

ELECTRONIC TUBE REFERENCE

6CM7

Power - TV Vertical Output electronic tube

CONSOLIDATED TECHNICAL DATA

2 SECTIONS

CONSTRUCTION

TRIODE-TRIODE

Dual triode intended for television vertical-deflection service, combining oscillator/driver and power-output functions where applicable. Manufacturer data emphasize vertical-sweep operation, pulse-voltage capability, and the stronger section's current and dissipation requirements.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9ES	BASE PINS	9
NOMINAL HEATER	6.3 V / 600 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Dissimilar

9ES - TERMINAL PINOUT

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

SECTION RATINGS

SECTION1 Triode	
PLATE RESISTANCE	10500 Ω
TRANSCONDUCTANCE	0.002 S
AMPLIFICATION FACTOR	21
MAXIMUM PLATE VOLTAGE	550 V
MAXIMUM PLATE DISSIPATION	6 W
MAXIMUM CATHODE CURRENT	15 mA
<i>Section 1 vertical oscillator.</i>	

SECTION2 Triode	
PLATE RESISTANCE	4100 Ω
TRANSCONDUCTANCE	0.0044 S
AMPLIFICATION FACTOR	18
MAXIMUM PLATE VOLTAGE	550 V
MAXIMUM PLATE DISSIPATION	6 W
MAXIMUM CATHODE CURRENT	20 mA
<i>Section 2 vertical-deflection amplifier; published 2200 V peak pulse limit retained as parameter.</i>	

Dissimilar medium-mu dual triode used as combined vertical-deflection oscillator and vertical-deflection amplifier in television receivers.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1961 Tung Sol

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

1961 TUNG SOL

Section 1 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Section1Transconductance	2000 μ S	Section1

1961 TUNG SOL

Section 2 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Section2Transconductance	4400 μ S	Section2



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1965 Westinghouse Data Book

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

1965 WESTINGHOUSE DATA BOOK

Section 1 · Triode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage	6.3 V	—
Heater Current	600 mA	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate Voltage	550 V	Section1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage	200 V	Section1; ClassA
Grid Voltage	-7 V	Section1; ClassA
Plate Current	5 mA	Section1; ClassA

1965 WESTINGHOUSE DATA BOOK

Section 2 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate Voltage	550 V	Section2
Maximum Peak Positive Plate Voltage	2200 V	Section2; Pulse
Maximum Plate Dissipation	6 W	Section2
Plate Voltage	250 V	Section2; ClassA
Grid Voltage	-8 V	Section2; ClassA
Plate Current	20 mA	Section2; ClassA



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1966 Tung Sol Electronic Tubes 2 of 4

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

1966 TUNG SOL ELECTRONIC TUBES 2 OF 4

Section 1 · Triode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-to-plate capacitance	3.8 pF	Section1
Grid-to-cathode-and-heater capacitance	2 pF	Section1
Plate-to-cathode-and-heater capacitance	0.5 pF	Section1

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Peak negative pulse grid voltage	-220 V	VerticalDeflection
Peak cathode current	77 mA	VerticalDeflection
Plate voltage	200 V	ClassA;Oscillator
Grid voltage	-7 V	ClassA;Oscillator
Plate current	5 mA	ClassA;Oscillator
Heater warm-up time	11 s	BothSections

1966 TUNG SOL ELECTRONIC TUBES 2 OF 4

Section 2 · Triode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-to-plate capacitance	3 pF	Section2
Grid-to-cathode-and-heater capacitance	3.5 pF	Section2
Plate-to-cathode-and-heater capacitance	0.4 pF	Section2

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Peak positive pulse plate voltage	2200 V	VerticalDeflection
Peak negative pulse grid voltage	-220 V	VerticalDeflection
Peak cathode current	77 mA	VerticalDeflection
Plate voltage	250 V	ClassA;Amplifier
Grid voltage	-8 V	ClassA;Amplifier
Plate current	20 mA	ClassA;Amplifier



SOURCE DATA APPENDIX

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
HeaterVoltageNominal	6.3 V	—
HeaterCurrentNominal	600 mA	—
Peak Cathode Current	70 mA	VerticalOscillator

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Resistance	10500 Ohm	—
Transconductance	2000 uS	—
Amplification Factor	21	—

1968 GENERAL ELECTRIC CO

Section 2 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Resistance	4100 Ohm	—
Transconductance	4400 uS	—
Amplification Factor	18	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Peak Positive Pulse Plate Voltage	2200 V	VerticalDeflection
Peak Cathode Current	70 mA	VerticalDeflection



1971 RCA HB3 Binder 4 of 7

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

1971 RCA HB3 BINDER 4 OF 7
Section 1 · Triode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Warm-up time (Average)	11 s	—
Plate Voltage	200 V	Published table column 1 of 2
Plate Voltage	250 V	Published table column 2 of 2
Grid Voltage	-7 V	Published table column 1 of 2
Grid Voltage	-8 V	Published table column 2 of 2
Plate Resistance (Approx)	10500 Ω	Published table column 1 of 2
Plate Resistance (Approx)	4100 Ω	Published table column 2 of 2
Transconductance	2000 μS	Published table column 1 of 2
Transconductance	4400 μS	Published table column 2 of 2
Plate Current	5 mA	Published table column 1 of 2
Plate Current	20 mA	Published table column 2 of 2
Plate Current forgrid volts =	-10 V	Published table column 1 of 2
Plate Current forgrid volts =	-1 V	Published table column 2 of 2
μa =	10 V	Published table column 1 of 2
μa =	-14 V	Published table column 2 of 2
Plate Voltage	200 V	ClassA
Grid Voltage	-7 V	ClassA
Plate Current	5 mA	ClassA
Amplification Factor	21	ClassA
Plate Resistance	10500 Ω	ClassA
Transconductance	2000 μS	ClassA

