811-A

POWER TRIODE

Supersedes Type 811

GENERAL DATA

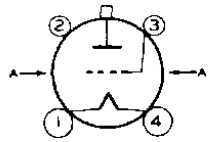
Electrical:

Filament, Thoriated Tungsten:		
Voltage	6.3	ac or dc volts
Current	4	amp
Amplification Factor	160	
Direct Interelectrode Capacitances:		
Grid to Plate	5.6	μμf
Grid to Filament	5.9	μμf
Plate to Filament	0.7	μμf

Mechanical:

Mounting Position	Vertical, base down; or Horizontal, pins 1 & 4 in vertical plane
Overall Length	6-1/2" ± 5/32"
Seated Length	5-7/8" ± 5/32"
Maximum Diameter	2-7/16"
Bulb	ST-19
Cap	Medium
Base	Medium-Shell Small 4-Pin Micanol, Bayonet
Basing Designation for BOTTOM VIEW	3G

Pin 1 – Filament
Pin 2 – No Connection



AA'=PLANE OF ELECTRODES

Pin 3 – Grid
Pin 4 – Filament
Cap – Plate

AF POWER AMPLIFIER & MODULATOR – Class B

Maximum Ratings, *Absolute Values*:

	CCS•	*ICAS*••	
DC PLATE VOLTAGE	1250 max.	1500 max.	volts
MAX.-SIGNAL DC PLATE CUR.*	175 max.	175 max.	ma
MAX.-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	750	1250	1000	1250	1500	volts
DC Grid Voltage#	0	0	0	0	-4.5	volts
Peak AF Grid-to-Grid Volt.	197	145	185	175	170	volts
Zero-Signal DC Plate Cur.	32	50	44	54	32	ma
Max.-Signal DC Plate Cur.	350	260	350	350	313	ma

* For ac filament supply.

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

•, ••: See next page.

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	CCS●		ICAS●●			
Effective Load Resistance (Plate to plate)	5100	12400	7400	9200	12400	ohms
Max.-Signal Driving Power (Approx.)	9.7	3.8	7.5	6.0	4.4	watts
Max.-Signal Power Output (Approx.)	178	235	248	310	340	watts

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, *Absolute Values*:

	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	50 max.	50 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●	-55	-120	volts
	1200	2700	ohms
Peak RF Grid Voltage	150	250	volts
DC Plate Current	115	140	ma
DC Grid Current (Approx.)□	45	45	ma
Driving Power (Approx.)□	6.1	10	watts
Power Output (Approx.)	88	135	watts

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation□□

Maximum Ratings, *Absolute Values*:

	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	50 max.	50 max.	ma
PLATE INPUT	175 max.	260 max.	watts
PLATE DISSIPATION	45 max.	65 max.	watts

Typical Operation:

DC Plate Voltage	1250	1500	volts

●● Intermittent Commercial and Amateur Service.

● Obtained by grid resistor of value shown or by partial self-bias methods.

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

●,□: See next page.

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POWER TRIODE

	CCS●	ICAS●●	
DC Grid Voltage▲▲	-50	-70	volts
	1100	1750	ohms
	270	330	ohms
Peak RF Grid Voltage	140	175	volts
DC Plate Current	140	173	ma
DC Grid Current (Approx.)□	45	40	ma
Driving Power (Approx.)□	5.7	7.1	watts
Power Output (Approx.)	135	200	watts

SELF-RECTIFYING AMPLIFIER▲—Class C

Maximum CCS● Ratings, ***Absolute Values:***

AC PLATE VOLTAGE (RMS)	1750 max.	volts
DC GRID VOLTAGE	-125 max.	volts
DC PLATE CURRENT	65 max.	ma
DC GRID CURRENT	25 max.	ma
PLATE INPUT	125 max.	watts
PLATE DISSIPATION	45 max.	watts

Typical Operation in Push-Pull Circuit at 27 Mc:

