

# Federal Telecommunication Laboratories, Inc.

500 WASHINGTON AVENUE

NUTLEY 10, N. J.

## 5738

### COMMUTATOR TUBE

#### DESCRIPTION

The 5738 is a 25-circuit electron-beam commutating tube. It employs a single stage of secondary electron multiplication and is capable of delivering 1 milliampere output current. The beam source is a conventional electron gun with electrostatic focus and deflection. The beam is focused on a circular array of 25 secondary emission dynodes (targets) arranged behind an aperture-collector. When suitable sweep voltages are applied to the deflection plates, the beam scans this array. The secondary emission may be modulated by the dynode-collector voltage, or for simple on-off control the grid in the electron gun may be used.

#### GENERAL DATA

	Min.	Boige	Max.
<b>ELECTRICAL:</b>			
Heater for coated unipotential cathode:			
Voltage (AC or DC)	5.7	6.3	6.9 volts
Current	.55	.6	.65 amp
Direct Interelectrode Capacitances:			
Dynode to Dynode	.5	1	1.5 $\mu\text{uf}$
Dynode to Aperture Plate	.5	1	1.5 $\mu\text{uf}$
Focussing Method		Electrostatic	
Deflection Method		Electrostatic	
Type of Sweep Contemplated		Circular	
Number of Dynodes		25	
Time Ratio: 'Open' to 'Closed'		1.5	
<b>MECHANICAL:</b>			
Overall Length	11-7/8	12	12-1/8 in.
Maximum Diameter	2-11/16	2-3/4	2-13/16 in.
Mounting Position		any	
Angle Subtended by Aperture		5.76	deg.
Angle Subtended by Space between Apertures		8.64	deg.
Gun Base		Medium shell diheptal	12 pin
Dynode Base		B26-53	
Net Weight		12-1/4	oz.

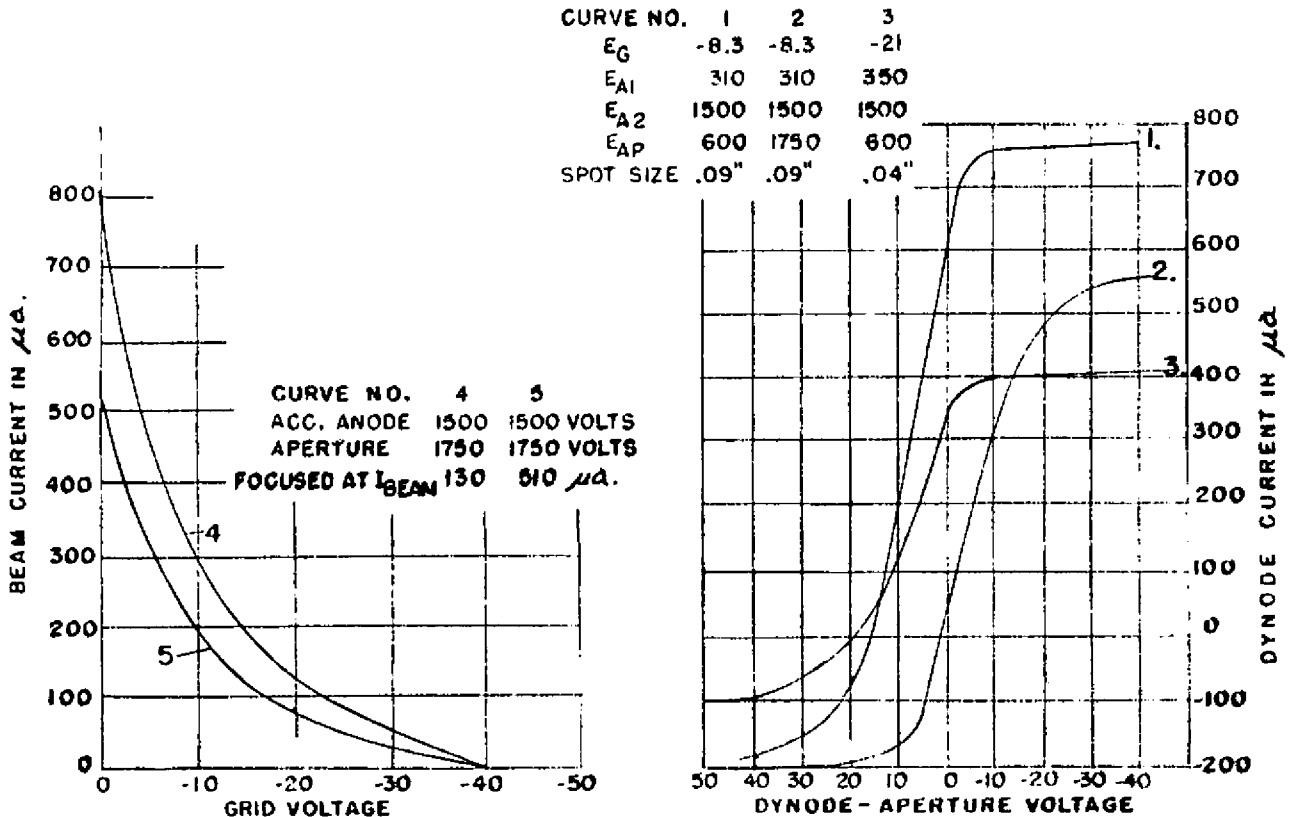
MAXIMUM RATINGS (Design Center Values)

