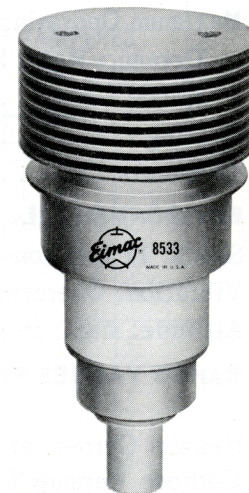




## TECHNICAL DATA

## PLANAR TRIODE

The EIMAC Type 8533 is a planar triode designed for use as a grid- or plate-pulsed oscillator, amplifier, frequency multiplier, or switch tube at high plate voltages. The tube will operate from low frequencies up to 3.0 GHz. The extended grid-to-anode insulator and a matrix cathode of the arc resistant extended interface type permit reliable operation up to 8 kVdc in RF applications. Other features of this tube type include high transconductance, high  $\mu$ , and high current capability coupled with great mechanical strength permitting operation at elevated temperatures. The compact metal and ceramic coaxial construction coupled with low interelectrode capacitances make this tube well suited for operation in line type circuits at lower frequencies as well as in cavity resonators at the higher frequencies. The cathode is an indirectly heated disc requiring only minimal heater power.

GENERAL CHARACTERISTICS<sup>1</sup>

## ELECTRICAL

Cathode: Oxide Coated, Unipotential

Heater: Voltage . . . . .	6.3 ± 0.3 V
Current, at 6.3 volts . . . . .	1.3 A
Transconductance (Average):	
$I_b = 160$ mA (200 mA/cm <sup>2</sup> ) . . . . .	30 mmhos
Amplification Factor (Average): . . . . .	145
Direct Interelectrode Capacitance (grounded cathode) <sup>2</sup>	
$C_{in}$ . . . . .	8.0 pF
$C_{out}$ . . . . .	0.06 pF
$C_{gp}$ . . . . .	1.65 pF
Cut-off Bias <sup>3</sup> . . . . .	-30 V max.
Frequency of Maximum Rating:	
CW . . . . .	3000 MHz
Plate or Grid-Pulsed . . . . .	3000 MHz

1. Characteristics and operating values are based upon performance tests. These figures may change without notice as the result of additional data or product refinement. EIMAC Division of Varian should be consulted before using this information for final equipment design..
2. Capacitance values are for a cold tube as measured in a special shielded fixture. When the cathode is heated to the proper temperature, the grid-cathode capacitance will increase from the cold value by approximately 1 pF due to thermal expansion of the cathode.
3. Measured with one milliampere plate current and a plate voltage of 1 kVdc.

**MECHANICAL**

Maximum Overall Dimensions:

Length . . . . .	2.701 in; 68.60 mm
Diameter . . . . .	1.264 in; 32.11 mm
Net Weight . . . . .	63 gm
Operating Position . . . . .	Any
Maximum Operating Temperature:	
Ceramic/Metal Seals . . . . .	250°C
Anode Core . . . . .	250°C
Cooling . . . . .	Forced Air
Terminals . . . . .	Coaxial, special

**ENVIRONMENTAL**

Shock: 11 ms, non-operating . . . . .	60 G
Vibration: Operating, All Axis . . . . .	10 G
Altitude: max., in suitably designed circuit . . . . .	60,000 ft.

**RANGE VALUES FOR EQUIPMENT DESIGN**

	<u>Min.</u>	<u>Max.</u>
Heater: Current at 6.3 volts . . . . .	1.20	1.40 A
Cathode Warmup Time . . . . .	60	--- sec.
Interelectrode Capacitance <sup>1</sup> (grounded cathode connection)		
Cin . . . . .	7.00	9.00 pF
Cout . . . . .	---	0.06 pF
Cgp . . . . .	1.50	1.80 pF

1. Capacitance values for a cold tube as measured in a special shielded fixture. When the cathode is heated to the proper temperature, the grid-cathode capacitance will increase from the cold value by approximately 1 pF due to thermal expansion of the cathode.

