

1 B 1 0 2

THE VICTOREEN INSTRUMENT CO.



5806 HOUGH AVE. CLEVELAND, OHIO

MAY 1950

DATA SHEET 21

TENTATIVE

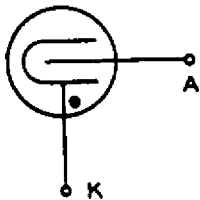
1B102 THYRODE

The 1B102 is a mica-window beta counter tube designed to meet both laboratory and field requirements.

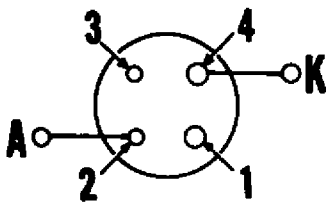
Photosensitivity and the effects of static charges on the window have been practically eliminated by the use of a halogen quenching gas.

The 1B102 Thyrode has been equipped with a RMA medium 4-pin tube base to facilitate mounting in laboratory and field equipment.

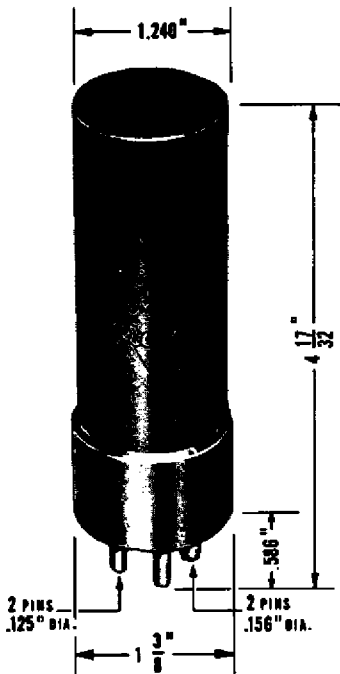
Resistance to vibration and shock is much greater than that of the 1B67.



SYMBOL



BASE VIEW



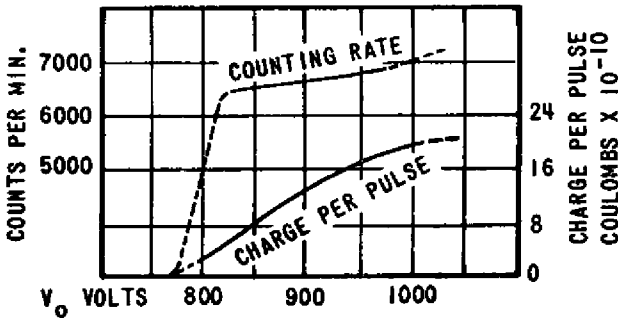
THRESHOLD VOLTAGE*.....(MAX.)	825	VOLTS
PLATEAU LENGTH*.....(MIN.)	150	VOLTS
PLATEAU SLOPE*.....(MAX.)	10	%/100 VOLTS
(V ₀ = 800 To 1000 V)		
RECOVERY TIME.....	200	μSEC
BACKGROUND.....	40	C/M
(V ₀ = 900 V)		
LIFE.....	UNLIMITED BY USE	
(AT 6000 c/m, V ₀ = 900 V)		
ACTIVE LENGTH.....	1.7	INCHES
WINDOW (MICA).....	2	MG/CM ²
ELECTRODE CAPACITANCE.....	2.5	μμF

*NEW TUBES

RATINGS

OPERATING VOLTAGE.....(MIN.)	850	VOLTS
.....(MAX.)	950	VOLTS
AMBIENT TEMPERATURE.....(MIN.)	-55	°C
.....(MAX.)	+70	°C
RELATIVE HUMIDITY.....(MAX.)	100	%

TUBE CHARACTERISTICS



1 B 1 0 6

THE VICTOREEN INSTRUMENT CO. 5806 HOUGH AVE. CLEVELAND, OHIO

FEBRUARY 1950 DATA SHEET 20 TENTATIVE

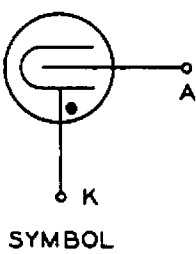
1B106 THYRODE

The 1B106 is a mica-window beta counter tube designed to meet both laboratory and field requirements.