Values are for 2 tubes

AC Plate Voltage (RMS)	1750	volts
DC Grid Voltage† ●	-70	volts
	1500	ohms
DC Plate Current	130	ma
DC Grid Current (Approx.)	46	ma
Driving Power (Approx.)■	12	watts
Power Output (Approx.)	175	watts
Useful Power Output (Approx.)— 75% circuit efficiency	130	watts

AMPLIFIER▲—Class C

With Separate, Rectified, Unfiltered, Single-Phase, Full-Wave Plate Supply

Maximum CCS● Ratings, ***Absolute Values:***

DC PLATE VOLTAGE	1125 max.	volts
DC GRID VOLTAGE	-125 max.	volts
DC PLATE CURRENT	160 max.	ma

● Continuous Commercial Service.

□ For effect of load resistance on grid current and driving power, refer to TUBE RATINGS—*Grid Current and Driving Power* in the General Section.

▲▲ Obtained from fixed supply, by grid resistor (1100, 1750) or by cathode resistor (270, 330).

▲ The 811-A is not recommended for oscillator service in applications involving wide variations in load. For such applications, the 812-A with its low amplification factor is preferred because of its ability to oscillate over a wide range of load variation.

□ From a self-rectifying driver.

†, ●: See next page.

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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† ●	−35	volts
	1400	ohms
DC Plate Current	125	ma
DC Grid Current (Approx.)	25	ma
Driving Power (Approx.)■■	3	watts
Power Output (Approx.)	135	watts

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Filament Current	1	3.75	4.25	amp
Amplification Factor	1,2	144	176	
Grid-Plate Capacitance	-	4.9	6.3	μμf
Grid-Filament Capacitance	-	4.9	6.9	μμf
Plate-Filament Capacitance	-	0.52	0.88	μμf
Plate Current	1,3	16	36	ma
Grid Current	1,4	25	85	ma
Useful Power Output	1,5	140	-	watts

NOTE 1: With dc filament voltage of 6.3 volts.

NOTE 2: With dc plate current of 20 ma. and dc grid voltage of -1 volt.

NOTE 3: With dc plate voltage of 2000 volts and dc grid voltage of -2 volts.

NOTE 4: With dc plate voltage of 200 volts and dc grid voltage of +50 volts.

NOTE 5: With dc plate voltage of 1500 volts; dc plate current of 175 ma; dc grid current of 34 to 50 ma; grid resistor of 3500 ± 10% ohms; and frequency of 15 Mc.

† The 811-A can be biased by any convenient method. However, the use of a grid resistor is preferred because the bias is automatically adjusted as the load on the circuit varies. In those applications, such as are encountered in therapeutic equipment, where grid current and grid voltage may vary widely because of fluctuating loads, it is important to design equipment so that the maximum grid-current and grid-voltage ratings are never exceeded for any load.

■■ From a driver with a rectified, unfiltered, single-phase, full-wave plate supply.

● Obtained by grid resistor of value shown or by partial self-bias methods.

Data on operating frequencies for the 811-A are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

