



MODULATOR, A-F AND R-F POWER AMPLIFIER, OSCILLATOR

ENGINEERING INFORMATION

GENERAL RATINGS

Number of Electrodes	3
Filament Voltage	10 volts
Current	3.25 amperes
Type	Thoriated Tungsten
Average Characteristic Values Calculated at: Eb = 1000, Ec = -10, Ef = 10 D-C	
Plate Current	0.072 amperes
Amplification Factor	25
Plate Resistance	6000 ohms
Mutual Conductance	4200 micromhos
Average Direct Interelectrode Capacities:	
Grid to Plate	14.5 uuf
Grid to Filament	6.5 uuf
Plate to Filament	5.5 uuf
Maximum Overall Dimensions:	
Length	7 7/8 inches
Diameter	2 5/16 inches
Bulb	T-18
Base	Jumbo 4-Large Pin
Type of Cooling	Air
Net Weight	8 oz.

MAXIMUM RATINGS

Maximum D-C Plate Voltage Modulated.....	1000 volts
Maximum D-C Plate Voltage Unmodulated.....	1250 volts
Maximum A-C Plate Voltage R. M. S.	1250 volts
Maximum D-C Plate Current Modulated.....	150 ma.
Maximum D-C Plate Current Unmodulated.....	175 ma.
Maximum Plate Dissipation	125 watts
Maximum D-C Grid Current	60 ma.
Maximum R-F Grid Current	7.5 amp.

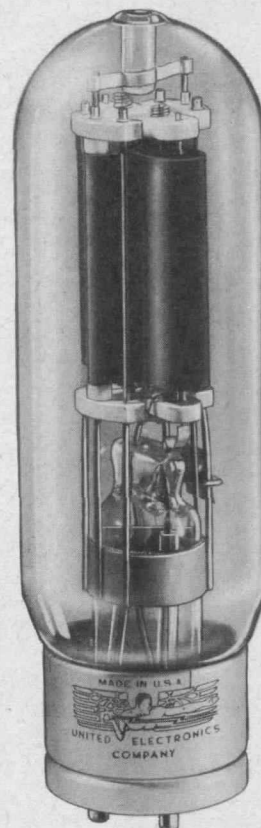
Frequency Rating for Operating Conditions with Maximum Rated Power Input and Nominal Output:

Below	15 megacycles
Above	20 meters

*Maximum Frequency Rating with Reduced Power Input and Output:

Below	*80 megacycles
Above	*3.75 meters

* For operation at the higher frequencies, the plate voltage, plate current, plate dissipation, and d-c grid current should not exceed 50% of the Maximum Ratings. The R-F grid current should never exceed the maximum rated value.



REPLACES UNITED TYPE 303-A

"Ruggedized" construction enables type 203-A to withstand unusual shock and vibration conditions. This is one of the most enduring types of transmitting tubes.

INSTALLATION

The base of the UNITED 203-A is designed for mounting in a standard "50 watt" socket of the four-pin, bayonet type. The tube should always be mounted vertically with ample air space provided for ventilation.

The filament of the 203-A should be operated at the rated value of 10 volts. Operation at other than the rated value may result in loss of filament emission and short life.

While the ratings printed herein are conservative, it is important to observe the requirements of good engineering practice as to transmitter design and operation. Adequate cabinet ventilation should be provided to carry off the heat dissipated during operation. Tube sockets should be inspected to avoid high resistance contacts to the base-pin terminals.

GRAPHITE ANODE

A specially processed graphite anode is used in this tube type because of several specific advantages over metals such as tantalum, molybdenum, and nickel. The radiating area of graphite is approximately twice the projected anode area because of its surface porosity and it will dissipate at least four times more heat than metal.

Graphite, being infusible will not warp or twist. The exact form of graphite is maintained under all temperatures; hence constant inter-element relationships and uniform characteristics result. The inherent advantages of graphite over metal are of primary importance in designing tubes of this type for long and satisfactory service.

All ratings given are for continuous service. Higher ratings are permissible for intermittent operation. Additional data will be furnished upon request.

A-F POWER AMPLIFIER AND MODULATOR—CLASS B

Maximum D-C Plate Voltage	1250	volts
Maximum D-C Plate Current } Average over any....	175	ma.
Maximum Plate Dissipation } audio-freq. cycle....	100	watts
Maximum Plate Input	220	watts

Typical Operation (2 tubes):

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	1000	1250	volts
D-C Grid Voltage	-35	-45	volts
Zero-Signal Plate Cur.	26	26	ma.
Max.-Signal Plate Cur.	320	320	ma.
Load Resistance (per tube)	1725	2250	ohms
Effec. Load Res. (plate to plate)	6900	9000	ohms
Power Output	200	260 approx.	watts

R-F POWER AMPLIFIER—CLASS B TELEPHONY

(Carrier Conditions—Modulation Factor = 1.0)

Maximum D-C Plate Voltage	1250	volts
Maximum D-C Plate Current	150	ma.
Maximum Plate Dissipation	100	watts
Maximum Plate Input	150	watts
Maximum R-F Grid Current	6	amp.

Typical Operation:

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	1000	1250	volts
D-C Grid Voltage	-35	-45	volts
Peak R-F Grid Voltage	95	90	volts
D-C Plate Current	130	106	ma.
Peak Power Output	160	170 approx.	watts
Power Output	40	42.5 approx.	watts

PLATE MODULATED R-F POWER AMPLIFIER

CLASS C TELEPHONY

(Carrier Conditions—Modulation Factor = 1.0)

Maximum D-C Plate Voltage	1000	volts
Maximum D-C Plate Current	175	ma.
Maximum Plate Dissipation	67	watts
Maximum Plate Input	175	watts
Maximum R-F Grid Current	6	amp.
Maximum D-C Grid Current	60	ma.

Typical Operation:

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	750	1000	volts
D-C Grid Voltage	-100	-135	volts
D-C Plate Current	150	150	ma.
D-C Grid Current†	50	50	ma.
Driving Power†	12	14	watts
Power Output	65	100 approx.	watts

R-F POWER AMPLIFIER AND OSCILLATOR

CLASS C TELEGRAPHY

(Key Down Conditions)

Maximum D-C Plate Voltage	1250	volts
Maximum D-C Plate Current	175	ma.
Maximum Plate Dissipation	100	watts
Maximum Plate Input	220	watts
Maximum R-F Grid Current	7.5	amp.
Maximum D-C Grid Current	60	ma.

Typical Operation:

Filament Voltage	10	10	10	a-c volts
D-C Plate Voltage	750	1000	1250	volts
D-C Grid Voltage	-75	-100	-125	volts
D-C Plate Current	150	150	150	ma.
D-C Grid Current†	25	25	25	ma.
Driving Power†	5	6	7	watts
Power Output	65	100	130 approx.	watts

† Subject to wide variations depending on the impedance of the load circuit. The driver stage should have a tank circuit of good regulation and should be capable of delivering considerably more than the required driving power.