Accelerating Anode Voltage	2000 max. volts
Focusing Anode Voltage	500 max. volts
Aperture Voltage	2000 max. volts
Dynode Voltage	500 max. volts
Dynode to Aperture Voltage	1500 max. volts
Grid Voltage	
Positive Bias Voltage	0 max. volts
Negative Bias Voltage	-75 max. volts
Dynode Current	1 max. ma.
Sweep Frequency (approximate)	30 max. mc/sec

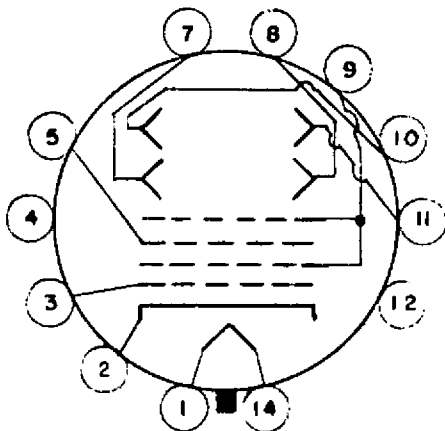
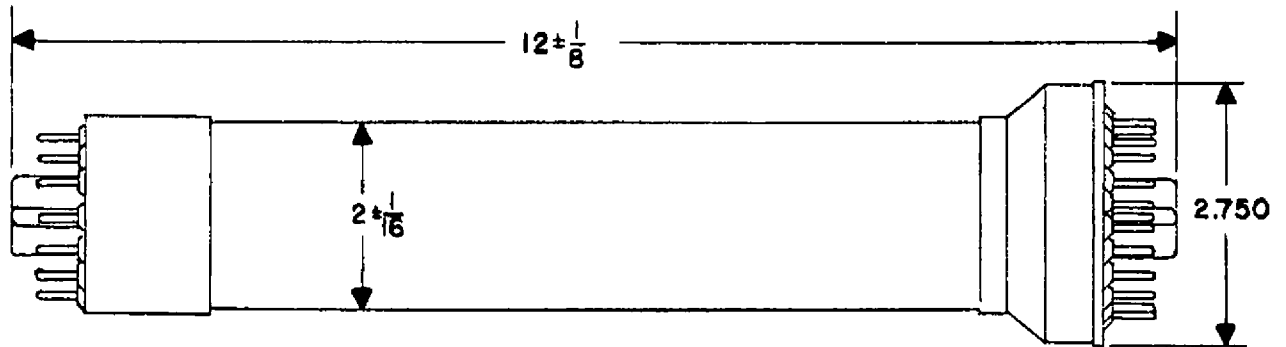
TYPICAL OPERATING CONDITIONS

Sweep Frequency	8000 cycles/sec
Accelerating Anode Voltage	1500 volts
Focusing Anode Voltage	350 volts
Aperture Voltage	1750 volts
Grid Voltage	-15 volts
Dynode Voltage	500 volts
Dynode Current	0.5 ma.
Beam Current	0.2 ma.
Dynode Load Resistance	10,000 ohms.
Deflection Voltages (peak to peak sweep)	
D <sub>1</sub> and D <sub>2</sub>	145 volts
D <sub>3</sub> and D <sub>4</sub>	191 volts

CHARACTERISTICS



5738

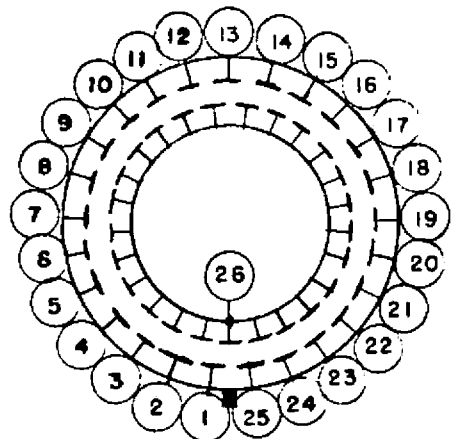


BASE - MEDIUM SHELL  
DIHEPTAL - 12 PIN

GUN SECTION

BASE CONNECTIONS

- 1- HEATER
- 2- CATHODE
- 3- GRID
- 4- CATHODE
- 5- FOCUSING ANODE
- 7- DEFLECTION PLATE - D1
- 8- " " - D2
- 9- ACCELERATING ANODE
- 10- DEFLECTION PLATE - D3
- 11- " " - D4
- 12- NO CONNECTION
- 14- HEATER



BASE - SPECIAL  
WAFER - 26 PIN

DYNODE SECTION

BASE CONNECTIONS

- 1 TO 25 - DYNODES
- 26 - APERTURE PLATE