

# Technical Information

**CK7979**

**SUBMINIATURE  
GAS TRIODE**

The CK7979 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.

CHARACTERISTICS AND TYPICAL OPERATION:

	Fig. B (Note 6)	Fig. C (Note 7)	D.C. Operation Fig. A
Filament Voltage (RMS)	1.25 Vac	1.25 Vac	1.25 Vac
Filament Current	250 mA	250 mA	250 mA
Anode Supply Voltage Epp (RMS) or Vdc	65 Vac	65 Vac	80 Vdc
Anode Current (Grid Supply Voltage=0 Volts)	1.9 mAdc	0.67 mA	0.6 mAdc
Grid Supply Voltage (Tube non conducting)	-4.5 Vdc	-4.5 Vdc	-4.5 Vdc
Grid Supply Voltage (Tube conducting)	-1.0 Vdc	-1.0 Vdc	-1.0 Vdc
Grid Isolation Resistor	0.1 meg.	.068 meg	.033 meg.
Series Anode Limiting Resistor	0.01 meg.	.033 meg.	.033 meg.

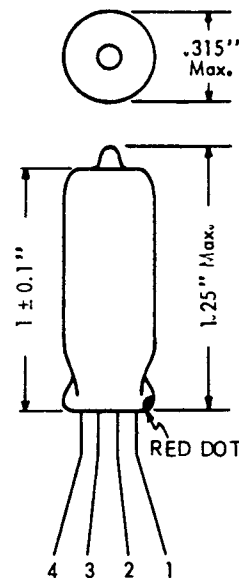
PULSE OPERATION:(Fig. A)

Typical Input Triggering pulse characteristics	
Pulse Amplitude (Tube conducting) (sg1 to k)	+5.0 v
Pulse Width	8.0 μsec
Typical Ionization Time	2 μsec
Typical Deionization Time	30 μsec

**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**



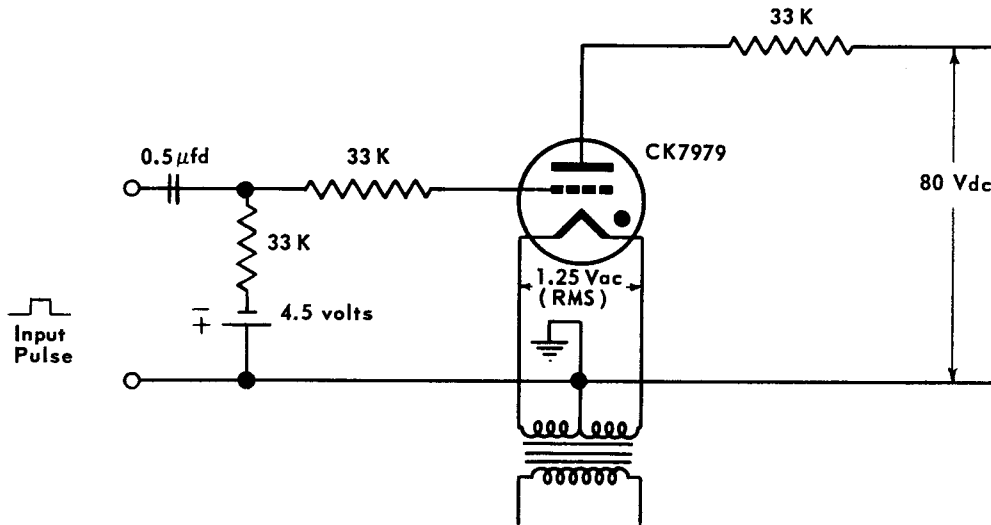
**TERMINAL CONNECTIONS:**  
 (Red dot is adjacent to lead 1)

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

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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 ( $E_{pp}$ ) 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.

