

RCA Transmitting Tubes

AMPLIFIER[®] — Class C

With separate, rectified, unfiltered, single-phase, full-wave plate supply

Maximum CCS Ratings:

DC PLATE VOLTAGE	1125 max	volts
DC GRID VOLTAGE	-125 max	volts
DC PLATE CURRENT	160 max	ma
DC GRID CURRENT	45 max	ma
PLATE INPUT [▲]	175 max	watts
PLATE DISSIPATION	45 max	watts

Typical Operation:

DC Plate Voltage	1125	volts
DC Grid Voltage ϕ	-35	volts
From grid resistor of	1400	ohms
DC Plate Current	125	ma
DC Grid Current (Approx.)	25	ma
Driving Power (Approx.) ^{▲▲}	3	watts
Power Output (Approx.)	135	watts

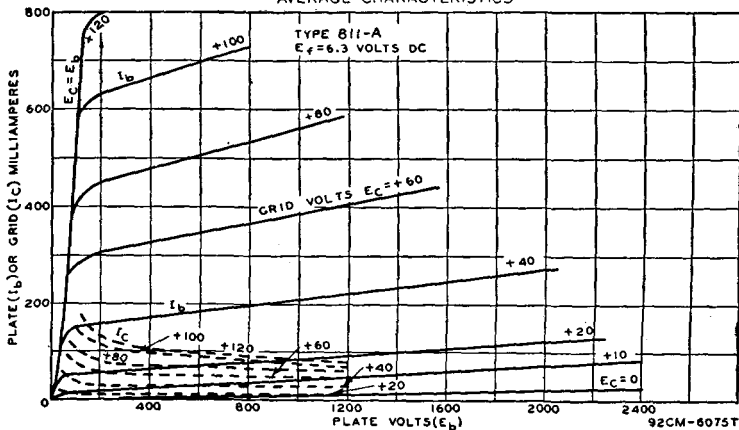
[▲] Power input is 1.23 times the product of dc plate voltage and dc plate current.

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

^{▲▲} From a driver having a rectified, unfiltered, single-phase, full-wave plate supply.

[®]The 811-A is not recommended for oscillator service in applications involving wide variations of load. For such applications, the 812-A having a lower amplification factor is preferred for its ability to oscillate over a wide variation of load.

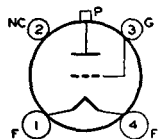
AVERAGE CHARACTERISTICS



POWER TRIODE

812-A

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 and with reduced input



up to 100 Mc. Class C Telegraphy maximum plate dissipation, CCS 45 watts, ICAS 65 watts.

FILAMENT VOLTAGE (AC/DC)	6.3	volts
FILAMENT CURRENT	4	amperes
AMPLIFICATION FACTOR [*]	29	
DIRECT INTERELECTRODE CAPACITANCES:		
Grid to plate	5.5	μf
Grid to filament	5.4	μf
Plate to filament	0.77	μf

^{*}Grid volts, -30; plate milliamperes, 30.

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AF POWER AMPLIFIER AND MODULATOR—Class B

Maximum Ratings:	CCS	ICAS	
DC PLATE VOLTAGE.....	1250 max	1500 max	volts
MAXIMUM-SIGNAL DC PLATE CURRENT [‡]	175 max	175 max	ma
MAXIMUM-SIGNAL PLATE INPUT [‡]	165 max	235 max	watts
PLATE DISSIPATION [‡]	45 max	65 max	watts

Typical Operation (Values are for 2 tubes):

DC Plate Voltage.....	1250	1500	volts
DC Grid Voltage [‡]	-40	-48	volts
Peak AF Grid-to-Grid Voltage.....	225	270	volts
Zero-Signal DC Plate Current.....	22	28	ma
Maximum-Signal DC Plate Current.....	260	310	ma
Effective Load Resistance (Plate to plate).....	12200	13200	ohms
Maximum-Signal Driving Power (Approx.).....	3.5	5	watts
Maximum-Signal Power Output (Approx.).....	235	340	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:	CCS	ICAS	
DC PLATE VOLTAGE.....	1000 max	1250 max	volts
DC GRID VOLTAGE.....	-200 max	-200 max	volts
DC PLATE CURRENT.....	125 max	150 max	ma
DC GRID CURRENT.....	35 max	35 max	ma
PLATE INPUT.....	115 max	175 max	watts
PLATE DISSIPATION.....	30 max	45 max	watts

