RAYTHEON

TECHNICAL INFORMATION SERVICE

Technical Information

CK1050A

SUBMINIATURE GAS TRIODE

The CK1050A is a grid controlled neon filled triode of subminiature construction. It has a directly heated cathode and is designed for use either as an indicator lamp or a low current negative grid control device. The low working and control voltages permit its use in association with transistor circuitry. Using an AC anode supply with an anode current of 3.0 milliamperes, the light output is several times greater than that obtainable from a NE–2 glow lamp at maximum rating. The flexible terminal leads may be soldered or welded directly to the terminals of circuit components without the use of sockets. Standard inline subminiature sockets may be used by cutting the leads to a suitable length.

ELECTRICAL DATA

RATINGS–ABSOLUTE MAXIMUM VALUES: (Note 1)

Filament Voltage (RMS)	1.25±5%	Vac
Peak Forward and Inverse Anode Voltage (Anode to filament or grid)	±118	v max.
Grid Supply Voltage	–12	Vdc min.
Anode Current (Average)	3	mAdc max.
Peak Anode Current (Note 3)	11	ma. max.
Minimum Anode Supply Voltage (RMS) Note 2	60	Vac min.
Maximum Anode Supply Voltage (RMS) Note 2	75	Vac max.
Maximum Preconduction Grid Current at 75 volts (RMS) Anode Supply Voltage	0.5	μAdc max.

TYPICAL PULSE CHARACTERISTICS: (See Figure A)

Grid Supply Voltage (Tube non conducting)	–10.0	Vdc
Input Pulse Voltage (For tube conducting)		
8 μsec. pulse width:	+5.0	Vdc G1–K
Typical Ionization Time (Approx.)	2	μsec
Typical Deionization Time (Approx.)	30	μsec

CHARACTERISTICS AND TYPICAL OPERATION:

	Figure B		Figure C	
Filament Voltage (RMS)	1.25	Vac	1.25	Vac
Filament Current	250	mA	250	mA
Anode Supply Voltage Epp (RMS)	65	Vac	65	Vac
Anode Current (Grid Supply Voltage = 0 Volts)	1.9	mAdc	0.67	mA
Grid Supply Voltage (Tube non conducting)	–4.5	Vdc	–4.5	Vdc
Grid Supply Voltage (Tube conducting)	–1.0	Vdc	–1.0	Vdc
Grid Isolation Resistor	0.1	meg.	.068	meg.
Series Anode Limiting Resistor	0.01	meg.	.033	meg.

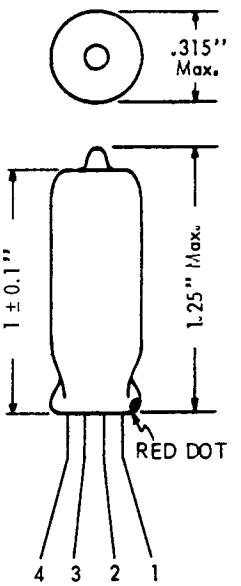
MECHANICAL DATA

ENVELOPE ..... T–2 Glass

BASE ..... None (0.016" tinned flexible leads. Length: 1.5" min. Spacing: 0.048" center to center)

MOUNTING POSITION ..... Any

PHYSICAL DIMENSIONS

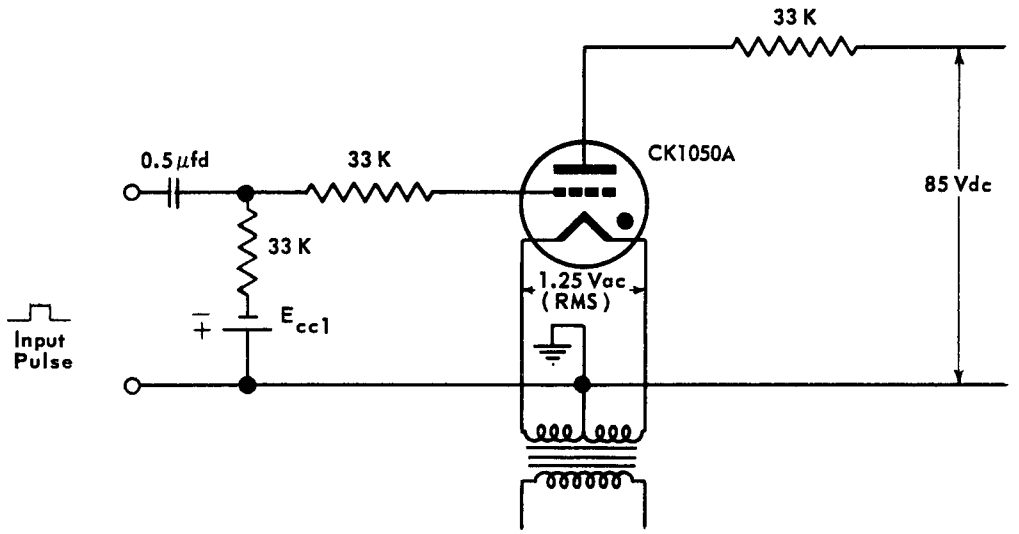


TERMINAL CONNECTIONS:

