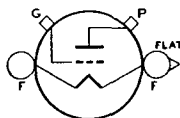


833-A

POWER TRIODE

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 with natural cooling (20



Mc with forced-air cooling), and with reduced input up to 75 Mc. Class C Telegraphy maximum plate dissipation with natural cooling, CCS 300 watts, ICAS 350 watts; with forced-air cooling, CCS 400 watts, ICAS 450 watts.

FILAMENT VOLTAGE (AC/DC)	10	volts
FILAMENT CURRENT	10	amperes
AMPLIFICATION FACTOR*	35	
DIRECT INTERELECTRODE CAPACITANCES:		
Grid to plate	6.3	μf
Grid to filament	12.3	μf
Plate to filament	8.5	μf

* Grid volts, -10; plate milliamperes, 200.

AF POWER AMPLIFIER AND MODULATOR—Class B

	Natural Cooling		Forced-Air Cooling		
	CCS	ICAS	CCS	ICAS	
Maximum Ratings:					
DC PLATE VOLTAGE	3000 max	3300 max	4000 max	4000 max	volts
MAXIMUM-SIGNAL DC PLATE CURRENT [■]	500 max	500 max	500 max	500 max	ma
MAXIMUM-SIGNAL PLATE INPUT [■]	1125 max	1300 max	1600 max	1800 max	watts
PLATE DISSIPATION [■]	300 max	350 max	400 max	450 max	watts

Typical Operation (Values are for two tubes):

DC Plate Voltage	3000	3300	4000	4000	volts
DC Grid Voltage [†]	-70	-80	-100	-100	volts
Peak AF Grid-to-Grid Voltage	400	440	480	510	volts
Zero-Signal DC Plate Current	100	100	100	100	ma
Maximum-Signal DC Plate Current	750	780	800	900	ma
Effective Load Resistance (Plate to plate)	9500	10500	12000	11000	ohms
Maximum-Signal Driving Power (Approx.)	20	30	29	38	watts
Maximum-Signal Power Output (Approx.)	1650	1900	2400	2700	watts

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

† For ac filament supply.

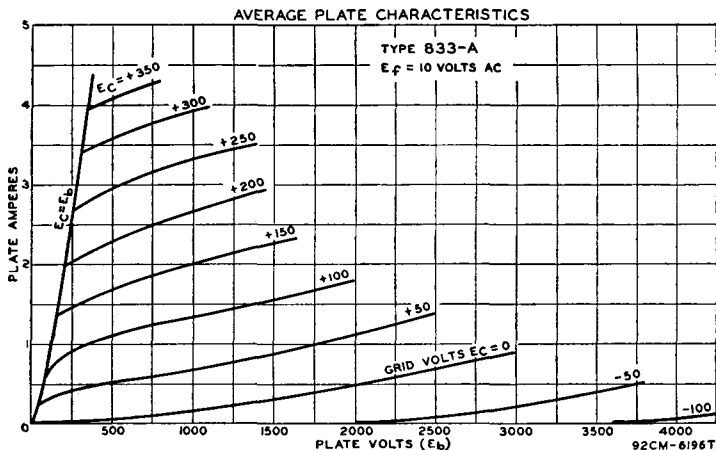


PLATE-MODULATED RF POWER AMPLIFIER—Class C Telephony

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

Maximum Ratings:	Natural Cooling		Forced-Air Cooling		
	CCS	ICAS	CCS	ICAS	
DC PLATE VOLTAGE.....	2500 max	3000 max	3000 max	4000 max	volts
DC GRID VOLTAGE.....	-500 max	-500 max	-500 max	-500 max	volts
DC PLATE CURRENT.....	400 max	400 max	450 max	450 max	ma
DC GRID CURRENT.....	100 max	100 max	100 max	100 max	ma
PLATE INPUT.....	835 max	1000 max	1250 max	1800 max	watts
PLATE DISSIPATION.....	200 max	250 max	270 max	350 max	watts
Typical Operation:					
DC Plate Voltage.....	2500	3000	3000	4000	volts
DC Grid Voltage ϕ	-300	-240	-300	-325	volts
From grid resistor of.....	4000	3400	3600	3600	ohms
Peak RF Grid Voltage.....	460	410	490	520	volts
DC Plate Current.....	335	335	415	450	ma
DC Grid Current (Approx.).....	75	70	85	90	ma
Driving Power (Approx.).....	30	26	37	42	watts
Power Output (Approx.).....	635	800	1000	1500	watts

ϕ Obtained from grid resistor of value shown or from a combination of grid resistor with either fixed supply or cathode resistor.

