



ELECTRONIC TUBE REFERENCE

8791

Power - Beam (NOT sweep) (over 1000V 100W) electronic tube

CONSOLIDATED TECHNICAL
DATA

1 SECTION
CONSTRUCTION
BEAMPOWER

Rugged high-linearity beam-power tube designed for low-noise HF and VHF single-sideband linear-amplifier service, emphasizing low distortion and dependable communications operation.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	6.3 V / 7.5 A	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Beam Power	
MAXIMUM PLATE VOLTAGE	3000 V
MAXIMUM SCREEN VOLTAGE	750 V
MAXIMUM PLATE DISSIPATION	1000 W
MAXIMUM CATHODE CURRENT	750 mA
<i>Source-derived section; identical dual beam-power sections compressed where applicable.</i>	

RCA-8791 38 dB Open Loop Third Order Distortion 43 dB Third Order Distortion w/Cathode R Full Input to 400 MHz Beam Power Tube Ruggedized, Reliable Matrix Oxide Cathode H-1587 The RCA-8791* is designed specifically to meet the high linearity and low noise requirements of modern HF, single sideband equipments.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1940 RCA

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

1940 RCA

Section 1 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Full Input to	400 MHz	Full Input to 400 MHz Beam Power Tube
single sideband equipments. In these equipments it can deliver	500 W	single sideband equipments. In these equipments it can deliver 500 watts peak envelope power output at an open
Its high gain, CERMOLOX tube construction and full input rating to	400 MHz	Its high gain, CERMOLOX tube construction and full input rating to 400 MHz also make it ideally suited for higher
it will deliver one kilowatt peak sync. or	200 W	it will deliver one kilowatt peak sync. or 200 watts carrier output respectively.
To assure compliance with environmental design objectives, sample tubes are regularly subjected to	11 A	To assure compliance with environmental design objectives, sample tubes are regularly subjected to 50g-11 milli-
second shock;	2000 s	second shock; 500g-3/4 millisecond shock; and also 20g-2000 hertz vibration testing.
Voltage®(acorde)	6.3 V	Voltage®(acorde) 6.3 typ. V Terminal Connections See Dimensional Outline
Current at6	7.5 V	Current at6.3 volts 7.5 A Radiator Integral part of tube
Grid No.11toplate	250 pF	Grid No.11toplate 0.11 max. pF cathode-heater and heater) 250 max. °C
Grid No	250 pF	Grid No.1 to cathode & heater 28 pF Plate-Core Temperature 250 max. °C
Plate to cathode & heater	0.011 pF	Plate to cathode & heater 0.011 max. pF Footnotes for General Data
Grid No.11togridNo	300 pF	Grid No.11togridNo.2 38 pF 9 See V.A.3 of 1CE-300.
Grid No	5.5 pF	Grid No.2toplate 5.5 pF Measured with special Adapter.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid No	1.1 pF	Grid No.2 to cathode & heater 1.1 max. pF € See Dimensional Outline for temperature measurement points.
Up to	30 MHz	Up to 400 MHz Modulation": at 30 Mc
DC PLATE VOLTAGE	3000 V	DC PLATE VOLTAGE 3,000 max. V DC Plate Voltage
DC GRID-No	350 V	DC GRID-No.2 VOLTAGE 750 max. V DC Grid-No.2 Voltage 450 450 350 V
DC PLATE CURRENT AT DC Grid-No	26 V	DC PLATE CURRENT AT DC Grid-No.1 Voltage -34 -32 26 V
PEAK OF ENVELOPE®	750 mA	PEAK OF ENVELOPE®. 750 max. mA Zero-Signal DC Plate
GRID No	200 mA	GRID No.2 INPUT 25 max. W Carrent 250 250 200 mA
GRID-No	430 mA	GRID-No.1 CIRCUIT of Envelope 535 545 430 mA
With cathode bias Not recommended Peak of Envelope	4 mA	With cathode bias Not recommended Peak of Envelope -1.2 4.2 —4.0 mA
IMPEDANCE oo oot See Note f Current —	-3 mA	IMPEDANCE oo oot See Note f Current —4.0 —4.0 -3.0 mA
GRID-No	22 V	GRID-No.2 CIRCUIT Peak RF Grid-No.1 Voltage ". . 30 40 22 V
DC PLATE VOLTAGE	420 V	DC PLATE VOLTAGE 3000 max. V In a cathode drive circuit, at 420 MHz with an output
DC GRID-No	10 V	DC GRID-No.2 VOLTAGE 750 max. V circuit bandwidth of 10.0 MHz.
DCPLATE CURRENT	500 mA	DCPLATE CURRENT 500 max. mA DC Plate Voltage
GRID-No	2 V	GRID-No.2 INPUT. 25 max. W DC Grid-No.2 Voltage
PLATE DISSIPATION	45 V	PLATE DISSIPATION 1000 max. W DC Grid-No.1 Voltage —45 V
DCPlate Current	340 mA	DCPlate Current 340 mA
DC GridNo	-2 mA	DC GridNo.2 Current -2.0 mA
high as	750 mA	high as 750 mA. times tube output capacity.
Ep=	2000 V	Ep= 2500 VOLTS b= 2000 VOLTS

