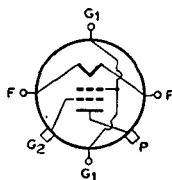


BEAM POWER TUBE



Forced-air-cooled type having thoriated-tungsten filament and integral radiator used as rf power amplifier and oscillator at frequencies up to 110 Mc. Class C Telegraphy maximum CCS plate dissipation, 800 watts.

827-R

FILAMENT VOLTAGE (AC/DC)	7.5	volts
FILAMENT CURRENT	25	amperes
FILAMENT STARTING CURRENT	50 max	amperes
MU-FACTOR, Grid No.2 to Grid No.1*	16	
DIRECT INTERELECTRODE CAPACITANCES (With external shielding):		
Grid No.1 to plate	0.22 max	μf
Grid No.1 to filament and grid No.2	18.5	μf
Plate to filament and grid No.2	11.0	μf

* Plate volts, 2000; grid-No.2 volts, 1100; plate milliamperes, 350.

RF POWER AMPLIFIER AND OSCILLATOR—Class C Telegraphy# and

RF POWER AMPLIFIER—Class C FM Telephony

Maximum CCS Ratings:

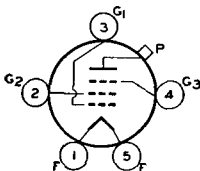
DC PLATE VOLTAGE	3500 max	volts
DC GRID-NO.2 (SCREEN-GRID) VOLTAGE	1000 max	volts
DC GRID-NO.1 (CONTROL-GRID) VOLTAGE	-500 max	volts
DC PLATE CURRENT	500 max	ma
DC GRID-NO.1 CURRENT	150 max	ma
PLATE INPUT	1500 max	watts
GRID-NO.2 INPUT	150 max	watts
PLATE DISSIPATION	800 max	watts
AMBIENT TEMPERATURE	45 max	$^{\circ}\text{C}$

Key-down conditions per tube without amplitude modulation. Amplitude modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115 per cent of the carrier conditions.

OPERATING CONSIDERATIONS

Type 827-R requires special mounting and may be mounted in vertical position only with grid-No.1 and filament terminals up. OUTLINE 76, *Outlines* Section.

At maximum CCS ratings, 100 cubic feet of forced air per minute from plate to seal end are required. Also, flow of 10 cubic feet per minute from 1-inch diameter nozzle should be directed into header. Air flow must start before any voltages are applied to the 827-R. Maximum temperatures: incoming air, 45°C; radiator, 150°C; glass, 150°C; filament seals, 175°C.



BEAM POWER TUBE

Thoriated-tungsten-filament type used as af power amplifier and modulator and as rf power amplifier and oscillator. May be used with full input up to 30 Mc. For operation at 50 Mc,

828

plate voltage and plate input should be reduced to 80 per cent of maximum ratings; at 75 Mc, to 65 per cent. Class C Telegraphy maximum plate dissipation, CCS 70 watts, ICAS 80 watts. Requires Small five-contact socket and may be mounted in vertical position with base down, or in horizontal position with pins 2 and 4 in vertical plane. OUTLINE 48, *Outlines* Section. Plate shows no color when tube is operated at maximum CCS ratings, and shows a barely perceptible red color at maximum ICAS ratings.

FILAMENT VOLTAGE (AC/DC)	10	volts
FILAMENT CURRENT	3.25	amperes
TRANSCONDUCTANCE (For plate current of 43 milliamperes)	2700	μmhos

RCA Transmitting Tubes

DIRECT INTERELECTRODE CAPACITANCES:

Grid No.1 to plate	0.07 max	$\mu\mu\text{f}$
Grid No.1 to filament, grid No.3, and grid No.2	12	$\mu\mu\text{f}$
Plate to filament, grid No.3, and grid No.2	14	$\mu\mu\text{f}$

AF POWER AMPLIFIER AND MODULATOR—Class AB₁

Maximum Ratings:

	CCS	ICAS	
DC PLATE VOLTAGE	1750 max	2000 max	volts
DC GRID-NO.3 (SUPPRESSOR-GRID) VOLTAGE	100 max	100 max	volts
DC GRID-NO.2 (SCREEN-GRID) VOLTAGE	750 max	750 max	volts
MAXIMUM-SIGNAL DC PLATE CURRENT [‡]	150 max	150 max	ma
MAXIMUM-SIGNAL PLATE INPUT [‡]	225 max	270 max	watts
MAXIMUM-SIGNAL DC GRID-NO.2 INPUT [‡]	16 max	23 max	watts
PLATE DISSIPATION [‡]	70 max	80 max	watts

Typical Operation (Values are for 2 tubes):