RF POWER AMPLIFIER AND OSCILLATOR—Class C Telephony[#] and

RF POWER AMPLIFIER—Class C FM Telephony

Maximum Ratings:	Natural Cooling		Forced-Air Cooling		
	CCS	ICAS	CCS	ICAS	
DC PLATE VOLTAGE.....	3000 max	3300 max	4000 max	4000 max	volts
DC GRID VOLTAGE.....	-500 max	-500 max	-500 max	-500 max	volts
DC PLATE CURRENT.....	500 max	500 max	500 max	500 max	ma
DC GRID CURRENT.....	100 max	100 max	100 max	100 max	ma
PLATE INPUT.....	1250 max	1500 max	1800 max	2000 max	watts
PLATE DISSIPATION.....	300 max	350 max	400 max	450 max	watts
Typical Operation:					
DC Plate Voltage.....	2250	3000	4000	4000	volts
DC Grid Voltage ^Δ	-125	-200	-200	-225	volts
From grid resistor of.....	1500	3600	2150	2400	ohms
From cathode resistor of.....	235	425	270	380	ohms
Peak RF Grid Voltage.....	300	360	350	375	volts
DC Plate Current.....	445	415	500	500	ma
DC Grid Current (Approx.).....	85	55	70	95	ma
Driving Power (Approx.).....	23	20	25	35	watts
Power Output (Approx.).....	780	1000	1150	1600	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.

^Δ Obtained from fixed supply, by grid resistor, by cathode resistor, or by combination methods.

OPERATING CONSIDERATIONS

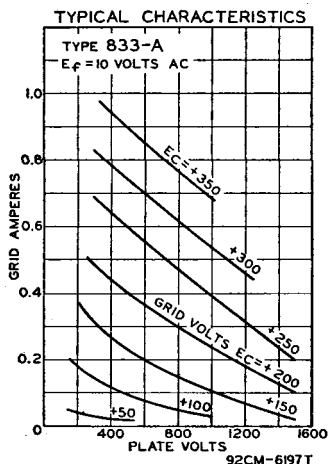
Type 833-A requires special mounting and may be mounted in vertical position with filament end up or down, or in horizontal position with all terminals in same vertical plane. OUTLINE 56, *Outlines* Section.

For operation with natural cooling at 50 Mc, plate voltage and plate input should be reduced to 90 per cent of maximum ratings; at 75 Mc, to 72 per cent. For operation with forced-air cooling at 50 Mc, plate voltage and plate input should be reduced to 83 per cent of maximum ratings; at 75 Mc, to 65 per cent.

With forced-air cooling, an air flow of 40 cubic feet per minute from a 2-inch-diameter nozzle directed vertically on the bulb between grid and plate seals is required to limit the temperature between these seals to 145°C.

When the 833-A is used in the final amplifier or a preceding stage of a transmitter designed for break-in operation and oscillator keying, a small amount of fixed bias must be used to maintain the plate current at a safe value. With a plate voltage of 4000 volts, a fixed bias of at least -90 volts should be used.

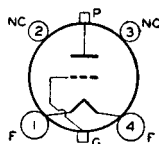
Plate shows an orange-red color when tube is operated at maximum CCS or ICAS ratings.



POWER TRIODE

834

Thoriated-tungsten-filament type used as rf power amplifier and oscillator. May be used with full input up to 100 Mc. For operation at 170 Mc, plate voltage and plate input should



be reduced to 80 per cent of maximum ratings; at 350 Mc, to 53 per cent. Class C Telegraphy maximum CCS plate dissipation, 50 watts. Requires Small four-contact socket and may be mounted in vertical position only, base up or down. **OUTLINE 44**, *Outlines* Section. Plate shows an orange-red color when tube is operated at maximum CCS ratings.

FILAMENT VOLTAGE (AC/DC)	7.5	volts
FILAMENT CURRENT	3.1	amperes
AMPLIFICATION FACTOR	10.5	
DIRECT INTERELECTRODE CAPACITANCES:		
Grid to plate	2.4	μf
Grid to filament	2.2	μf
Plate to filament	0.6	μf

RF POWER AMPLIFIER AND OSCILLATOR—Class C Telegraphy#

and RF POWER AMPLIFIER—Class C FM Telephony

Maximum CCS Ratings:

DC PLATE VOLTAGE	1250 max	volts
DC GRID VOLTAGE	-400 max	volts
DC PLATE CURRENT	100 max	ma
DC GRID CURRENT	20 max	ma
PLATE INPUT	125 max	watts
PLATE DISSIPATION	50 max	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.