

**TRIODE
AMPLIFIER, OSCILLATOR OR MODULATOR**

Western Electric

DESCRIPTION

The 284D is a three-electrode tube designed for use as an audio-frequency amplifier and modulator. It may also be used as a radio-frequency amplifier or oscillator. The anode is capable of dis-

sipating 100 watts and cooling is accomplished by radiation. The cathode is a thoriated tungsten filament. Maximum ratings apply up to 6 megacycles.

MAXIMUM RATINGS

D-C Plate Voltage	1250 volts
D-C Plate Current	150 milliamperes
Continuous Plate Dissipation	100 watts
D-C Grid Current	100 milliamperes



GENERAL CHARACTERISTICS

ELECTRICAL DATA

	Min.	Bogey	Max.
Filament Voltage	9.5	10.0	10.5 volts
Filament Current at Bogey Voltage	3.1	3.25	3.4 amperes
Amplification Factor			
Conditions: $E_c = 1250$ volts, $I_b = 64$ milliamperes	4.3	4.8	5.3
Interelectrode Capacitances			
Grid-Plate	7.6	8.6	9.6 uuf
Grid-Filament	4.5	5.4	6.3 uuf
Plate-Filament	4.1	5.5	6.9 uuf

MECHANICAL DATA

Mounting Position	Vertical or horizontal with plane of filament vertical
Net Weight, Approximate	6.5 ounces

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR—CLASS A₁

MAXIMUM RATINGS, Absolute Values

D-C Plate Voltage	CCS	1250 volts
D-C Grid Voltage		-240 volts
Plate Input		85 watts
Plate Dissipation		85 watts

TYPICAL OPERATION

	CCS	CCS	CCS
D-C Plate Voltage	750	1000	1250 volts
D-C Grid Voltage	-100	-160	-215 volts
Peak A-F Grid Voltage	100	160	215 volts
D-C Plate Current	110	83	68 milliamperes
Load Resistance	8000	8500	12000 ohms
Total Harmonic Distortion	2.4	3.6	4.4 per cent
Power Output	11.0	24.4	31.0 watts

AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR—CLASS B**MAXIMUM RATINGS, Absolute Values**

	CCS
D-C Plate Voltage	1250 volts
Signal D-C Plate Current ¹	150 milliamperes
Signal Plate Input ¹	188 watts
Plate Dissipation ¹	100 watts

TYPICAL OPERATION

Unless otherwise specified, values are for 2 tubes	CCS	CCS
D-C Plate Voltage	1000	1250 volts
D-C Grid Voltage	-200	-250 volts
Peak A-F Grid-to-Grid Voltage	530	720 volts
Zero Signal D-C Plate Current	20	25 milliamperes
Maximum Signal D-C Plate Current	250	300 milliamperes
Effective Load Resistance, Plate-to-Plate	7700	7200 ohms
Maximum Signal Driving Power, Approximate	3.5	2 watts
Maximum Signal Power Output, Approximate	150	200 watts

RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR—CLASS C TELEGRAPHY

Key-down conditions per tube without amplitude modulation²

MAXIMUM RATINGS, Absolute Values

	CCS
D-C Plate Voltage	1250 volts
D-C Grid Voltage	-550 volts
D-C Plate Current	150 milliamperes
D-C Grid Current	100 milliamperes
Plate Input	188 watts
Plate Dissipation	100 watts

TYPICAL OPERATION

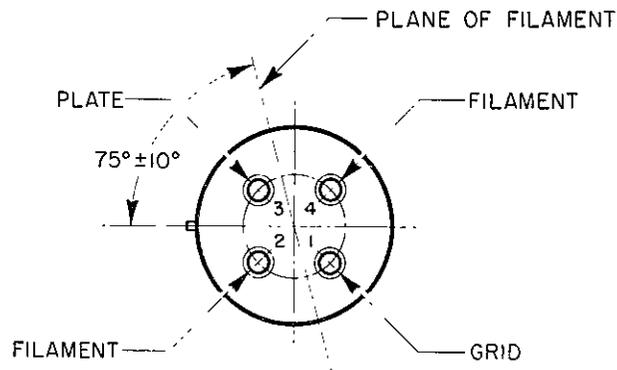
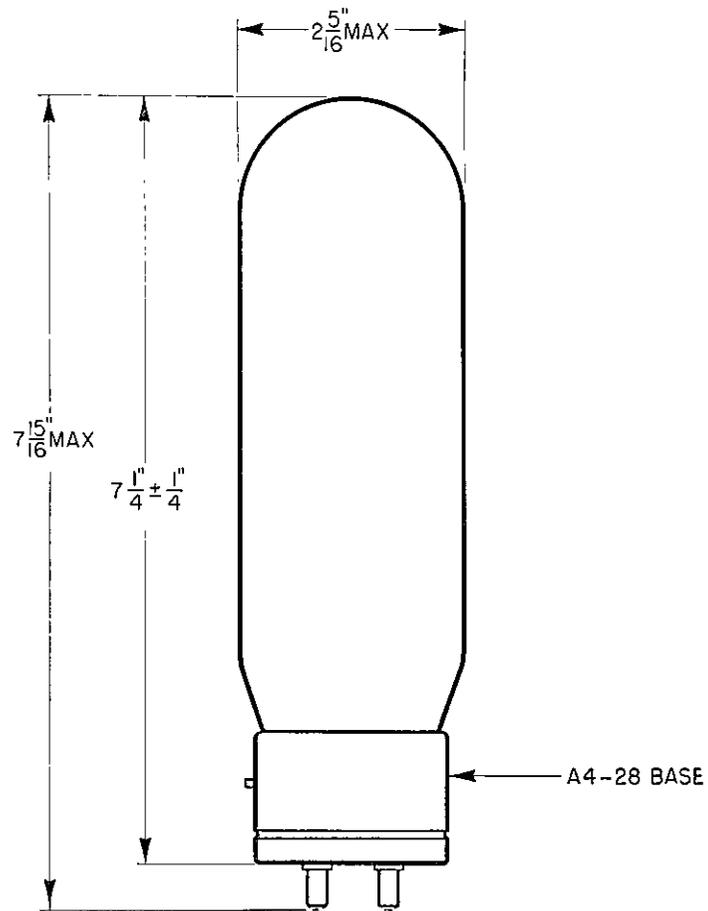
	CCS	CCS
D-C Plate Voltage	1000	1250 volts
D-C Grid Voltage	-245	-300 volts
Peak R-F Grid Voltage	385	445 volts
D-C Plate Current	150	150 milliamperes
D-C Grid Current, Approximate	18	16 milliamperes
Driving Power, Approximate	6.5	7.5 watts
Power Output, Approximate	115	140 watts

Maximum ratings apply up to 6 megacycles. The tube may be operated at higher frequencies provided maximum values of plate voltage and power input are reduced according to the tabulation below (other

maximum ratings are the same as shown above). Special attention should be given to adequate ventilation of the bulb at these frequencies.

Frequency	6	15	30 megacycles
Percentage of Maximum Rated Plate Voltage and Plate Input			
Class B	100	85	70 per cent
Class C Unmodulated	100	75	50 per cent

1. Averaged over any audio-frequency cycle of sine wave form.
2. Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115 per cent of the carrier conditions.



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A development of Bell Telephone Laboratories, the research laboratories of the American Telephone and Telegraph Company and the Western Electric Company