DC Plate Voltage	1700	2000	volts
DC Grid-No.3 Voltage	60	60	volts
DC Grid-No.2 Voltage [‡]	750	750	volts
DC Grid-No.1 (Control-Grid) Voltage [†]	-120	-120	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage	240	240	volts
Zero-Signal DC Plate Current	50	50	ma
Maximum-Signal DC Plate Current	248	270	ma
DC Grid-No.3 Current	9	9	ma
Zero-Signal DC Grid-No.2 Current	4	2	ma
Maximum-Signal DC Grid-No.2 Current	43	60	ma
Effective Load Resistance (Plate to plate)	16200	18500	ohms
Maximum-Signal Driving Power (Approx.)	0	0	watts
Maximum-Signal Power Output (Approx.)	300 [‡]	385	watts

Maximum Circuit Values (CCS or ICAS conditions):

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.22 max	megohm
For cathode-bias operation	Not recommended	

‡ Averaged over any audio-frequency cycle of sine-wave form.

† Zero-signal grid-No.2 voltage must not exceed 775 volts.

‡ For ac filament supply.

‡ Distortion only one per cent with 20 db of feedback to grid of driver.

PLATE-MODULATED RF POWER AMPLIFIER—Class C Telephony

Carrier conditions per tube for use with a maximum modulation factor of 1.0

Maximum Ratings:

	CCS	ICAS	
DC PLATE VOLTAGE	1000 max	1250 max	volts
DC GRID-NO.3 VOLTAGE	100 max	100 max	volts
DC GRID-NO.2 VOLTAGE	400 max	400 max	volts
DC GRID-NO.1 VOLTAGE	-300 max	-300 max	volts
DC PLATE CURRENT	135 max	160 max	ma
DC GRID-NO.1 CURRENT	15 max	15 max	ma
PLATE INPUT	135 max	200 max	watts
GRID-NO.3 INPUT	5 max	5 max	watts
GRID-NO.2 INPUT	11 max	11 max	watts
PLATE DISSIPATION	47 max	70 max	watts

Typical Operation:

DC Plate Voltage	1000	1250	volts
DC Grid-No.3 Voltage	75	75	volts
DC Grid-No.2 Voltage [‡]	400	400	volts
From series resistor of	26000	30000	ohms
DC Grid-No.1 Voltage [†]	-140	-140	volts
From grid-No.1 resistor of	14000	11700	ohms
Peak RF Grid-No.1 Voltage	230	250	volts
DC Plate Current	135	160	ma
DC Grid-No.3 Current	13	15	ma
DC Grid-No.2 Current	23	28	ma
DC Grid-No.1 Current (Approx.)	10	12	ma
Driving Power (Approx.)	2.1	2.7	watts
Power Output (Approx.)	100	150	watts

‡ Obtained preferably from separate source modulated along with the plate supply, or from the modulated plate supply through series resistor of value shown.

† For ac filament supply.

‡ Obtained from grid-No.1 resistor of value shown or from a combination of grid-No.1 resistor with either fixed supply or cathode resistor.

RCA Transmitting Tubes

RF POWER AMPLIFIER AND OSCILLATOR—Class C Telegraphy[#]

and

RF POWER AMPLIFIER—Class C FM Telephony

Maximum Ratings:

	CCS	ICAS	
DC PLATE VOLTAGE.....	1250 <i>max</i>	1500 <i>max</i>	volts
DC GRID-No.3 VOLTAGE.....	100 <i>max</i>	100 <i>max</i>	volts
DC GRID-No.2 VOLTAGE.....	400 <i>max</i>	400 <i>max</i>	volts
DC GRID-No.1 VOLTAGE.....	-300 <i>max</i>	-300 <i>max</i>	volts
DC PLATE CURRENT.....	160 <i>max</i>	180 <i>max</i>	ma
DC GRID-No.1 CURRENT.....	15 <i>max</i>	15 <i>max</i>	ma
PLATE INPUT.....	200 <i>max</i>	270 <i>max</i>	watts
GRID-No.3 INPUT.....	5 <i>max</i>	5 <i>max</i>	watts
GRID-No.2 INPUT.....	16 <i>max</i>	16 <i>max</i>	watts
PLATE DISSIPATION.....	70 <i>max</i>	80 <i>max</i>	watts

Typical Operation:

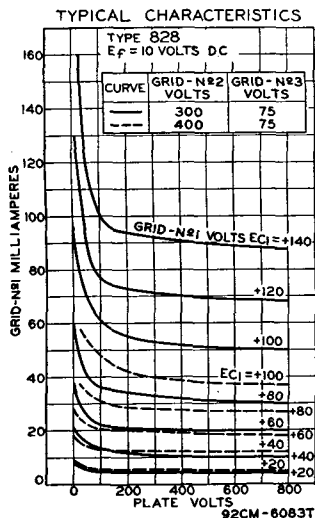
DC Plate Voltage.....	1250	1500	volts
DC Grid-No.3 Voltage.....	75	75	volts
DC Grid-No.2 Voltage [®]	400	400	volts
From series resistor of.....	24300	39300	ohms
DC Grid-No.1 Voltage [†]	-95	-100	volts
From grid-No.1 resistor of.....	7900	8300	ohms
From cathode resistor of.....	415	430	ohms
Peak RF Grid-No.1 Voltage.....	195	205	volts
DC Plate Current.....	160	180	ma
DC Grid-No.3 Current.....	22	14	ma
Grid-No.2 Current.....	35	28	ma
Grid-No.1 Current (Approx.).....	12	12	ma
Driving Power (Approx.).....	2.1	2.2	watts
Power Output (Approx.).....	150	200	watts

