

**PENTODE  
 POWER AMPLIFIER**

*Western Electric*

**DESCRIPTION**

The 293A is a suppressor grid, power pentode having an indirectly heated cathode. It is designed for use as an audio-frequency power amplifier in Class A<sub>1</sub> service.

**CHARACTERISTICS**

Heater Voltage . . . . .		10.0 volts
Plate Current . . . . .	$\left. \begin{array}{l} E_b = E_{c2} = 180 \text{ volts;} \\ E_{c1} = -18 \text{ volts;} E_{c3} = 0 \end{array} \right\}$	15.8 milliamperes
Transconductance . . . . .		1175 micromhos
Power Output . . . . .		1.2 watts

**GENERAL CHARACTERISTICS**

**ELECTRICAL DATA**

Heater Voltage, A-C or D-C . . . . .	10.0 volts
Heater Current . . . . .	320 milliamperes
Direct Interelectrode Capacitances (without external shield)	
Grid to Plate . . . . .	0.66 uuf
Input . . . . .	6.2 uuf
Output . . . . .	6.5 uuf

**MECHANICAL DATA**

Cathode . . . . .	Coated Unipotential
Bulb . . . . .	ST14
Base . . . . .	Medium 6-pin
Mounting Position . . . . .	Any
Dimensions and pin connections shown in outline drawing on Page 6	

