

RAYTHEON

TECHNICAL
INFORMATION
SERVICE

Technical Information

**0A3A 0B3A
0C3A 0D3A**

**GAS FILLED
VOLTAGE REGULATORS**

The Raytheon 0A3A, 0B3A, 0C3A and 0D3A are two-element gas filled, cold cathode voltage regulators. They are designed to provide regulated outputs of approximately 75, 90, 105 and 150 volts respectively. A jumper connected in the base between pins 3 and 7 provide the designer with several possible connections to ensure protection of associate components in case the regulator is removed from the socket. Except for bulb, these types are interchangeable with 0A3, 0B3, 0C3 and 0D3.

MECHANICAL DATA

ENVELOPE T9
OUTLINE JEDEC 9-7
BASE .. B6-8-Intermediate shell
BASING 4AJ
CATHODE Cold Glow Discharge
MOUNTING POSITION .Any

ELECTRICAL DATA

RATINGS (Absolute Maximum Values):

Average Starting Current 100 ma
Cathode Current (0A3A, 0C3A, 0D3A) 40 ma
Cathode Current (0B3A) 30 ma
Minimum Cathode Current 5 ma
Ambient Temperature Limits -55 to +90 °C

CHARACTERISTICS, TYPICAL OPERATION, AND TESTS

	0A3A	0B3A	0C3A	0D3A	
Minimum Plate Supply Voltage (Note 1)	105	130	133	185	Vdc
Operating Voltage, Approx.	75	90	105	150	Vdc
Tube Voltage Drop (Rp/Ib = 5mA dc) Min.	70	80	105	145	Vdc
Tube Voltage Drop (Rp/Ib = 30mA dc) Max.	79	100	111	160	Vdc
Tube Voltage Drop (Rp/Ib = 40mA dc) Max.	81		112	162	Vdc
Starting Voltage Maximum (5-50 foot candles)	105	125	127	180	Vdc
Regulation Maximum (5-40 ma)	6.5		4.0	5.5	Vdc
Regulation Maximum (5-30 ma)	4.5	6.0	2.0	4.0	Vdc
Leakage (Eb = 50 Vdc) Maximum	10	10	10	10	µA dc
Noise (at Maximum Current)	5	15	15	15	mVac
Shunt Capacitor (Maximum)	0.1	0.1	0.1	0.1	µf

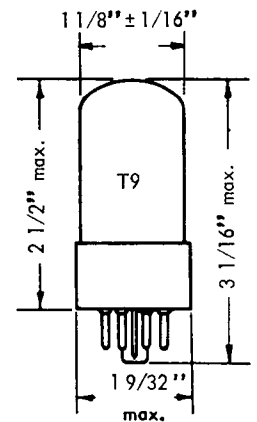
Note 1: Not less than the specified supply voltage should be provided, in order to assure starting throughout tube life.

APPLICATION DATA

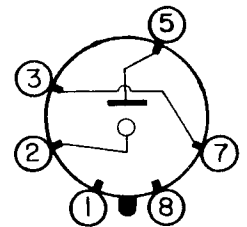
Sufficient resistance in series with the tubes must always be used to limit the current through the tubes. The value of this resistance is dependent upon the maximum plate supply voltage and the ratio of current through the load to the operating current of the regulator. The value that is chosen should not allow a current in excess of 40 mA (30 mA for the 0B3A) to flow through the tube after the starting period.

The maximum load current that can be regulated is determined by the maximum and minimum values of supply voltage. After the value of the series resistor for the maximum supply voltage has been calculated as indicated above, it

PHYSICAL DIMENSIONS



BASING



TERMINAL CONNECTIONS:

- Pin 1 No Connection
- Pin 2 Cathode
- Pin 3 Connected to pin 7
- Pin 5 Anode
- Pin 7 Connected to pin 3
- Pin 8 No connection

TENTATIVE DATA

Printed in
U.S.A.



0A3A, 0B3A 0C3A, 0D3A

GAS FILLED VOLTAGE REGULATORS

APPLICATION DATA (Cont'd.)

should then be determined if this value will permit starting when the supply voltage falls to its minimum value. If adequate starting voltage is not obtained, a new load current of lower value must be used and the calculations repeated. The higher the minimum supply voltage and the smaller the difference between minimum and maximum, the larger the current that can be regulated.

Two regulators of the same type may be connected in parallel if larger load currents have to be handled. In order to equalize the division of current between the tubes, a resistor of approximately 100Ω should be placed in series with each tube.

Two or more regulators may be connected in series if regulation of higher voltages is necessary. Different types may be used so long as the series current of the lowest rated tube is not exceeded. In other words, if an 0A3A and 0B3A were used, the series current should not exceed 30 mA. In addition, it is recommended that in order to ensure proper starting voltage, RL_2 be provided as shown in Figure 2.

TYPICAL REGULATOR CIRCUITS

FIGURE 1

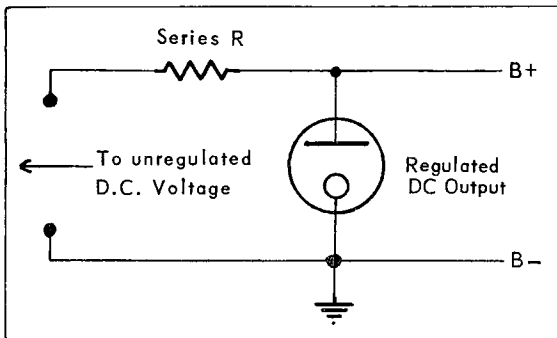
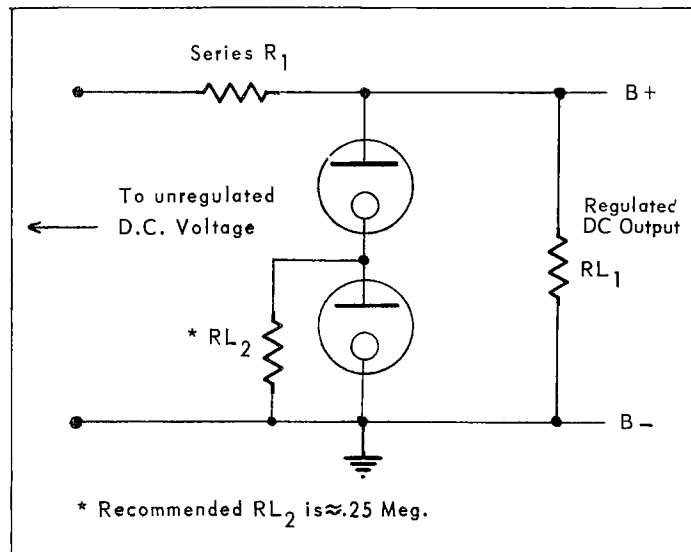


FIGURE 2

Regulation of higher voltages is possible by using 2 or more tubes in series.



TENTATIVE DATA