 to triode plate capacitance	0.12 pF	Coupling
Beam-power plate to triode plate capacitance	0.32 pF	Coupling



1975 RCA RC30

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

1975 RCA RC30
Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Bias feedback high-voltage regulation	0.47 Mohm	Bias feedback high-voltage regulation 0.47 megohm
DC or pulse shunt high-voltage regulation	10 Mohm	DC or pulse shunt high-voltage regulation 10 megohm
Heater Voltage 6.3 21	31.5 V	Heater Voltage 6.3 21 31.5 volts
Heater Current 1.5 0.45	300 mA	Heater Current 1.5 0.45 0.3 ampere
Heater Warm-up Time . 11	11 s	Heater Warm-up Time . 11 11 seconds
Flate Voltage 400	400 V	Flate Voltage 400 400 volts
Peak Cathode Current 105	260 mA	Peak Cathode Current 105 260 mA.
Average Cathode Current 30	75 mA	Average Cathode Current 30 75 mA
# Pulse duration must not exceed 15% of a horizontal scanning cycle (	10 us	# Pulse duration must not exceed 15% of a horizontal scanning cycle (10 microseconds).
Heater Voltage 6.3 8.1	11.4 V	Heater Voltage 6.3 8.1 11.4 volts
Heater Current 0.6 0.45	315 mA	Heater Current 0.6 0.45 0.315 ampere
Heater Warm-up Time (Average) 11 11	11 s	Heater Warm-up Time (Average) 11 11 11 seconds
Plate Voltage	330 V	Plate Voltage 330 volts
Grid-No.1 (Control-Grid) Voltage, Positive-bias value	0 V	Grid-No.1 (Control-Grid) Voltage, Positive-bias value 0 volts
For grid-No 2 voltages up to	165 V	For grid-No 2 voltages up to 165 volts 0.65 watt
Maximum plate/supply voltage	330 V	Published section value
Maximum screen-grid voltage	300 V	Published section value
Maximum plate dissipation	3.1 W	Published section value

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage 250 45 135	120 V	Plate Voltage 250 45 135 120 volts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-No.1 (Control-Grid) Voltage —4 0 —10 —	10 V	Grid-No.1 (Control-Grid) Voltage —4 0 —10 —10 volts
Plate Current 2.S 200	51 mA	Plate Current 2.S 200- 51 mA
For plate current of	1 mA	For plate current of 1 mA .
Plate Voltage	125 V	Plate Voltage 125 volts
Plate Current	10 mA	Plate Current 10 mA
Grid-No.1 Voltage (Approx.) for plate current of 20 /1A —	3.5 V	Grid-No.1 Voltage (Approx.) for plate current of 20 /1A —3.5 volts
Tube Voltage Drop for plate current of	20 mA	Tube Voltage Drop for plate current of 20 mA volts
Plate resistance	200000 ohm	Published section value
Amplification factor	58	Published section value

1975 RCA RC30

Section 2 · Beam Power

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Resistance Approx.) 14000	14000 ohm	Plate Resistance Approx.) 14000 14000 ohms
Grid-No.2 Voltage	125 V	Grid-No.2 Voltage 125 volts
Plate Resistance (Approx.)	200000 ohm	Plate Resistance (Approx.) 200000 ohms
Transconductance	13000 uS	Transconductance 13000 /imhos
Grid-No.2 Current	3.4 mA	Grid-No.2 Current 3.4 mA
Plate resistance	200000 ohm	Published section value
Amplification factor	58	Published section value

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-No.2 Voltage —	300 V	Grid-No.2 Voltage — 300 volts
Plate Dissipation!: 2.5	14 W	Plate Dissipation!: 2.5 14 watts
Grid-No.2 (Screen-Grid) Supply Voltage	330 V	Grid-No.2 (Screen-Grid) Supply Voltage 330 volts
Plate Dissipation	3.1 W	Plate Dissipation 3.1 watts
For grid-No.2 voltages between 165 and	33 V	For grid-No.2 voltages between 165 and 33 volts See curve page 300

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate/supply voltage	330 V	Published section value
Maximum screen-grid voltage	300 V	Published section value
Maximum plate dissipation	3.1 W	Published section value

TUBE TINKER

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