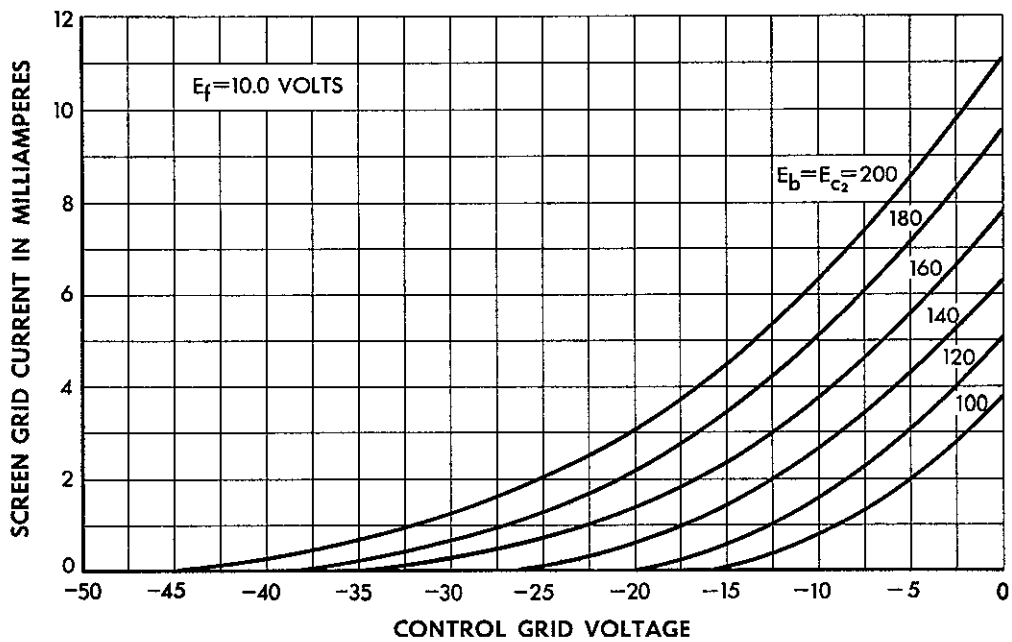
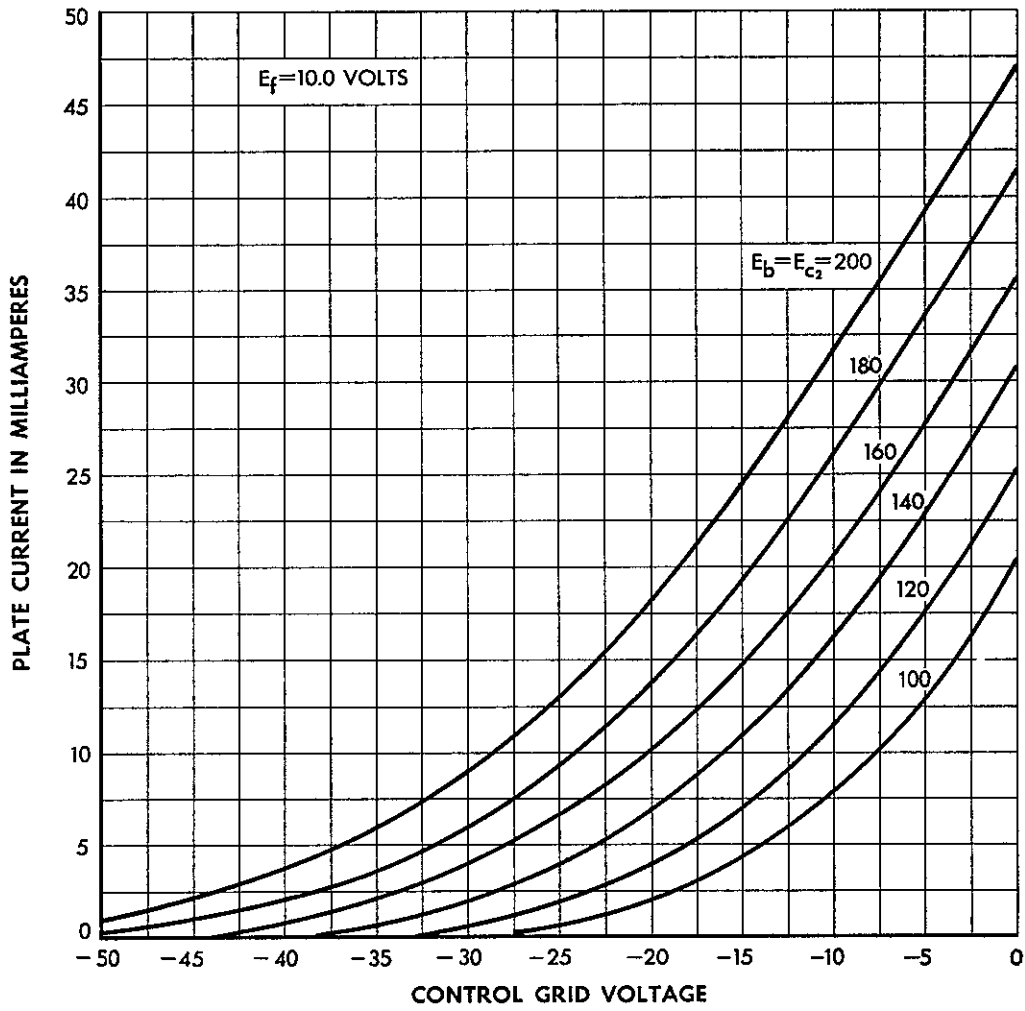
**MAXIMUM RATINGS, Design-Center Values**