**GRID PULSED OR PLATE PULSED AMPLIFIER OR OSCILLATOR**

ABSOLUTE MAXIMUM RATINGS:

DC PLATE VOLTAGE (grid pulsed) . . . . .	8000 VOLTS
PEAK PULSE PLATE VOLTAGE (plate pulsed) . . . . .	10,000 VOLTS
DC GRID VOLTAGE . . . . .	-150 VOLTS
INSTANTANEOUS PEAK GRID-CATHODE VOLTAGE	
Grid negative to cathode . . . . .	-750 VOLTS
Grid positive to cathode . . . . .	150 VOLTS
PULSE PLATE CURRENT . . . . .	5.0 AMPERES
PULSE GRID CURRENT . . . . .	2.5 AMPERES

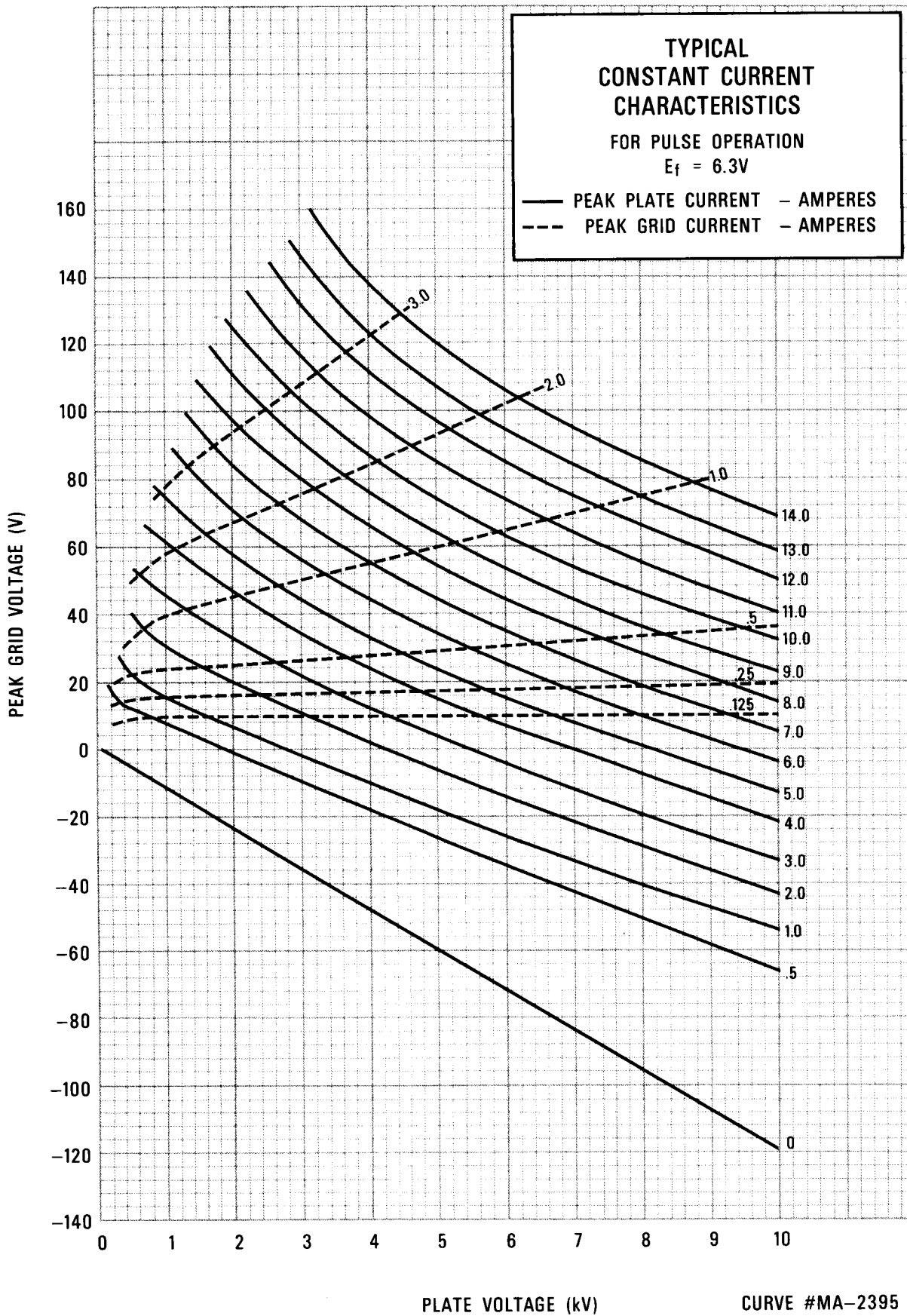
AVERAGE PLATE DISSIPATION