Typical Operation:

DC Plate Voltage.....	1000	1250	volts
DC Grid Voltage [‡]	-110	-115	volts
From grid resistor of.....	3400	3300	ohms
Peak RF Grid Voltage.....	220	240	volts
DC Plate Current.....	115	140	ma
DC Grid Current (Approx.).....	33	35	ma
Driving Power (Approx.).....	6.6	7.6	watts
Power Output (Approx.).....	85	130	watts

[‡] 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:	CCS	ICAS	
DC PLATE VOLTAGE.....	1250 max	1500 max	volts
DC GRID VOLTAGE.....	-200 max	-200 max	volts
DC PLATE CURRENT.....	175 max	175 max	ma
DC GRID CURRENT.....	35 max	35 max	ma
PLATE INPUT.....	175 max	260 max	watts
PLATE DISSIPATION.....	45 max	65 max	watts

Typical Operation:

DC Plate Voltage.....	1250	1500	volts
DC Grid Voltage [‡]	-90	-120	volts
From grid resistor of.....	3000	4000	ohms
From cathode resistor of.....	530	590	ohms
Peak RF Grid Voltage.....	200	240	volts
DC Plate Current.....	140	173	ma
DC Grid Current (Approx.).....	30	30	ma
Driving Power (Approx.).....	5.4	6.5	watts
Power Output (Approx.).....	130	190	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 fixed supply, by grid resistor, by cathode resistor, or by combination methods.

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SELF-RECTIFYING OSCILLATOR OR AMPLIFIER—Class C

Maximum CCS Ratings:

RMS PLATE VOLTAGE	1750 max	volts
DC GRID VOLTAGE	-125 max	volts
DC PLATE CURRENT	75 max	ma
DC GRID CURRENT	20 max	ma
PLATE INPUT	145 max	watts
PLATE DISSIPATION	45 max	watts

Typical Push-Pull Operation at 27 Mc (Values are for 2 tubes):

RMS Plate Voltage	1740	volts
DC Grid Voltage ϕ	-100	volts
From grid resistor of	3500	ohms
DC Plate Current	150	ma
DC Grid Current (At full load)	29	ma
Driving Power (Approx.)*	12	watts
Power Output (Approx.)	200	watts
Useful Power Output (Approx.)—75-per-cent circuit efficiency	150	watts

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

* From a self-rectified driver.

AMPLIFIER OR OSCILLATOR—Class C

With separate, rectified, unfiltered, single-phase, full-wave plate supply

Maximum CCS Ratings:

DC PLATE VOLTAGE	1125 max	volts
DC GRID VOLTAGE	-125 max	volts
DC PLATE CURRENT	160 max	ma
DC GRID CURRENT	32 max	ma
PLATE INPUT*	175 max	watts
PLATE DISSIPATION	45 max	watts

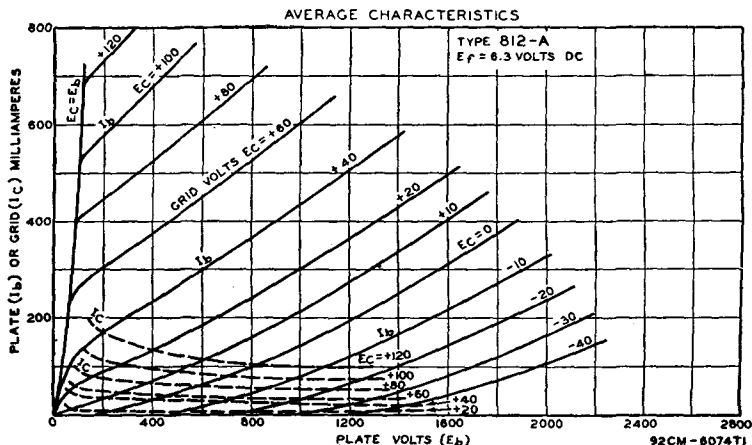
Typical Operation:

DC Plate Voltage	1125	volts
DC Grid Voltage ϕ	-65	volts
From grid resistor of	2200	ohms
DC Plate Current	125	ma
DC Grid Current (Approx.)	30	ma
Driving Power (Approx.)**	5	watts
Power Output (Approx.)	135	watts

* Power input is 1.23 times the product of dc plate voltage and dc plate current.