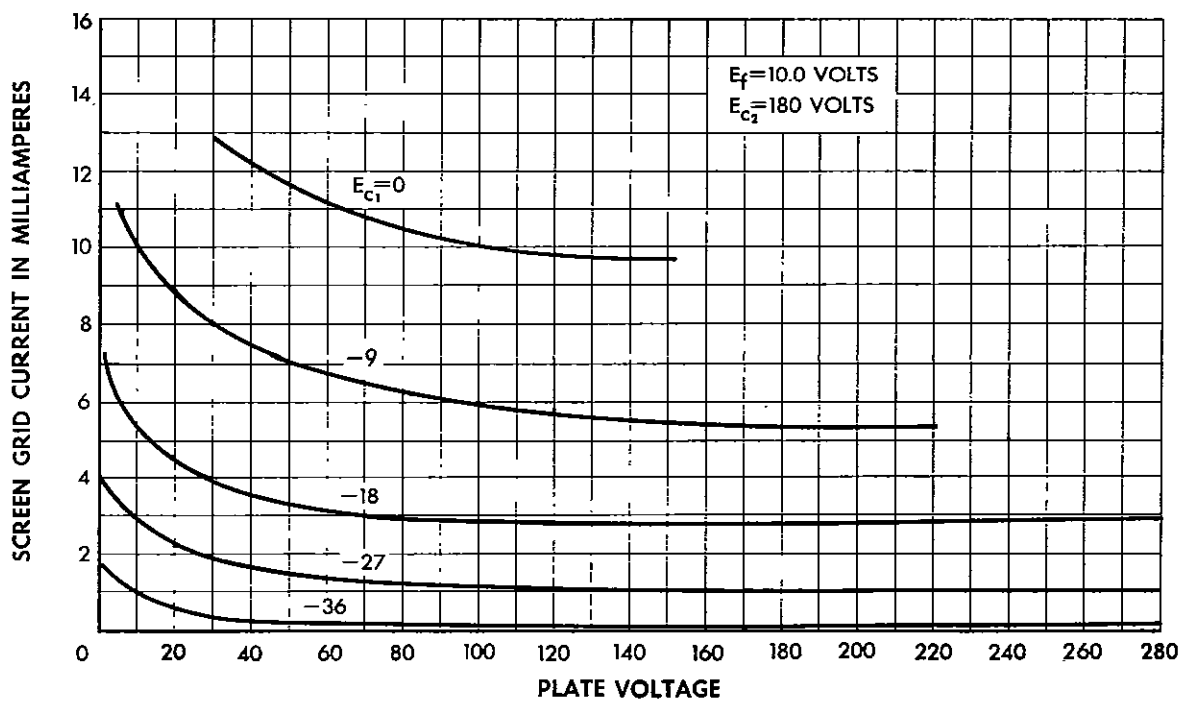
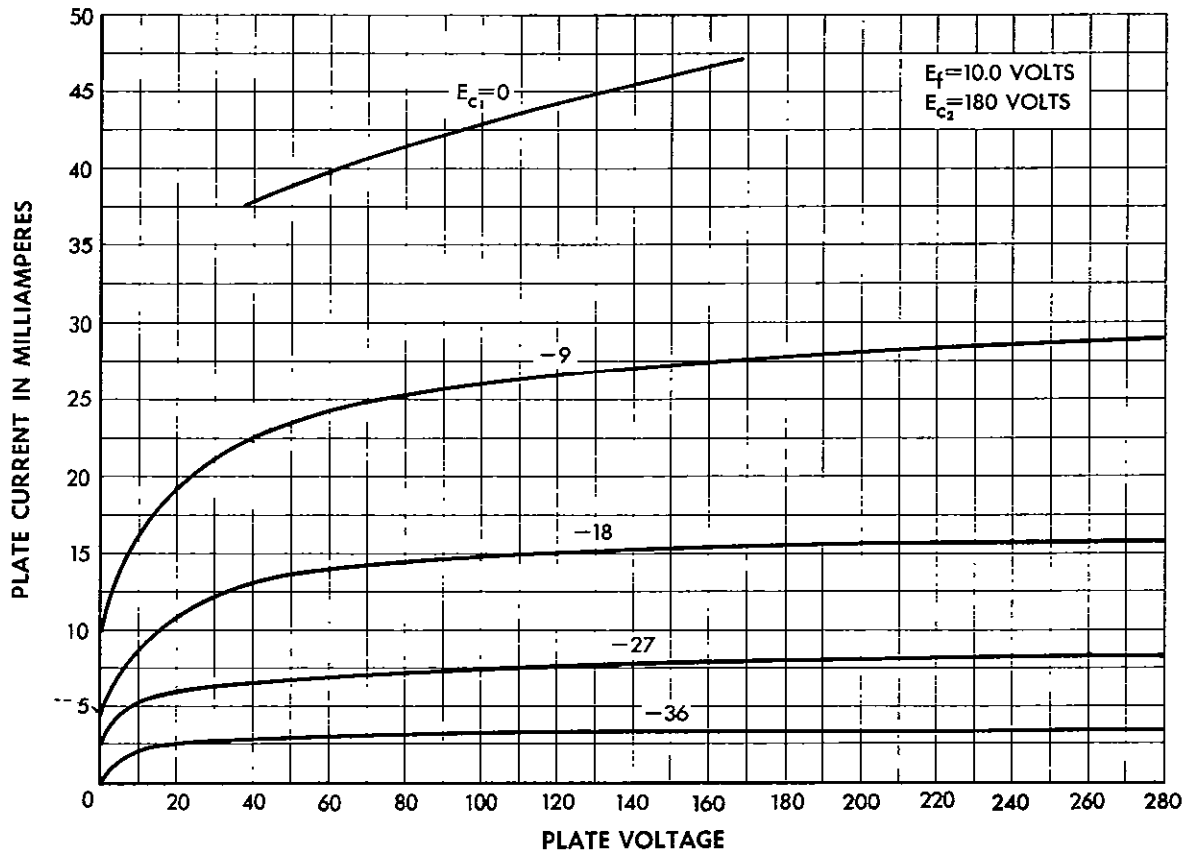
Plate Voltage . . . . .	250 volts
Screen Grid Voltage . . . . .	200 volts
Plate Dissipation . . . . .	5 watts
Screen Grid Dissipation . . . . .	1 watt
Cathode Current . . . . .	30 milliamperes
Heater-Cathode Voltage . . . . .	150 volts

