

RCA-837

R-F Power Amplifier Pentode

RCA-837 is a pentode transmitting tube of the heater-cathode type for use as an r-f amplifier, frequency-multiplier, oscillator, and suppressor, grid- or plate-modulated amplifier. The plate connection is brought out through a separate seal at the top of the bulb to maintain low grid-plate capacitance. Neutralization to prevent feedback and self-oscillation is generally unnecessary in adequately shielded circuits. The suppressor and the special internal shield are connected to individual base pins. RCA-837 has a ceramic base.

CHARACTERISTICS

Heater Volts (a-c or d-c)	12.6	Grid-Plate Capacitance (With	
Heater Amperes	0.7	external shielding)	0.20 max. μf
Transconductance (For plate current		Input Capacitance	16 μf
of 24 ma.) Micromhos	3400	Output Capacitance	10 μf

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

As R-F Power Amplifier Pentode—Class B Telephony

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

D-C PLATE VOLTAGE	500 max.	Volts
D-C SUPPRESSOR VOLTAGE (Grid No. 3)	200 max.	Volts
D-C SCREEN VOLTAGE (Grid No. 2)	200 max.	Volts
D-C PLATE CURRENT	40 max.	Milliamperes
PLATE INPUT	16 max.	Watts
SUPPRESSOR INPUT	5 max.	Watts
SCREEN INPUT	5 max.	Watts
PLATE DISSIPATION	12 max.	Watts

TYPICAL OPERATION:

D-C Plate Voltage	400	500	500	Volts
D-C Suppressor Voltage	0	0	40	Volts
D-C Screen Voltage	200	200	200	Volts
D-C Grid Voltage (Grid No. 1)	-25	-25	-25	Volts
Peak R-F Grid Voltage	28	25	24	Volts
Internal Shield	Connected to cathode at socket			
D-C Plate Current	35	30	30	Milliamperes
D-C Screen Current	10	15	12	Milliamperes
D-C Grid Current (Approx.)	1	0	0	Milliampere
Driving Power (Approx.) [†]	0.4	0.2	0.1	Watt
Power Output (Approx.)	4	5	5.5	Watts

As Suppressor-Modulated R-F Power Amplifier—Class C Telephony

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

D-C PLATE VOLTAGE	500 max.	Volts
D-C SCREEN VOLTAGE (Grid No. 2)	200 max.	Volts
D-C GRID VOLTAGE (Grid No. 1)	-200 max.	Volts
D-C PLATE CURRENT	40 max.	Milliamperes
D-C GRID CURRENT	8 max.	Milliamperes
PLATE INPUT	16 max.	Watts
SCREEN INPUT	8 max.	Watts
PLATE DISSIPATION	12 max.	Watts

TYPICAL OPERATION:

D-C Plate Voltage	400	500	Volts
D-C Suppressor Voltage (Grid No. 3)	-55	-65	Volts

[†] see end of tabulation.

D-C Grid Voltage	-20	-20	Volts
Peak R-F Grid Voltage	45	32	Volts
Peak A-F Suppressor Voltage	55	65	Volts
Internal Shield	Connected to cathode at socket		
D-C Plate Current	35	30	Milliamperes
D-C Screen Current	37	23	Milliamperes
D-C Grid Current (Approx.)	8	3.5	Milliamperes
Screen Resistor	6500	14000	Ohms
Grid Resistor	2500	5700	Ohms
Driving Power (Approx.)	0.4	0.1	Watt
Power Output (Approx.)	4	5	Watts

As Grid-Modulated R-F Power Amplifier Pentode—Class C Telephony

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

D-C PLATE VOLTAGE	500	max.	Volts
D-C SUPPRESSOR VOLTAGE (Grid No. 3)	200	max.	Volts
D-C SCREEN VOLTAGE (Grid No. 2)	200	max.	Volts
D-C GRID VOLTAGE (Grid No. 1)	-200	max.	Volts
D-C PLATE CURRENT	40	max.	Milliamperes
PLATE INPUT	16	max.	Watts
SUPPRESSOR INPUT	5	max.	Watts
SCREEN INPUT	5	max.	Watts
PLATE DISSIPATION	12	max.	Watts
TYPICAL OPERATION:			
D-C Plate Voltage	400	500	500 Volts
D-C Suppressor Voltage	0	0	40 Volts
D-C Screen Voltage	200	200	200 Volts
D-C Grid Voltage	-50	-45	-43 Volts
Peak R-F Grid Voltage	58	48	44 Volts
Peak A-F Grid Voltage	25	20	18 Volts
Internal Shield	Connected to cathode at socket		
D-C Plate Current	35	30	30 Milliamperes
D-C Screen Current	9	7	6 Milliamperes
D-C Grid Current (Approx.)	1	0	0 Milliamperes
Driving Power (Approx.)†	0.5	0.2	0.15 Watt
Power Output (Approx.)	4	5	5.5 Watts