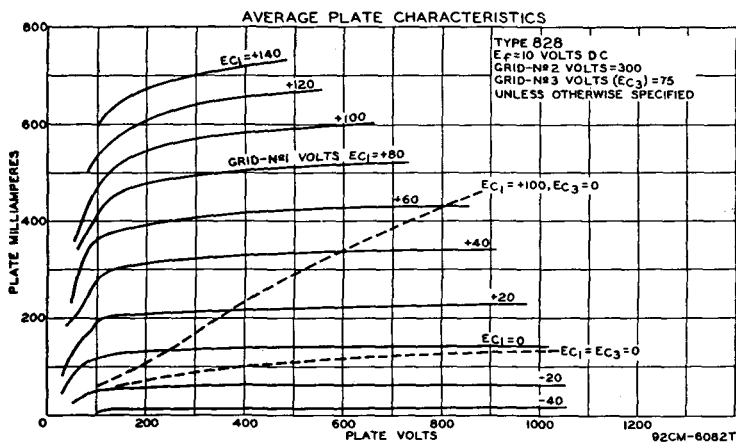
[#] Key-down conditions per tube without amplitude modulation. Amplitude modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115 per cent of the carrier conditions.

[®] Obtained from separate source, from plate-voltage supply with a voltage divider, or through series resistor of value shown. Grid-No.2 voltage must not exceed 800 volts under key-up conditions.

[†] For ac filament supply.

Obtained from fixed supply, by grid-No.1 resistor, by cathode resistor, or by combination methods. If preceding stage is keyed, partial fixed bias is required.

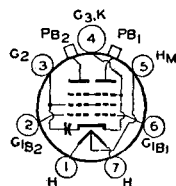




TWIN BEAM POWER TUBE

829-B

Heater-cathode type having mid-tapped heater used as af power amplifier and modulator and as rf power amplifier and oscillator. May be used with full input up to 200 Mc. For operation



at 250 Mc, plate voltage and plate input should be reduced to 89 per cent of maximum ratings. Class C Telegraphy maximum plate dissipation (per tube) with natural cooling, CCS 30 watts, ICAS 40 watts; with forced-air cooling, CCS 40 watts, ICAS 45 watts. Requires Septar seven-contact socket and may be mounted in vertical position with base up or down, or in horizontal position with pins 2 and 6 in vertical plane. OUTLINE 22, *Outlines* Section. Plates show no color when tube is operated at maximum CCS or ICAS ratings.

HEATER ARRANGEMENT	Series	Parallel	
HEATER VOLTAGE (AC/DC)	$12.6 \pm 10\%$	$6.3 \pm 10\%$	volts
HEATER CURRENT	1.125	2.25	amperes
TRANSCONDUCTANCE (Each unit)*		8500	μmhos
MU-FACTOR, Grid No.2 to Grid No.1 (Each unit)**		9	
DIRECT INTERELECTRODE CAPACITANCES (Each unit): [‡]			
Grid No.1 to plate		0.12 max	μμf
Grid No.1 to cathode, grid No.3, grid No.2, and heater mid-tap		14.5	μμf
Plate to cathode, grid No.3, grid No.2, and heater mid-tap		7	μμf

* Plate volts, 250; grid-No.2 volts, 175; plate milliamperes, 60.

** Plate and grid-No.2 volts, 225; plate milliamperes, 60.

‡ With external shield up to flange seal.

PUSH-PULL AF POWER AMPLIFIER AND MODULATOR—Class AB₁

Values are on a per-tube basis

Maximum CCS Ratings:

DC PLATE VOLTAGE	
DC GRID-NO.2 (SCREEN-GRID) VOLTAGE	
MAXIMUM-SIGNAL DC PLATE CURRENT [‡]	
MAXIMUM-SIGNAL PLATE INPUT [‡]	
MAXIMUM-SIGNAL GRID-NO.2 INPUT [‡]	
PLATE DISSIPATION [‡]	

Natural Cooling

750 max	volts
225 max	volts
250 max	ma
100 max	watts
7 max	watts
30 max	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	100 max	volts
Heater positive with respect to cathode	100 max	volts

BULB TEMPERATURE	235 max	°C
----------------------------	---------	----