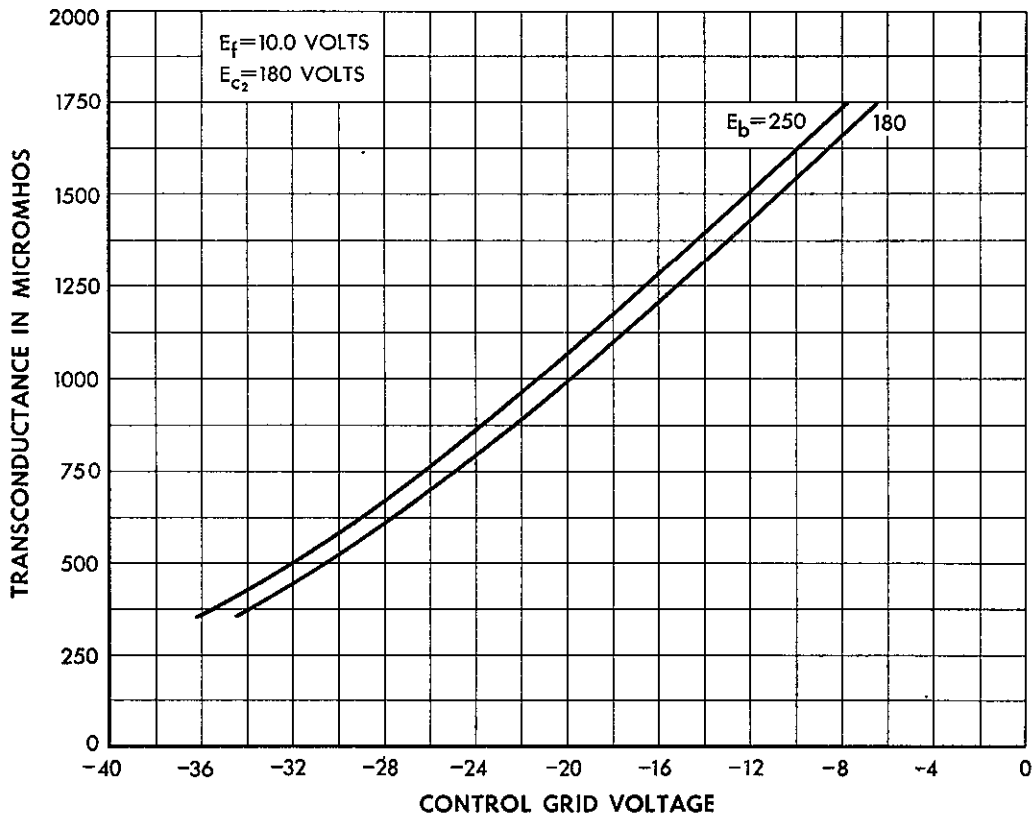
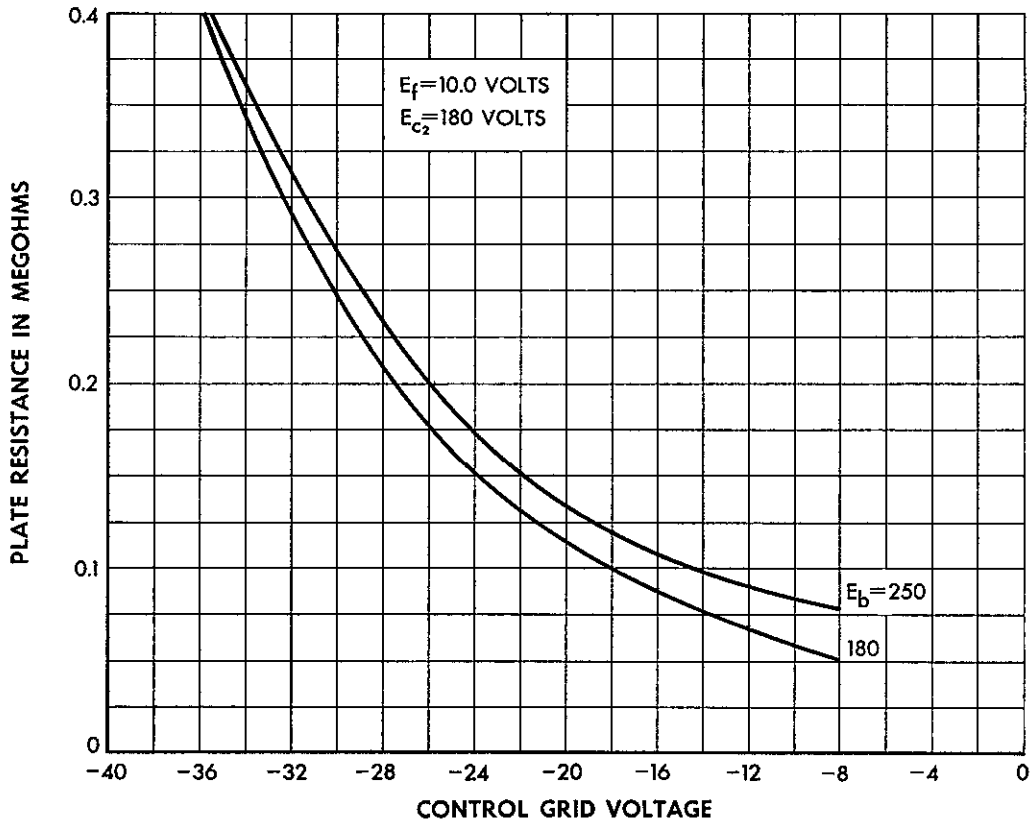
**TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS**

