

## Beam Power Tube

CERAMIC-METAL SEALS  
UNIPOTENTIAL CATHODE  
CONDUCTION COOLING

COAXIAL-ELECTRODE STRUCTURE  
INTEGRAL CONDUCTION CYLINDER  
180 WATTS CW INPUT UP TO 1215 Mc

For Use at Frequencies up to 2000 Mc

The 7843 is the same as the 7844 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC) <sup>a</sup> . . . . .	26.5 ± 10%	volts
Current at heater volts = 26.5. . . . .	0.52	amp

<sup>a</sup> Because the cathode is subjected to considerable back bombardment as the frequency is increased with resultant increase in temperature, the heater voltage should be reduced depending on operating conditions and frequency to prevent overheating the cathode and resultant short life.

## CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Heater Current. . . . .	1	0.45	0.57	amp
Direct Interelectrode Capacitances:				
Grid No.1 to plate. . . . .	2	-	0.065	μf
Grid No.1 to cathode & heater. . . . .	2	11.8	15.2	μf
Plate to cathode & heater . . . . .	2	-	0.015	μf
Grid No.1 to grid No.2. . . . .	2	15.9	18.9	μf ←
Grid No.2 to plate. . . . .	2	4	5	μf
Grid No.2 to cathode & heater. . . . .	2	-	0.4	μf
Grid-No.1 Voltage . . . . .	1,3	-6.5	-15	volts
Grid-No.1 Cutoff Voltage. . . . .	1,4	-	-30	volts
Grid-No.1 Current . . . . .	1,5	10	-	ma
Reverse Grid-No.1 Current . . . . .	1,3	-	-20	μa
Grid-No.2 Current . . . . .	1,3	-8	+2	ma
Peak Emission Voltage . . . . .	1,6	-	400	volts
Interelectrode Leakage Resistance . . . . .	7	1	-	megohm
Useful Power Output . . . . .	8	80	-	watts

Note 1: With 26.5 volts ac or dc on heater.

Note 2: Measured with special shield adapter.

Note 3: With dc plate voltage of 1000 volts, dc grid-No.2 voltage of 300 volts, and dc grid-No.1 voltage adjusted to give a dc plate current of 115 ma.

Note 4: With dc plate voltage of 1000 volts, dc grid-No.2 voltage of 250 volts, and dc grid-No.1 voltage adjusted to give a dc plate current of 1 ma.

Note 5: With plate and grid-No.2 floating and dc grid-No.1 voltage of +2 volts.

Note 6: For conditions with: grid No.1, grid No.2, and plate tied together; and pulse-voltage source connected between plate and cathode. Pulse duration is 2 microseconds, pulse-repetition frequency is 60 pps, and duty factor is 0.00012. The voltage-pulse amplitude is adjusted until a peak cathode current of 10 amperes is obtained. After 1 minute at this value, the voltage-pulse amplitude will not exceed 400 volts (peak).

Note 7: Under conditions with tube at 20° to 30° C for at least 30 minutes without any voltages applied to the tube. The minimum resistance between any two adjacent electrodes as measured with a 200-volt Megger-type ohmmeter having an internal impedance of 1 megohm, will be 1 megohm.

← Indicates a change.



# 7843

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Note 8: In a single-tube, grid-driven, coaxial-cavity class-C-amplifier circuit at 400 Mc and for conditions with 24 volts ac or dc on heater, dc plate voltage of 100 volts, dc grid-No.2 voltage of 300 volts, grid-No.1 resistor adjustable between 1000 and 10,000 ohms, dc plate current of 180 ma. maximum, dc grid-No.1 current of 20 ma. maximum, and driver power output of 3 watts.



## Beam Power Tube

## CERMOLOX

Oxide-Coated Cathode Conduction Cooled	80 Watts CW Power Output at 400 MHz
Linear RF Power Amplifier	40 Watts CW Power Output at 1215 MHz

## ELECTRICAL

Heater for Oxide-Coated

Unipotential Cathode:

Voltage (ac or dc) . . . . .	26.5 ± 10%
Current at 26.5 volts. . . . .	0.5 A
Minimum heating time. . . . .	60 s
Mu-Factor, Grid No.2 to Grid No.1 . . . . .	18

## MAXIMUM CCS RATINGS, Absolute-Maximum Values

Up to 1215 MHz:

DC Plate Voltage . . . . .	1000	V
DC Grid-No.2 Voltage . . . . .	300	V
DC Grid-No.1 Voltage . . . . .	-100	V
DC Plate Current . . . . .	180	mA
Plate Dissipation . . . . .	115	W

## MECHANICAL

Operating Position . . . . .	Any
Weight (Approx.) . . . . .	2 oz (0.06 kg)

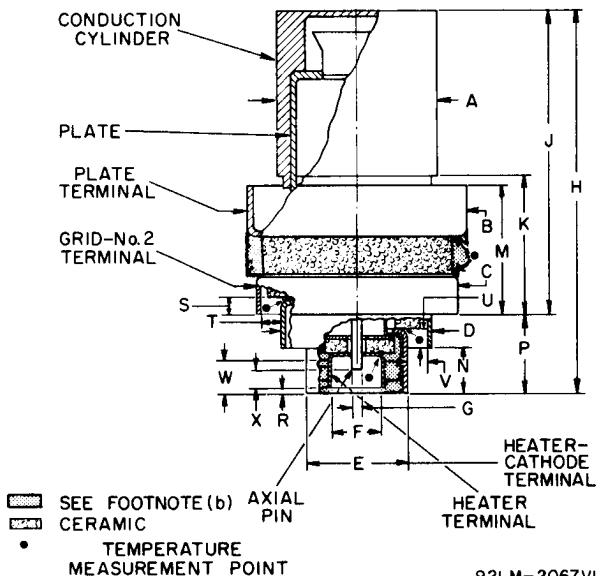
THERMAL<sup>a</sup>

Terminal Temperature (Plate, grid No.2, grid No.1, cathode, and heater) . . . . .	250 max. °C
Plate-Core Temperature . . . . .	250 max. °C

<sup>a</sup> See *Dimensional Outline* for temperature measurement points.<sup>b</sup> Keep all stippled regions clear. Do not allow contacts or circuit components to protrude into these annular volumes.

Detailed performance and application information is available through your RCA Sales Office, Distributor, or write to RCA Commercial Engineering, Harrison, NJ 07029.

## DIMENSIONAL OUTLINE



DI-MEN-SION	DIMENSIONS		DI-MEN-SION	DIMENSIONS	
	INCHES	MILLIMETERS		INCHES	MILLIMETERS
A	0.900 ± .005	22.86 ± .1	M	0.86 ± .02	16.76 ± .51
B	1.085 Min.	27.56 Min.	N	0.175 ± .015	4.45 ± .38
C	0.985 Min.	25.02 Min.	P	0.37 ± .02	9.40 ± .51
D	0.735 Min.	18.67 Min.	R	0.025 ± .025	0.64 ± .64
E	0.480 Min.	12.32 Min.	S	0.06 Min.	1.52 Min.
F	0.260 Max.	6.60 Max.	T	0.09 Min.	2.29 Min.
G	0.062 Max.	1.57 Max.	U	0.12 Min.	3.05 Min.
H	1.88 ± .05	47.75 ± 1.27	V	0.095 Min.	2.41 Min.
J	1.51 ± .03	38.35 ± .76	W	0.10 Min.	2.54 Min.
K	0.730 ± .02	18.54 ± .51	X	0.054 Min.	1.37 Min.