(Red dot is adjacent to lead 1)

Lead 1 Filament
Lead 2 Grid
Lead 3 Anode
Lead 4 Filament

FIGURE A



NOTE 1: Operation at all maximum ratings simultaneously is not permitted.

NOTE 2: As indicated under "Ratings–Absolute Maximum Values", the anode supply voltage (Epp) must be maintained within the limits of 60 Vac (RMS) and 75 Vac (RMS) to ensure reliable operation. In terms of peak anode supply voltage the range of reliable operation is 84 to 106 peak positive volts. In installations using large numbers of tubes where distortion may be a factor it is important to maintain the anode supply voltage within peak voltage limits described above.

NOTE 3: In applications where capacity may be employed to shunt either all or part of the series anode limiting resistor or its equivalent, it is necessary to consider the peak anode current limitation. Also the minimum positive amplitude of anode supply voltage must be low enough to cause deionization each cycle.

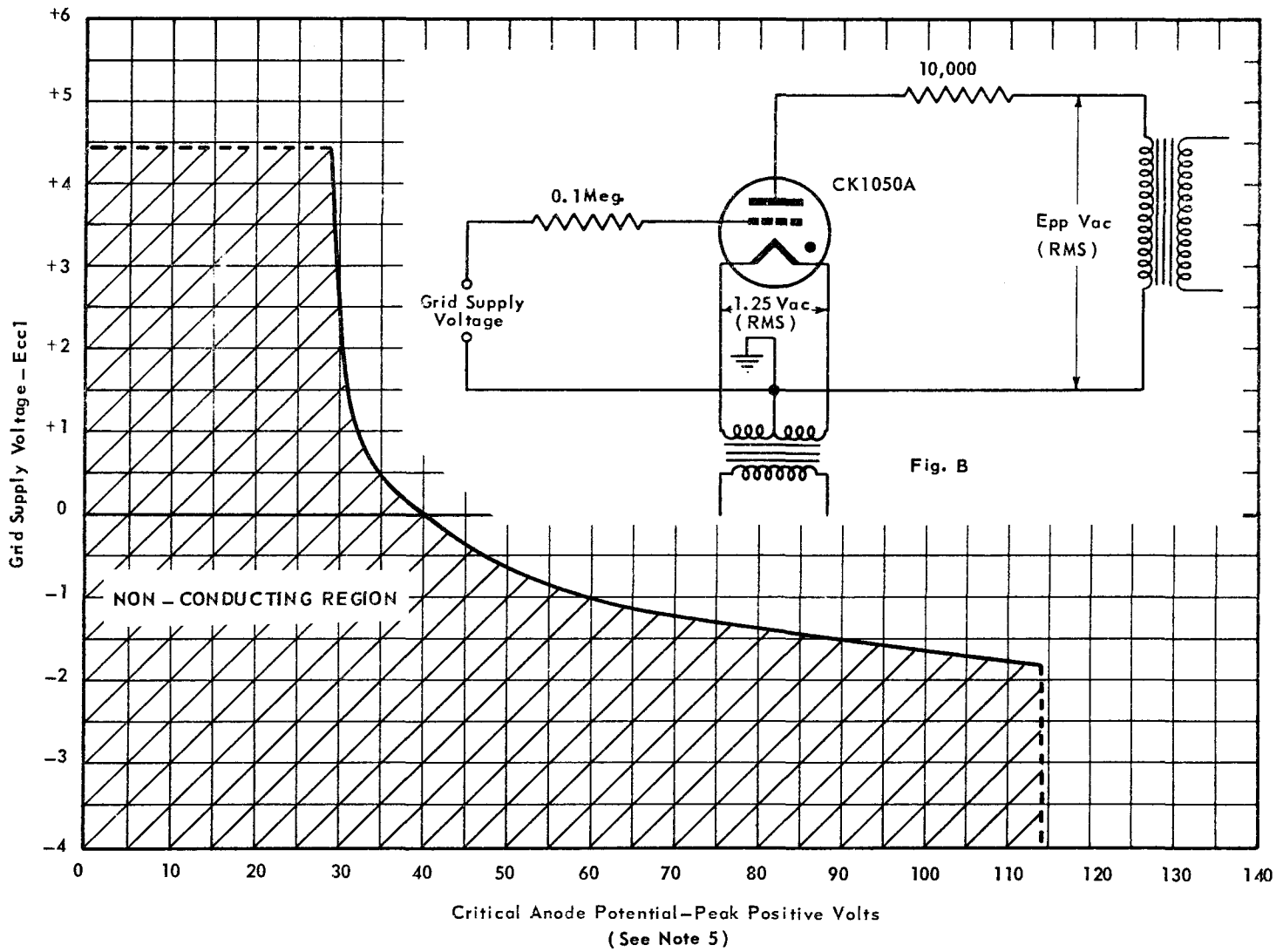
NOTE 4: Anode Current at cut–off may be considered relatively independent of Grid Supply Voltage for a range of Anode Supply Voltage from 60 Vac to 75 Vac.