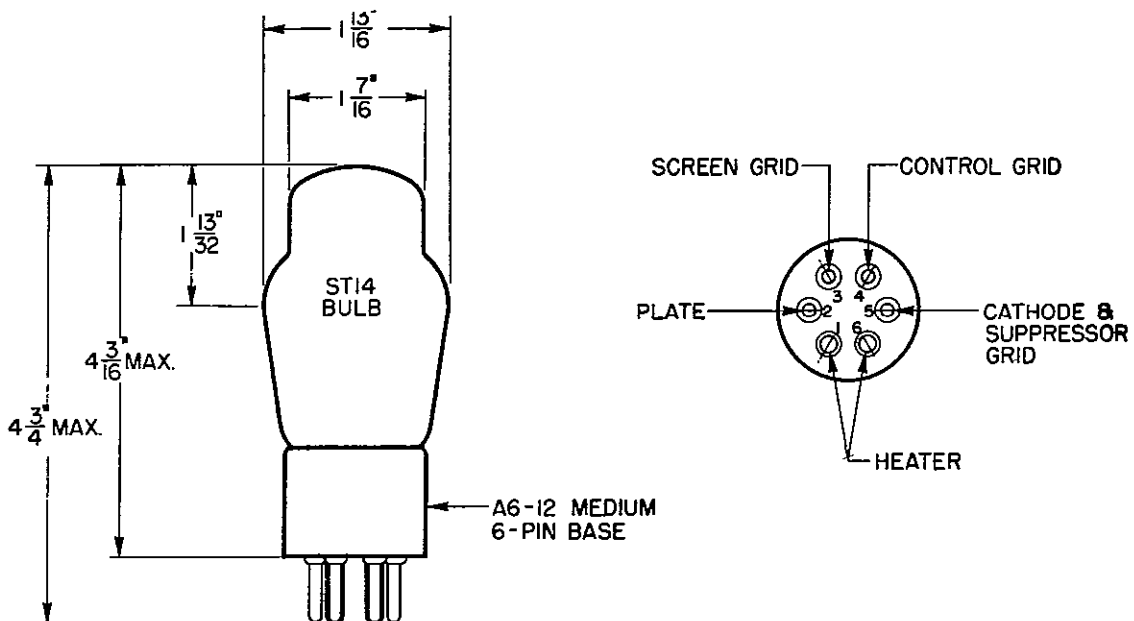
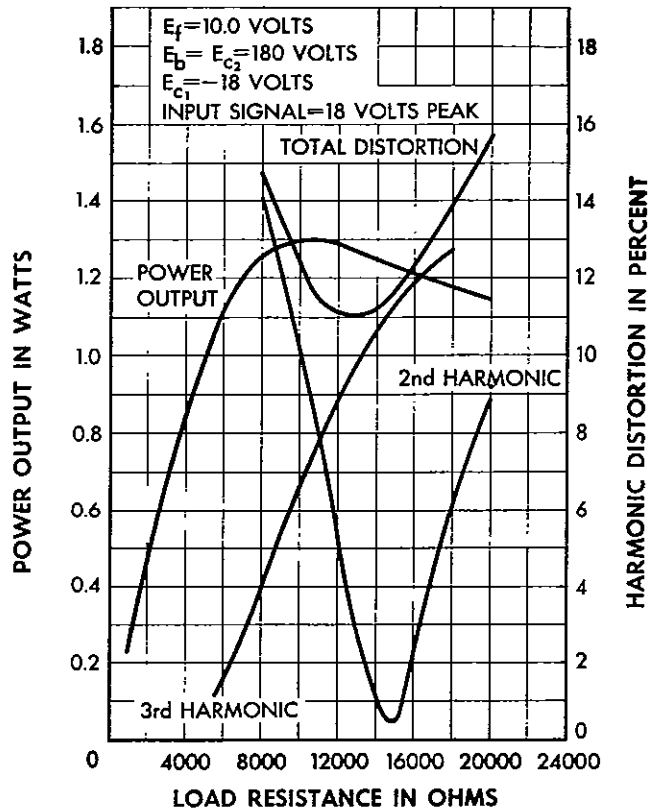
**SINGLE TUBE AMPLIFIER — CLASS A<sub>1</sub>**

Plate Voltage . . . . .	135	180	250 volts
Screen Grid Voltage . . . . .	135	180	200 volts
Control Grid Voltage . . . . .	-12	-18	-18 volts
Peak A-F Grid Voltage . . . . .	12	18	18 volts
Zero Signal Plate Current . . . . .	12.5	15.8	21.5 milliamperes
Maximum Signal Plate Current . . . . .	13.5	17.0	23.5 milliamperes
Zero Signal Screen Grid Current . . . . .	1.9	2.7	3.5 milliamperes
Maximum Signal Screen Grid Current . . . . .	3.2	5.2	5.6 milliamperes
Transconductance . . . . .	1140	1175	1340 micromhos
Plate Resistance . . . . .	95000	100000	100000 ohms
Load Resistance . . . . .	11000	11500	12000 ohms
Maximum Signal Power Output . . . . .	0.6	1.3	2.1 watts
Total Harmonic Distortion . . . . .	9.7	11	10 per cent









**Western Electric**

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