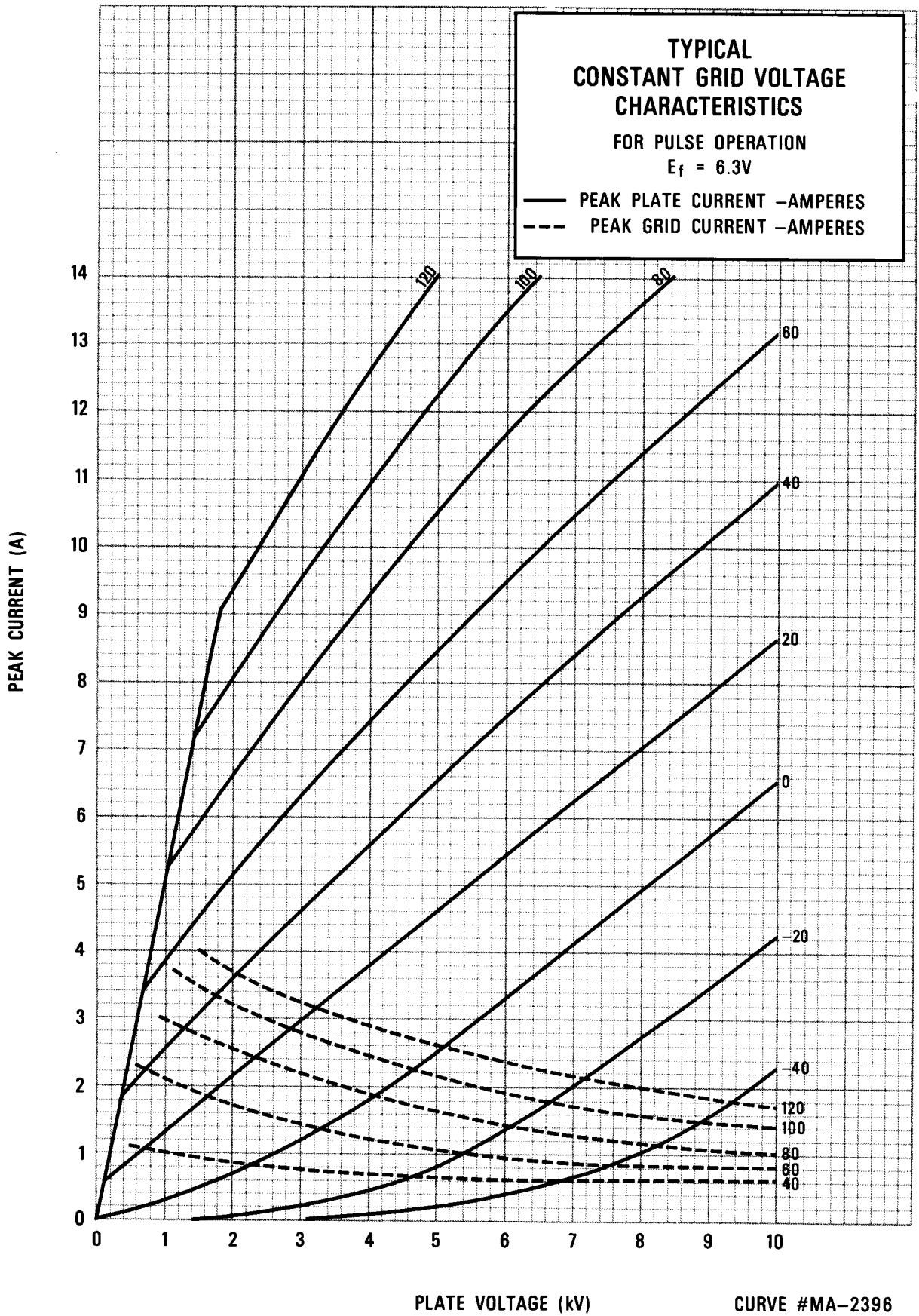
Forced Air Cooling <sup>1</sup> . . . . .	100 WATTS
GRID DISSIPATION (Average) . . . . .	1.5 WATTS
FREQUENCY . . . . .	3.0 GHz
PULSE DURATION <sup>2</sup> . . . . .	6.0 $\mu$ s
DUTY FACTOR <sup>2</sup> . . . . .	.0033

1. Using EIMAC radiator PN 014224.

2. For applications using longer pulse duration and/or higher duty cycle consult the nearest Varian Electron Tube & Device Field Office, or the Product Manager, EIMAC Division of Varian, Salt Lake City, Utah.