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid to plate	3.8 pF	Published table column 1 of 2

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid to plate	3 pF	Published table column 2 of 2
Grid to cathode and heater	2 pF	Published table column 1 of 2
Grid to cathode and heater	3.5 pF	Published table column 2 of 2
Plate to cathode and heater	0.5 pF	Published table column 1 of 2
Plate to cathode and heater	0.4 pF	Published table column 2 of 2

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DC PLATE VOLTAGE	550 V	—
PEAK POSITIVE-PULSE PLATE VOLTAGE ^d	2200 V	—
PEAK NEGATIVE-PULSE GRID VOLTAGE	220 V	—
Peak	77 mA	—
Average	22 mA	—
PLATE DISSIPATION	6 W	—
respect to cathode	200 V	—
For fixed-bias operation	1 MΩ	—
For cathode-bias operation	2.5 MΩ	—

1971 RCA HB3 BINDER 4 OF 7

Section 2 · Triode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage	250 V	ClassA
Grid Voltage	-8 V	ClassA
Plate Current	20 mA	ClassA
Amplification Factor	18	ClassA
Plate Resistance	4100 Ω	ClassA
Transconductance	4400 μS	ClassA



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
6.3	8.4 V	Published in approved 8CM7 target datasheet entry; Section1
0.6	450 mA	Published in approved 8CM7 target datasheet entry; Section1
11	11 seconds	Published in approved 8CM7 target datasheet entry; Section1
DC Plate Voltage 550	550 V	Published in approved 8CM7 target datasheet entry; Section1
Peak Positive-Pulse Plate Voltage 2200	2200 V	Published in approved 8CM7 target datasheet entry; Section1
Peak Negative-Pulse Grid Voltage 220	220 V	Published in approved 8CM7 target datasheet entry; Section1
Peak Cathode Current 77	77 mA	Published in approved 8CM7 target datasheet entry; Section1
Average Cathode Current 17	22 mA	Published in approved 8CM7 target datasheet entry; Section1
Plate Dissipation 1.45	6 W	Published in approved 8CM7 target datasheet entry; Section1
For fixed-bias operation 2.2	1 MΩ	Published in approved 8CM7 target datasheet entry; Section1
For cathode-bias operation 2.2	2.5 MΩ	Published in approved 8CM7 target datasheet entry; Section1
# Pulse duration must not exceed 15% of a vertical scanning cycle (	2.5 milliseconds	Published in approved 8CM7 target datasheet entry; Section1

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid to Plate 3.8	3 pF	Published in approved 8CM7 target datasheet entry; Section1
2	3.5 pF	Published in approved 8CM7 target datasheet entry; Section1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
0.5	0.4 pF	Published in approved 8CM7 target datasheet entry; Section1

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage 200	250 V	Published in approved 8CM7 target datasheet entry; Section1
Grid Voltage -7	-8 V	Published in approved 8CM7 target datasheet entry; Section1
10500	4100 Ω	Published in approved 8CM7 target datasheet entry; Section1
Transconductance 2000	4400 μS	Published in approved 8CM7 target datasheet entry; Section1
Plate Current 5	20 mA	Published in approved 8CM7 target datasheet entry; Section1
10 volts	1 mA	Published in approved 8CM7 target datasheet entry; Section1
Grid Voltage (Approx.) for plate current of 10 juA	-14 V	Published in approved 8CM7 target datasheet entry; Section1

1975 RCA RC30

Section 2 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
6.3	8.4 V	Published in approved 8CM7 target datasheet entry; Section2
0.6	450 mA	Published in approved 8CM7 target datasheet entry; Section2
11	11 seconds	Published in approved 8CM7 target datasheet entry; Section2
DC Plate Voltage 550	550 V	Published in approved 8CM7 target datasheet entry; Section2
Peak Positive-Pulse Plate Volt&ge#	2200 V	Published in approved 8CM7 target datasheet entry; Section2
Peak Negative-Pulse Grid Voltage 220	220 V	Published in approved 8CM7 target datasheet entry; Section2
Peak Cathode Current 77	77 mA	Published in approved 8CM7 target datasheet entry; Section2
Average Cathode Current 17	22 mA	Published in approved 8CM7 target datasheet entry; Section2

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Dissipation 1.45	6 W	Published in approved 8CM7 target datasheet entry; Section2
For fixed-bias operation 2.2	1 M Ω	Published in approved 8CM7 target datasheet entry; Section2
For cathode-bias operation 2.2	2.5 M Ω	Published in approved 8CM7 target datasheet entry; Section2
# Pulse duration must not exceed 15% of a vertical scanning cycle (	2.5 milliseconds	Published in approved 8CM7 target datasheet entry; Section2

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid to Plate 3.8	3 pF	Published in approved 8CM7 target datasheet entry; Section2
2	3.5 pF	Published in approved 8CM7 target datasheet entry; Section2
0.5	0.4 pF	Published in approved 8CM7 target datasheet entry; Section2

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage 200	250 V	Published in approved 8CM7 target datasheet entry; Section2
Grid Voltage -7	-8 V	Published in approved 8CM7 target datasheet entry; Section2
10500	4100 Ω	Published in approved 8CM7 target datasheet entry; Section2
Transconductance 2000	4400 μ S	Published in approved 8CM7 target datasheet entry; Section2
Plate Current 5	20 mA	Published in approved 8CM7 target datasheet entry; Section2
10 volts	1 mA	Published in approved 8CM7 target datasheet entry; Section2
Grid Voltage (Approx.) for plate current of 10 μ A	-14 V	Published in approved 8CM7 target datasheet entry; Section2