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

** From a driver having a rectified, unfiltered, single-phase, full-wave plate supply.

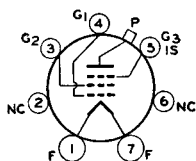


OPERATING CONSIDERATIONS

Type 812-A requires Small four-contact socket and may be mounted in vertical position with base down, or in horizontal position with pins 1 and 4 in vertical plane. OUTLINE 39, *Outlines* Section.

For operation at 60 Mc, plate voltage and plate input should be reduced to 89 per cent of maximum ratings; at 80 Mc, to 70 per cent; at 100 Mc, to 55 per cent. Plate shows no color when tube is operated at maximum CCS ratings, and shows a barely perceptible red color at maximum ICAS ratings.

When the 812-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 1500 volts, a fixed bias of at least -45 volts should be used.



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 45 Mc,

plate voltage and plate input should be reduced to 87 per cent of maximum ratings; at 60 Mc, to 75 per cent; at 120 Mc, to 50 per cent. Class C Telegraphy maximum plate dissipation, CCS 100 watts, ICAS 125 watts. Requires Giant 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 47, *Outlines* Section. Plate shows no color when tube is operated at maximum CCS or ICAS ratings.

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FILAMENT VOLTAGE (AC/DC)	10	volts
FILAMENT CURRENT	5	amperes
TRANSCONDUCTANCE*	3750	μmhos
MU-FACTOR, Grid No.2 to Grid No.1*	8.5	
DIRECT INTERELECTRODE CAPACITANCES:		
Grid No.1 to plate	0.25 max	μμf
Grid No.1 to filament, grid No.3, internal shield, grid No.2, and base shell	16.3	μμf
Plate to filament, grid No.3, internal shield, grid No.2, and base shell ...	14	μμf

* Plate volts, 2000; grid-No.2 volts, 400; plate milliamperes, 50.

AF POWER AMPLIFIER AND MODULATOR—Class AB₁

Maximum Ratings:	CCS	ICAS	
DC PLATE VOLTAGE	2250 max	2500 max	volts
DC GRID-NO.2 (SCREEN-GRID) VOLTAGE	1100 max	1100 max	volts
MAXIMUM-SIGNAL DC PLATE CURRENT [■]	180 max	225 max	ma
MAXIMUM-SIGNAL PLATE INPUT [■]	360 max	450 max	watts
MAXIMUM-SIGNAL DC GRID-NO.2 INPUT [■]	22 max	22 max	watts
PLATE DISSIPATION [■]	100 max	125 max	watts

Typical Operation (Values are for 2 tubes):

DC Plate Voltage	1500	2000	2250	2500	volts
DC Grid-No.3 (Suppressor-Grid) Voltage [▲]	0	0	0	0	volts
DC Grid-No.2 Voltage [†]	750	750	750	750	volts
DC Grid-No.1 (Control-Grid) Voltage [†]	-85	-90	-95	-95	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage	160	160	170	180	volts
Zero-Signal DC Plate Current	50	50	50	50	ma
Maximum-Signal DC Plate Current	305	265	255	290	ma
Zero-Signal DC Grid-No.2 Current	2	2	2	2	ma
Maximum-Signal DC Grid-No.2 Current	45	43	53	54	ma
Effective Load Resistance (Plate to plate)	9300	16000	20000	19000	ohms
Maximum-Signal Driving Power (Approx.)	0	0	0	0	watts
Maximum-Signal Power Output (Approx.)	260	335	380	490	watts

Maximum Circuit Values (CCS or ICAS conditions):

Grid-No.1-Circuit Resistance	30000 max	ohms
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