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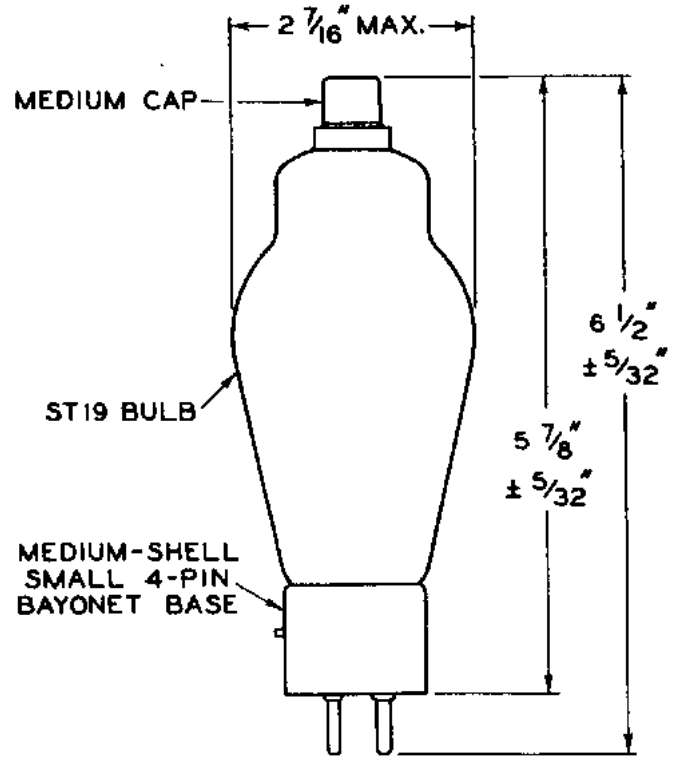

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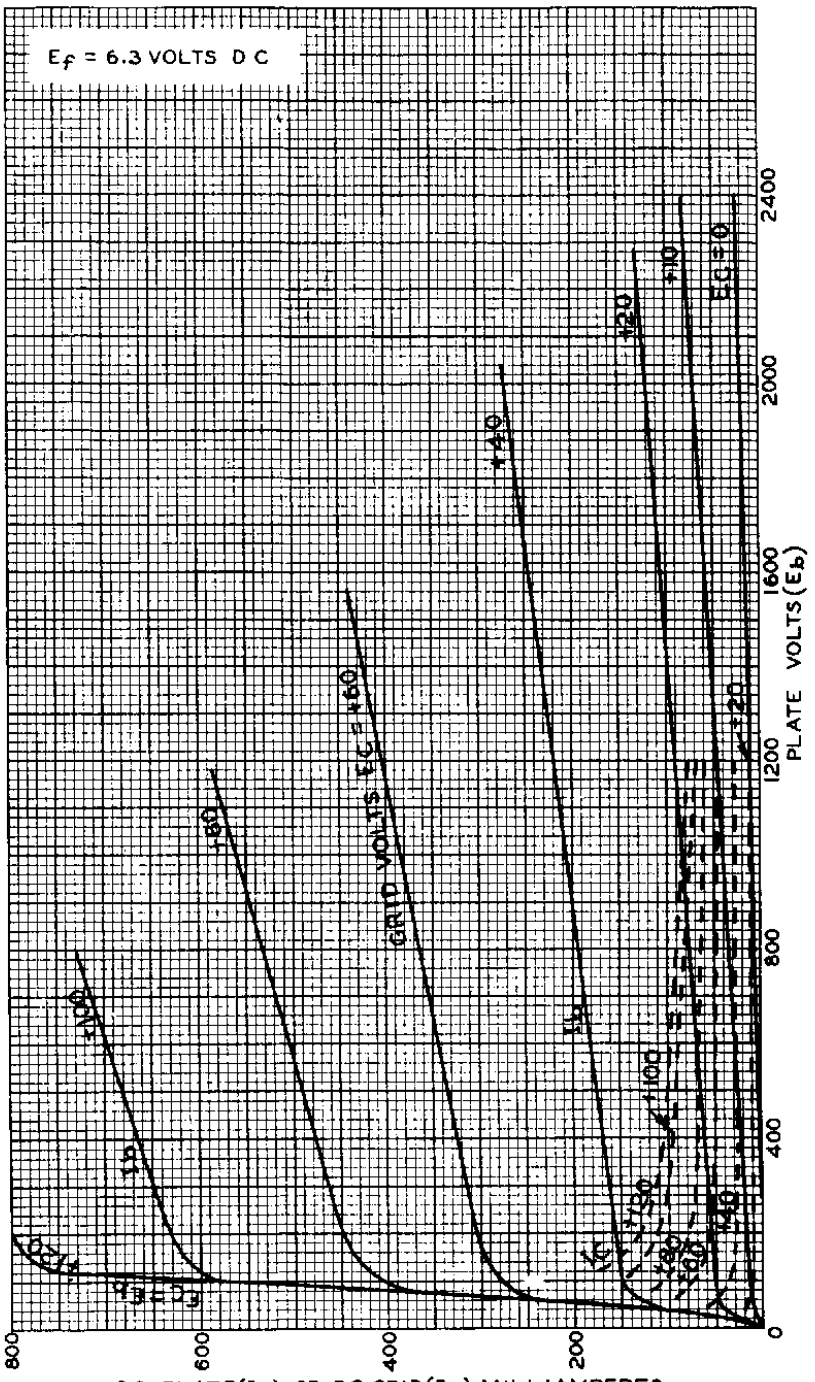
AVERAGE PLATE CHARACTERISTICS