As Plate-Modulated R-F Power Amplifier—Class C Telephony

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

	Pentode Connection	Tetrode Connection	
D-C PLATE VOLTAGE	400 max.	400 max.	Volts
D-C SUPPRESSOR VOLTAGE (Grid No. 3)	200 max.	—	Volts
D-C SCREEN VOLTAGE***	200 max.	200 max.	Volts
D-C GRID VOLTAGE (Grid No. 1)	-200 max.	-200 max.	Volts
D-C PLATE CURRENT	50 max.	50 max.	Milliamperes
D-C GRID CURRENT	8 max.	8 max.	Milliamperes
PLATE INPUT	20 max.	20 max.	Watts
SCREEN INPUT***	5 max.	7.5 max.	Watts
SUPPRESSOR INPUT	5 max.	—	Watts
PLATE DISSIPATION	8 max.	8 max.	Watts
TYPICAL OPERATION:			
D-C Plate Voltage	400	400	Volts
D-C Suppressor Voltage	40	—	Volts
D-C Screen Voltage***	140	100	Volts

***, †: see end of tabulation.

D-C Grid Voltage	-40	-70	Volts
Peak R-F Grid Voltage	60	100	Volts
Internal Shield	Connected to cathode at socket		
D-C Plate Current	45	45	Milliamperes
D-C Screen Current	20	30	Milliamperes
D-C Grid Current (Approx.)	5	7	Milliamperes
Screen Resistor	13000†	10000**	Ohms
Grid Resistor	8000	10000	Ohms
Driving Power (Approx.)	0.3	0.7	Watts
Power Output (Approx.)	11	11	Watts

As R-F Power Amplifier and Oscillator—Class C Telegraphy

Key-down conditions per tube without modulation††

	Pentode Connection	Tetrode Connection	
D-C PLATE VOLTAGE	500 max.	500 max.	Volts
D-C SUPP. VOLT. (Grid Nq. 3)	200 max.	—	Volts
D-C SCREEN VOLTAGE***	200 max.	200 max.	Volts
D-C GRID VOLT. (Grid No. 1)	-200 max.	-200 max.	Volts
D-C PLATE CURRENT	80 max.	80 max.	Milliamperes
D-C GRID CURRENT	8 max.	8 max.	Milliamperes
PLATE INPUT	32 max.	32 max.	Watts
SUPPRESSOR INPUT	5 max.	—	Watts
SCREEN INPUT***	8 max.	8 max.	Watts
PLATE DISSIPATION	12 max.	12 max.	Watts

TYPICAL OPERATION:

D-C Plate Voltage	500	500	400	500	Volts
D-C Suppressor Voltage	0	40	—	—	Volts
D-C Screen Voltage***	200	200	110	80	Volts
D-C Grid Voltage	-85	-75	-70	-70	Volts
Peak R-F Grid Voltage	120	100	115	110	Volts
Internal Shield	Connected to cathode at socket				
D-C Plate Current	60	60	70	60	Milliamperes
D-C Screen Current	30	15	25	15	Milliamperes
D-C Grid Current (Approx.)	8	4	8	8	Milliamperes
Screen Resistor	10000	20000	11600	28000	Ohms
Grid Resistor	10600	18700	8700	8700	Ohms
Driving Power (Approx.)	0.8	0.4	0.75	0.7	Watt
Power Output (Approx.)	20	22	18	20	Watts

† At crest of audio-frequency cycle with modulation factor of 1.0.

** Connected to unmodulated plate-voltage supply.

*** For pentode connection, Grid No. 2 is screen; for tetrode connection, grids No. 2 and 3 connected together.

‡ Connected to modulated plate-voltage supply.

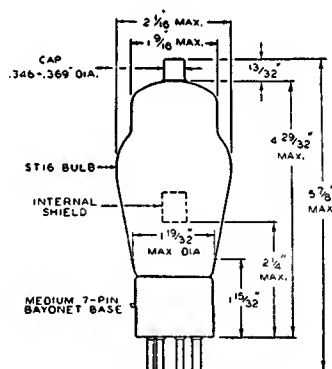
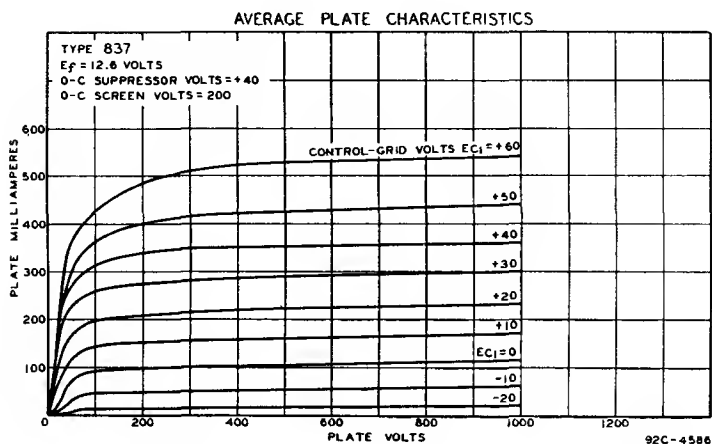
†† Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

INSTALLATION AND APPLICATION

The 12.6-volt heater of the 837 may be operated from either an a-c or a d-c supply. It is designed to operate under normal conditions of line-voltage or battery-voltage variation. Other installation requirements are the same as for the 802.

For high-frequency operation above 20 megacycles, see page 144.

For additional information, see chapters on INSTALLATION and APPLICATION.



Top View of Socket Connections