NOTE 5: The critical anode potential (peak positive) is equal to $\sqrt{2}$ X Epp, where Epp is the RMS value of a symmetrical and undistorted alternating voltage.

SUBMINIATURE GAS TRIODE

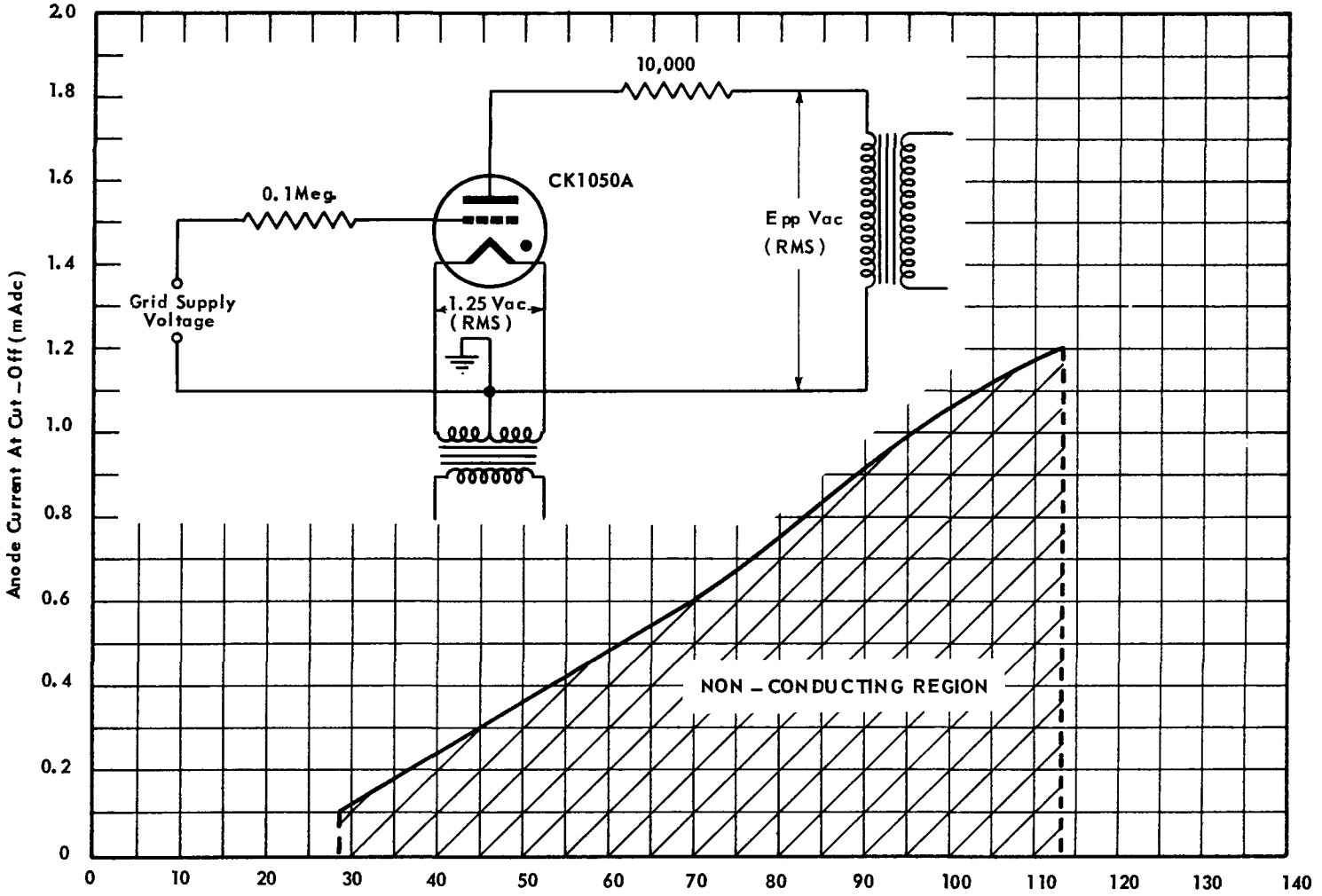