CURVE #MA-2396

TYPICAL CONSTANT PLATE CURRENT CHARACTERISTICS  
NEGATIVE GRID REGION  $E_f = 6.3V$

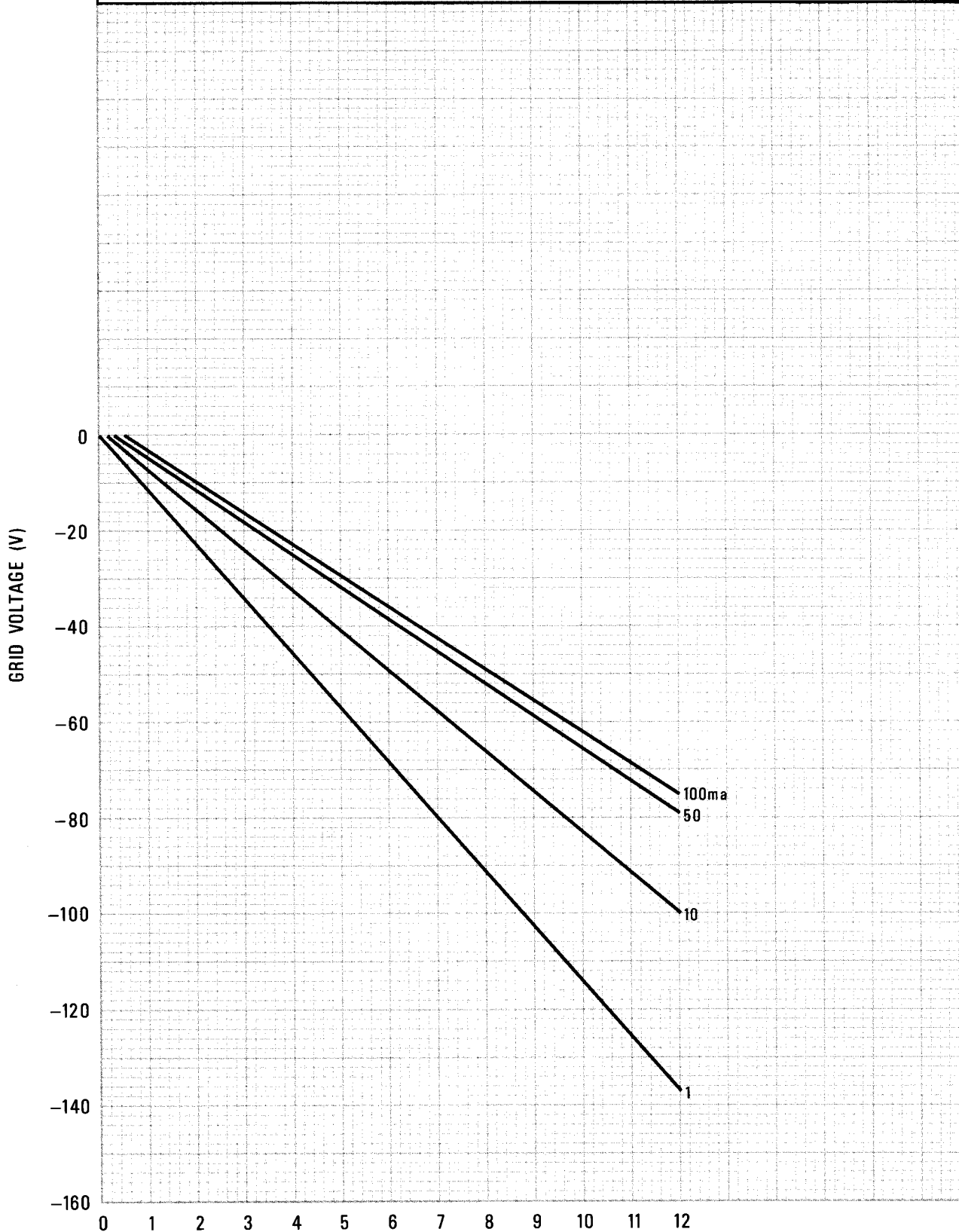


PLATE VOLTAGE (kV)

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