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
30 E2,< 350 VOLTS 30 Eg,	30 V	30 E2,< 350 VOLTS 30 Eg,
= 450 VOLTS	450 V	= 450 VOLTS
Ip= I5	0 mA	Ip= 150mA
&f -30 I, =] 150mA	150 mA	&f -30 I, =] 150mA
3 b 150mA	150 mA	3 b 150mA
Grid-Modulated RF Power Amplifier – Calculated Operation jn Grid-Drive Circuit at	216 A	Grid-Modulated RF Power Amplifier — Calculated Operation jn Grid-Drive Circuit at 216 MHz
Class C Television Service Bandwidth of	8.5 MHz	Class C Television Service Bandwidth of 8.5 MHz"
Synchronizing-level conditions pertube unless otherwise DC Plate Voltage	2700 V	Synchronizing-level conditions pertube unless otherwise DC Plate Voltage 2700 V
specified DC Grid-No	450 V	specified DC Grid-No.2 Voltage , 450 V
Maximum CCS Ratings, Absolute-Maximum Values: DC Grid-No	1 V	Maximum CCS Ratings, Absolute-Maximum Values: DC Grid-No.1 Voltage:
Up to2	70 MHz	Up to216 MHz Synchronizing level ~70 V
DC PLATE VOLTAGE	80 V	DC PLATE VOLTAGE 3000 max. Pedestal level ~80 V
DC GRID-No	-110 V	DC GRID-No.2 VOLTAGE 750 max. Whitelevel —110 V
DC GRID-No	70 V	DC GRID-No.1 VOLTAGE Peak RF Grid-No.1 Voltage 70 V
DC PLATE CURRENT	700 mA	DC PLATE CURRENT 750 max Synchronizing level 700 mA
GRID-NO	500 mA	GRID-NO.2 INPUT .+ -+« v v v v v e e e v 25 max Pedestal level , 500 mA
HEATER VOLTAGE (E{)=	6.3 V	HEATER VOLTAGE (E{)= 6.3V BEE HEATER VOLTAGE
GRID No	450 V	GRID No.2 VOLTAGE (Ecz) =350V i GRID No.2 VOLTAGE (ECZ) =450V maas
7 @ 10 T T} - 2800mA	2800 mA	7 @ 10 T T} - 2800mA
H t [amma i	17 mA	H t [amma i 17 : E

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
1. HeaterCurrent i 6.9 8.3 A Grid No.1 to grid No.2	41 pF	1. HeaterCurrent i 6.9 8.3 A Grid No.1 to grid No.2 ... k 34 41 pF
2. Direct Interelectrode Grid No.2 to plate k 4.3 6.3 pF	6.3 pF	2. Direct Interelectrode Grid No.2 to plate k 4.3 6.3 pF
Grid No	50 pF	Grid No.1 to plate k — 0.11 pF 3. Reverse Grid-No.1 current j,m — =50 HA
& heater k	5 pF	& heater k 26 32 pF 5. Interelectrode Leakage
& heater k	87 pF	& heater k 0.011 pF 6. Cutoff Grid- No.1 Voltage i,s — 87 A"
M With dc plate voltage of	2 V	M With dc plate voltage of 2500 volts, dc grid- No.2 voltage r
of 400 volts, and dc grid- No.1 voltage adjusted to give a 30 minutes w	30 V	of 400 volts, and dc grid-No.1 voltage adjusted to give a 30 minutes without any voltages applied to the tube. The
" See V.A	0 V	" See V.A.3 of 1CE-300. across heaterterminals) 1s measured with a200-volt Megger-
type ohmmeterhaving an internal impedance of	1 ohm	type ohmmeterhaving an internal impedance of 1.0 megohm.
together; and pulse voltage source of	850 V	together; and pulse voltage source of 850 peak volts, s
With dc plate voltage of	2 V	With dc plate voltage of 2500 volts, dc grid-No.2 voltage
between plate and cathode. Pulse duration is	400 V	between plate and cathode. Pulse duration is 2 micro- of 400 volts, and dc grid-No.1 voltage adjusted to give a
seconds, pulse repetition frequency is	5 s	seconds, pulse repetition frequency is 60 pps, and duty plate current of 5 mA.
grid-No	750 V	grid-No.1 voltages. In typical operation at 750 watts

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
RESISTANCE Average DC Plate Current	320 mA	RESISTANCE Average DC Plate Current ... 400 410 320 mA
plate current of	240 mA	plate current of 240 mA. minimum resistance between any two electrodes (except
PRESSURE DROP — INCHES H,	0 in	PRESSURE DROP — INCHES H,0

TUBE TINKER

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and their source documents.

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