AVERAGE CHARACTERISTICS

GRID SUPPLY VOLTAGE VS CRITICAL ANODE POTENTIAL



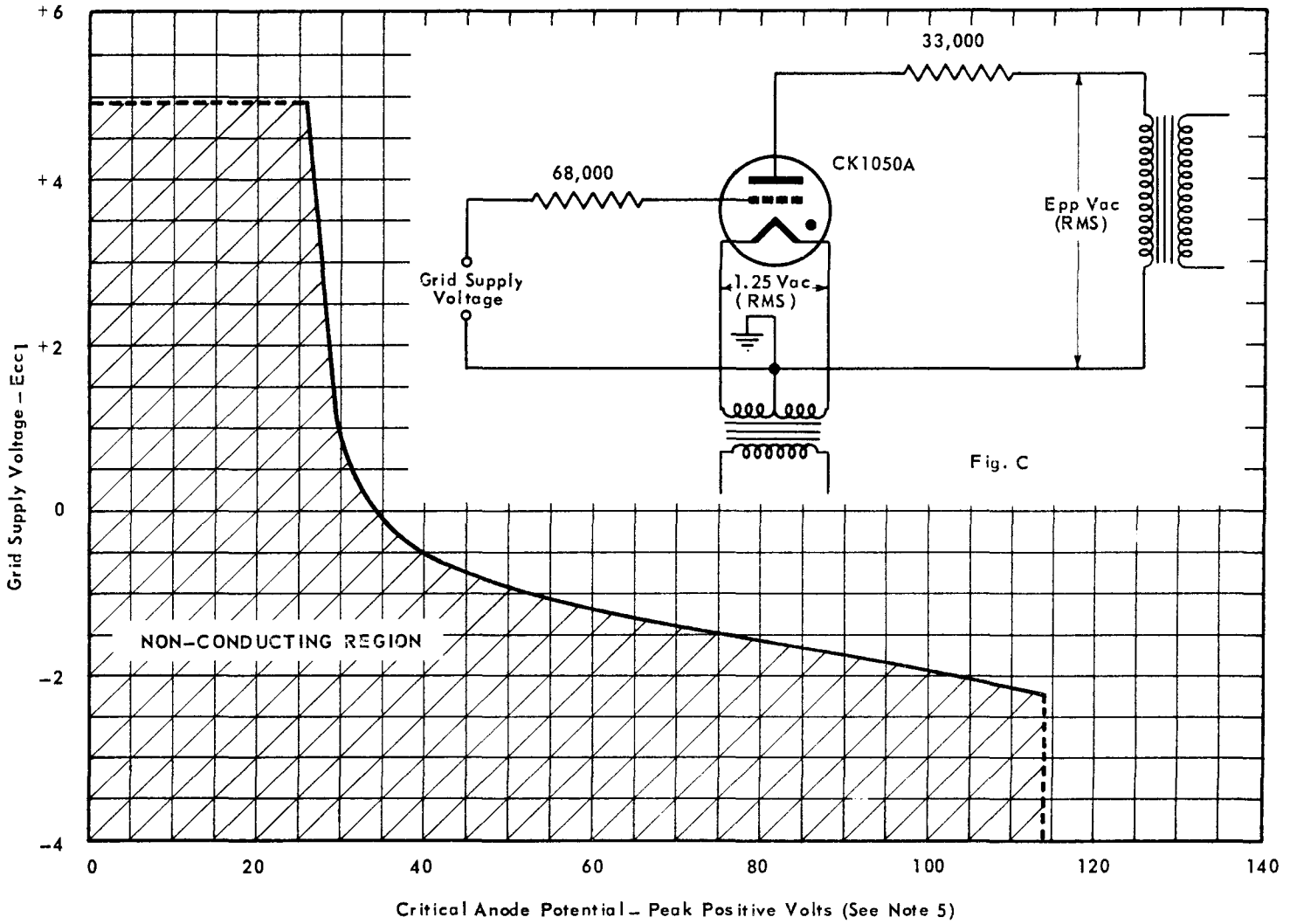
AVERAGE CHARACTERISTICS

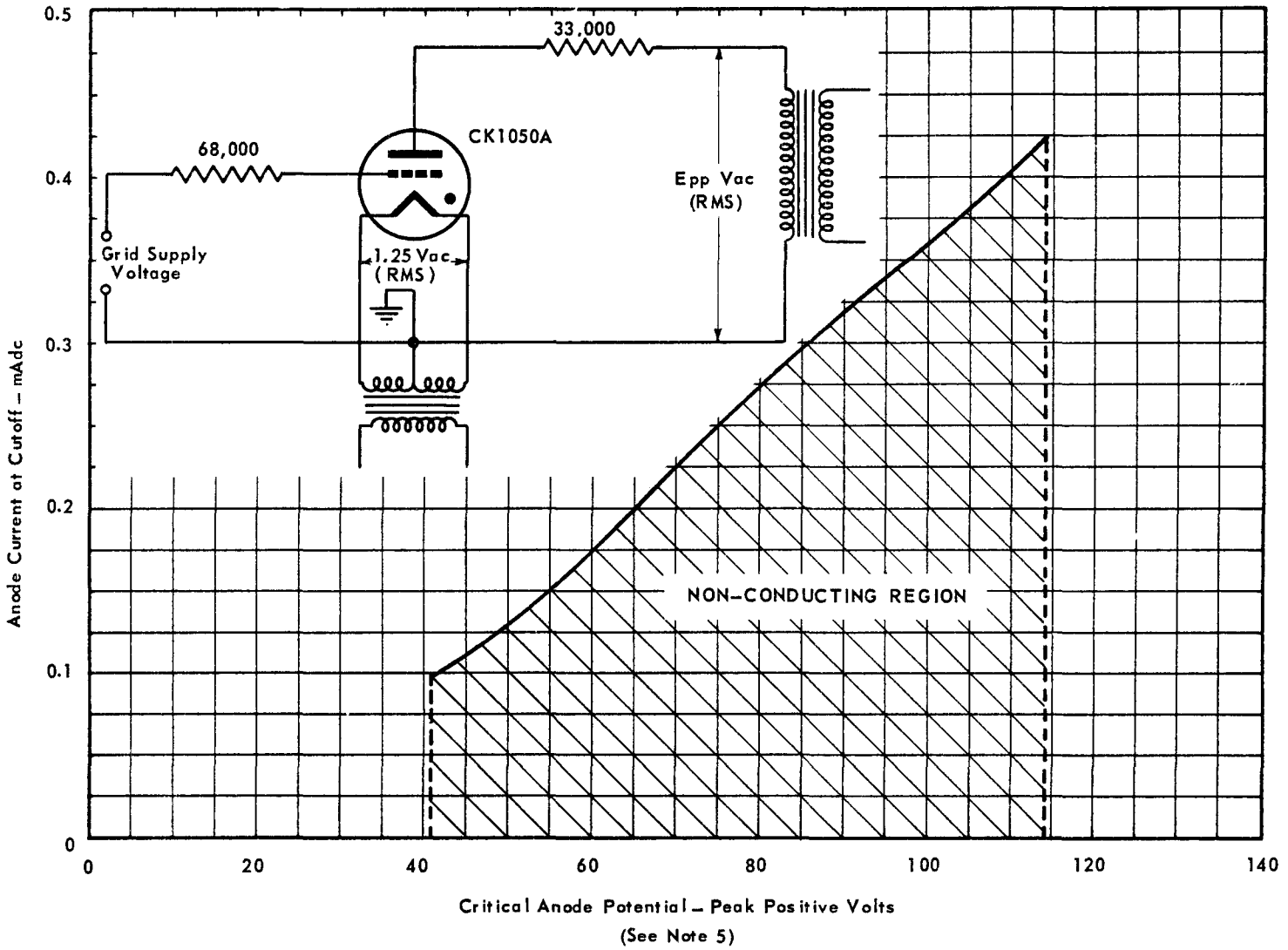
TYPICAL ANODE CURRENT AT CUT-OFF VS CRITICAL ANODE POTENTIAL (See Note 4)



AVERAGE CHARACTERISTICS

GRID SUPPLY VOLTAGE VS. CRITICAL ANODE POTENTIAL



AVERAGE CHARACTERISTICS

TYPICAL ANODE CURRENT AT CUTOFF vs. CRITICAL ANODE POTENTIAL (See Note 4)