MAR. 31, 1949 TUBE DEPARTMENT 92CM-6075

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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OPERATION CHARACTERISTICS

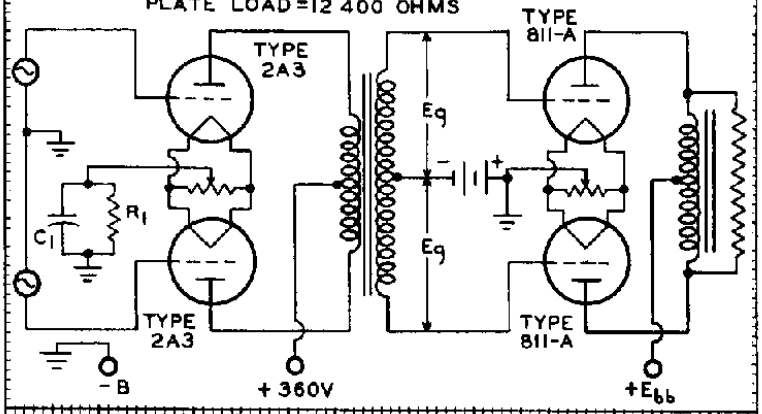
E_f = 6.3 VOLTS AC FOR 811-A's & 2.5 VOLTS AC FOR 2A3's

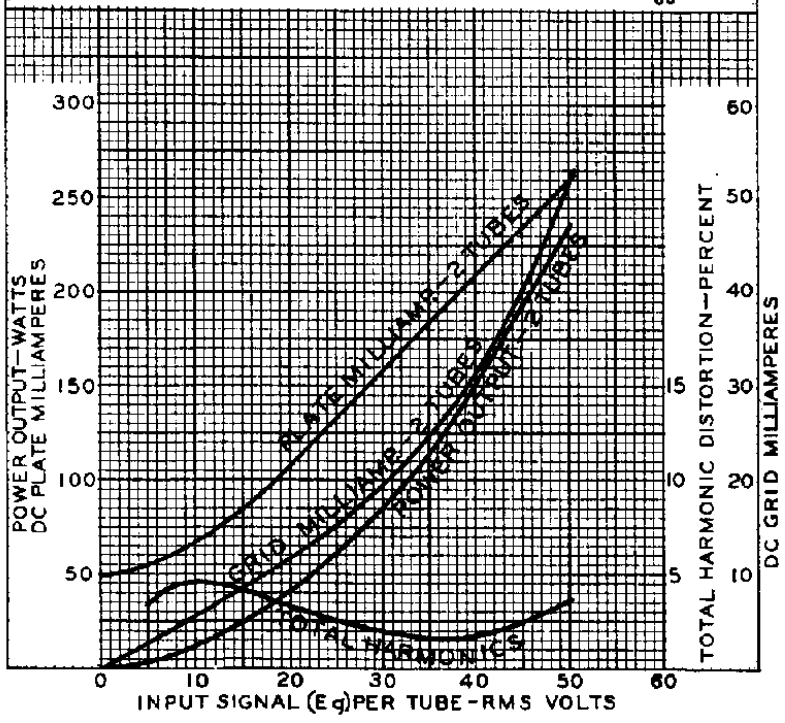
INPUT: CLASS AB_1 - TWO TYPE 2A3's; PLATE-SUPPLY VOLTS = 360; CATHODE-BIAS RESISTOR (R_1) = 780 OHMS; BYPASS CAPACITOR (C_1) = 80 μf

