



5651

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# VOLTAGE-REFERENCE TUBE

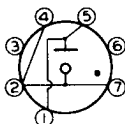
MINIATURE GLOW-DISCHARGE TYPE

## DATA

### General:

Cathode. . . . . Cold  
 Maximum Overall Length . . . . . 2-1/8"  
 Maximum Seated Length . . . . . 1-7/8"  
 Length from Base Seat to Bulb Top (excluding tip) 1-1/2" ± 3/32"  
 Maximum Diameter . . . . . 3/4"  
 Bulb . . . . . T-5-1/2  
 Mounting Position. . . . . Any  
 Base . . . . . Small-Button Miniature 7-Pin  
 Basing Designation for BOTTOM VIEW . . . . . 5B0

Pin 1 - Anode  
 Pin 2 - Cathode  
 Pin 3 - Internal  
 Connection  
 -Do Not Use  
 Pin 4 - Cathode



Pin 5 - Anode  
 Pin 6 - Internal  
 Connection  
 -Do Not Use  
 Pin 7 - Cathode

### Maximum Ratings, Absolute Values:

DC OPERATING CURRENT (Continuous). . . . . 3.5 max. ma  
 AMBIENT TEMPERATURE RANGE. . . . . -55 to +90 °C

### Characteristics and Operation Range Values:

	<u>Min.</u>	<u>Av.</u>	<u>Max.</u>	
DC Starting Voltage. . . . .	-	107	115*	volts
DC Operating Voltage . . . . .	82	87	92	volts
DC Operating Current . . . . .	1.5	-	3.5	ma
Regulation (1.5 ma. to 3.5 ma.)	-	-	3	volts
Stability <sup>□</sup> . . . . .	-	-	0.1	volt

### Circuit Values:

Shunt Capacitor. . . . . - - 0.02 . . . . . μf  
 Series Resistor. . . . . See NOTE Below

\* A supply voltage of not less than this value should be provided to insure "starting" throughout tube life.

□ Defined as the maximum voltage fluctuation at any current level within the operating current range.

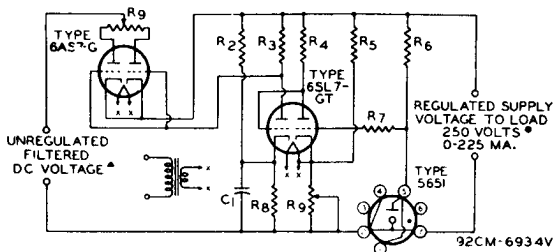
NOTE: A series resistor must always be used with the 5651. The resistance value must be chosen so that (1) the maximum current rating of 3.5 ma. is not exceeded at the highest anode-supply voltage employed, and (2) the minimum current rating of 1.5 ma. is always exceeded when the anode-supply voltage is at its lowest value.

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 SERIES TYPE OF STABILIZED VOLTAGE SUPPLY USING  
 RCA-5651 AS VOLTAGE-REFERENCE TUBE


$C_1 = 0.1 \mu\text{f}$ , 400 volts  
 $R_1 =$  Plate current balancing potentiometer, 160 ohms, 10 watts  
 $R_2 = 12000$  ohms, 2 watts  
 $R_3 = 470000$  ohms, 0.5 watt  
 $R_4 = 470000$  ohms, 0.5 watt

$R_5 = 12000$  ohms, 2 watts  
 $R_6 = 68000$  ohms, 1 watt  
 $R_7 = 1$  megohm, 0.5 watt  
 $R_8 = 15000$  ohms, 2 watts  
 $R_9 =$  Output voltage control potentiometer, 10000 ohms

▲ 375 volts approx. at zero load current; 325 volts approx. at 225 milliamperes load current.

⊙ The voltage regulation of this supply operated at a fixed line voltage of 117 volts and an output voltage of 250 volts is less than 0.2 volt over the current range of 0 to 225 milliamperes. At full current, the regulation for a variation of  $\pm 10$  per cent in line voltage is less than 0.1 volt. Socket connections for the 5651 are made so that removal of the 5651 from its socket opens the load.