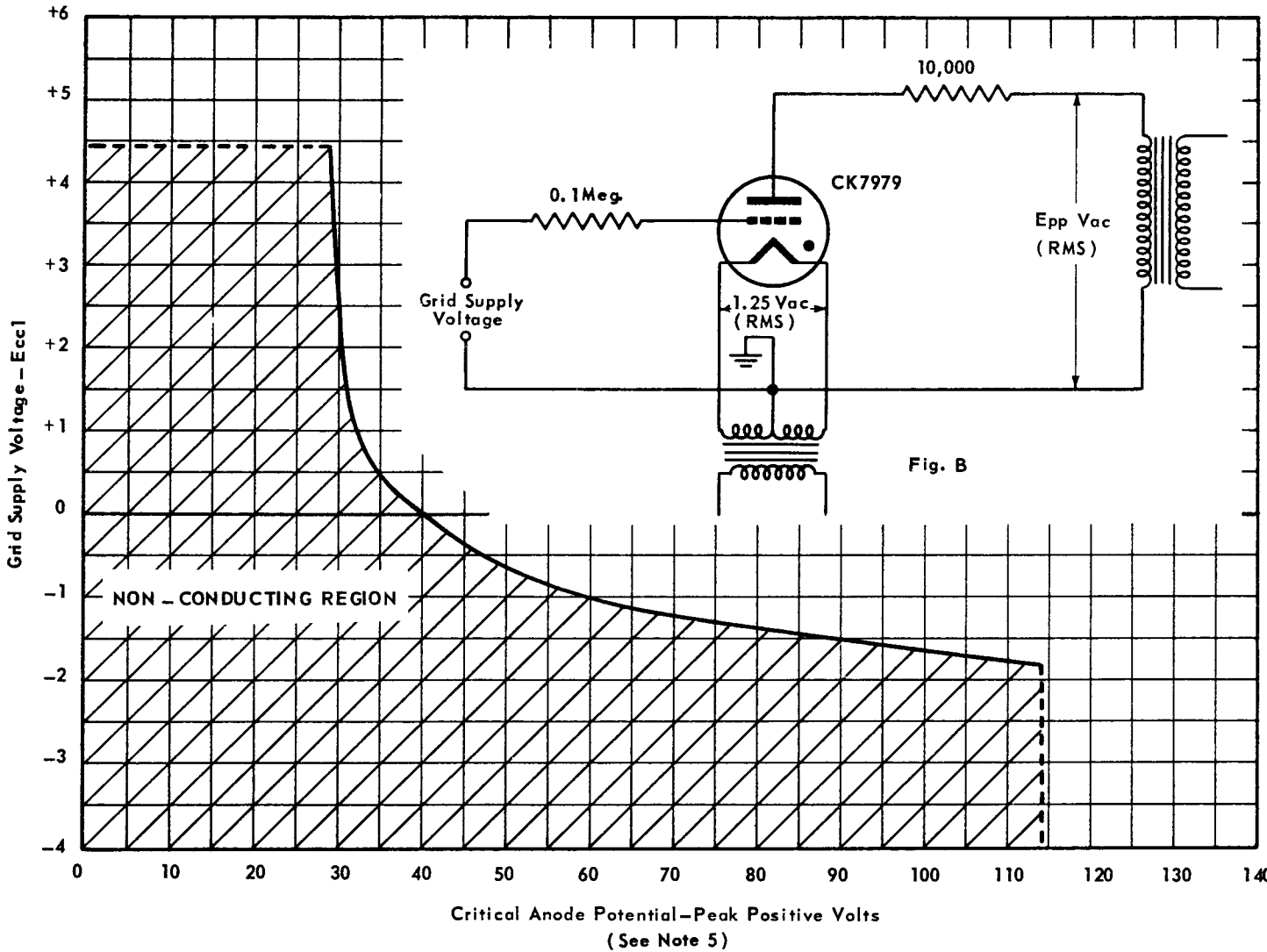
NOTE 5: The critical anode potential (peak positive) is equal to  $\sqrt{2} \times E_{pp}$ , where  $E_{pp}$  is the RMS value of a symmetrical and undistorted alternating voltage.

NOTE 6: This circuit can be used where maximum light output is desired.

NOTE 7: This circuit can be used where maximum tube life is desired.