INTERSTAGE TRANSFORMER (T):

VOLTAGE RATIO $\frac{\text{PRIMARY}}{\frac{1}{2}\text{ SEC.}} = 6$

OUTPUT: CLASS B - TWO TYPE 811-A's; PLATE-SUPPLY VOLTS (E_{bb}) = 1250; DC GRID VOLTS = 0; PLATE-TO-PLATE LOAD = 12 400 OHMS



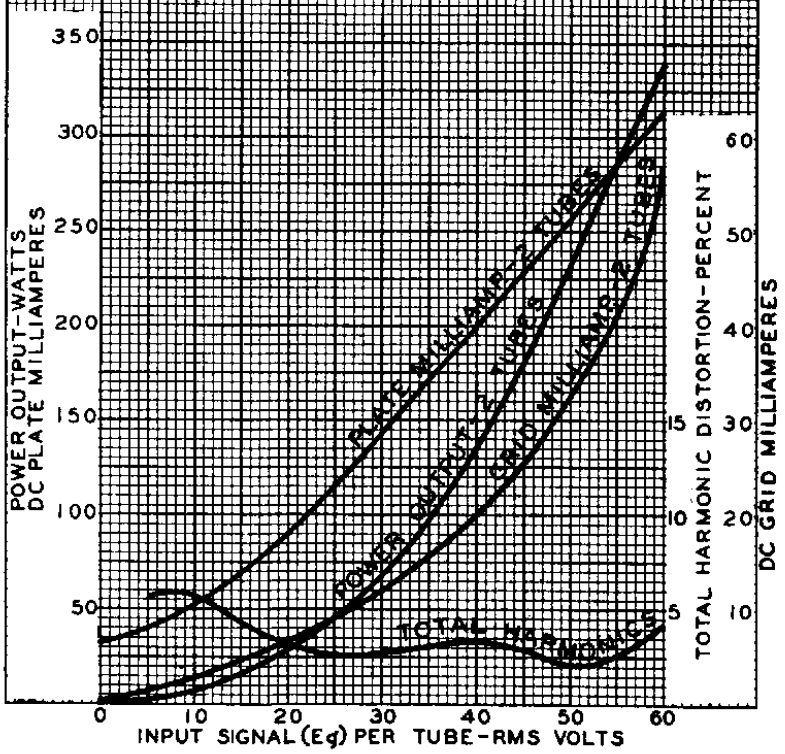


811-A

811-A

OPERATION CHARACTERISTICS

E_f = 6.3 VOLTS AC FOR 811-A's & 2.5 VOLTS AC FOR 2A3's
CIRCUIT ARRANGEMENT: SAME AS ON DWG. 92CM-7138 UNDER TYPE 811-A
INPUT: CLASS AB1-TWO TYPE 2A3's; PLATE-SUPPLY VOLTS = 360; CATHODE-BIAS RESISTOR (R_1) = 780 OHMS; BYPASS CAPACITOR (C_1) = 80 μf
INTERSTAGE TRANSFORMER (T):
VOLTAGE RATIO $\frac{\text{PRIMARY}}{\frac{1}{2}\text{ SEC.}} = 6$
OUTPUT: CLASS B-TWO TYPE 811-A's; PLATE-SUPPLY VOLTS (E_{bb}) = 1500; DC GRID VOLTS = −4.5; PLATE-TO-PLATE LOAD = 12400 OHMS



DEC. 8, 1948

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92CM-7139