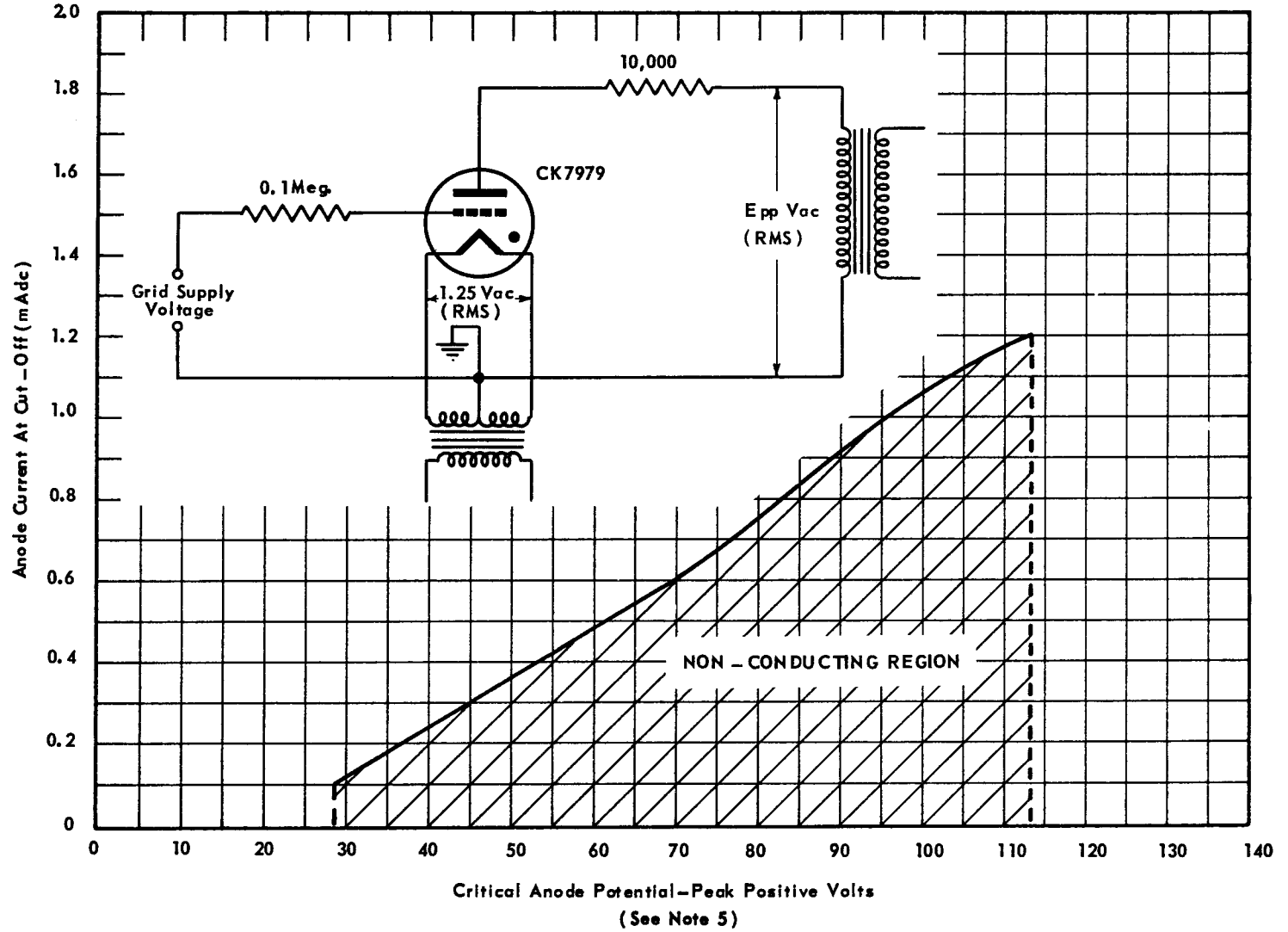
SUBMINIATURE GAS TRIODE

AVERAGE CHARACTERISTICS  
GRID SUPPLY VOLTAGE VS CRITICAL ANODE POTENTIAL



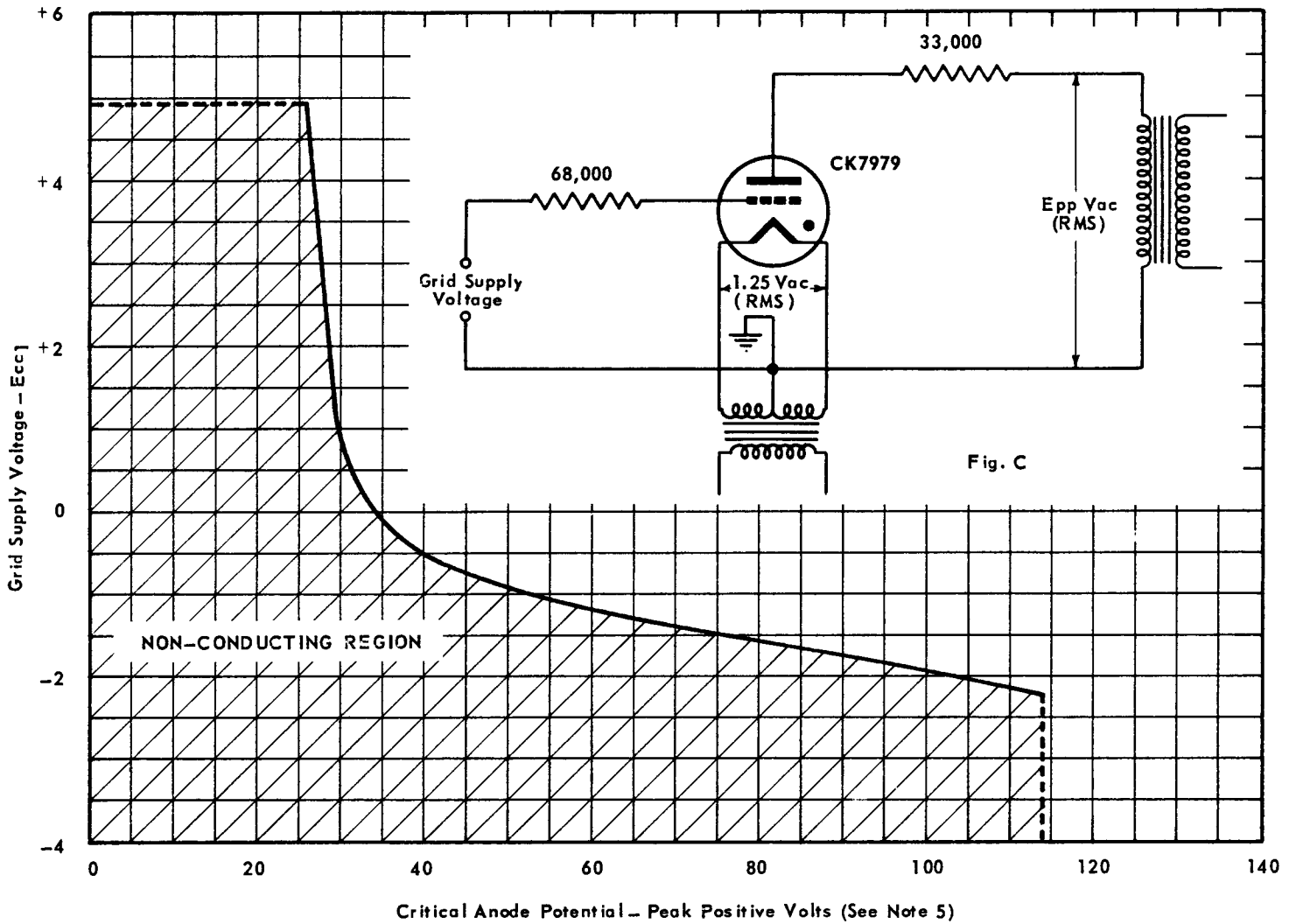
SUBMINIATURE GAS TRIODE

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



SUBMINIATURE GAS TRIODE

AVERAGE CHARACTERISTICS  
GRID SUPPLY VOLTAGE VS. CRITICAL ANODE POTENTIAL



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## SUBMINIATURE GAS TRIODE

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