Operating voltage has been reduced to 900 volts, and photosensitivity and the effects of static charges on the window have been practically eliminated by the use of a halogen quenching gas.

The coaxial base fits Thyrode Socket No. 380 or Probe No. 263-232. Tubes are easily replaced even in water tight installations.

Resistance to vibration and shock is much greater than that of the 1B67.



SYMBOL

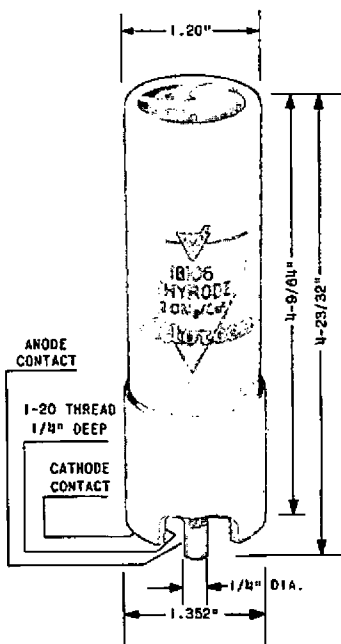
CHARACTERISTICS

THRESHOLD VOLTAGE*.....(MAX.)	825	VOLTS
PLATEAU LENGTH*.....(MIN.)	150	VOLTS
PLATEAU SLOPE*.....(MAX.)	10	%/100 VOLTS
(V ₀ = 800 To 1000 V)		
RECOVERY TIME.....	200	μSEC
BACKGROUND.....	40	C/M
(V ₀ = 900 V)		
LIFE.....	10 ¹⁰	COUNTS
(AT 6000 C/M, V ₀ = 900 V)		
ACTIVE LENGTH.....	1.7	INCHES
WINDOW (MICA).....	2	MG/CM ²
ELECTRODE CAPACITANCE.....	2.5	μμF

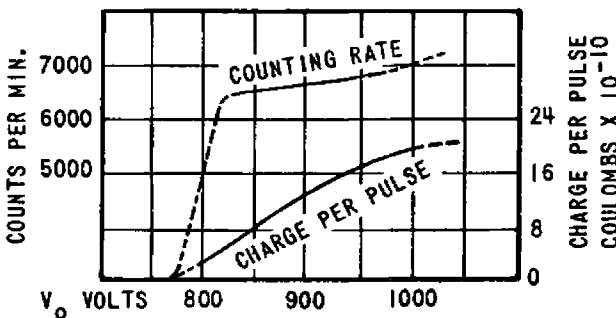
*NEW TUBES

RATINGS

OPERATING VOLTAGE.....(MIN.)	850	VOLTS
.....(MAX.)	950	VOLTS
AMBIENT TEMPERATURE.....(MIN.)	-55	°C
.....(MAX.)	70	°C
RELATIVE HUMIDITY.....(MAX.)	100	%



TUBE CHARACTERISTICS





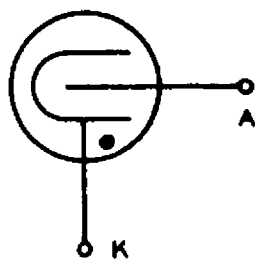
THE VICTOREEN INSTRUMENT CO.

5806 HOUGH AVE., CLEVELAND, OHIO

JUNE 1950

DATA SHEET 24

TENTATIVE



SYMBOL

1B124 THYRODE

The 1B124 Thyrode is a metal counter tube used for gamma ray measurement in portable survey instruments and well logging equipment.

This sturdily constructed tube has a standard RMA type A1-82 counter tube base for use with Victoreen socket types 380 and 500 or Victoreen probe types 389 and 263-232. The coaxial base and operation of the tube at 900 volts permits interchange of this tube with the 1B85 beta gamma tube, the 1B106 mica window tube, and the 1B125 cosmic ray tube.

The 1B124 Thyrode provides an intermediate size tube between the 1B85 Thyrode and the 1B125 Thyrode.

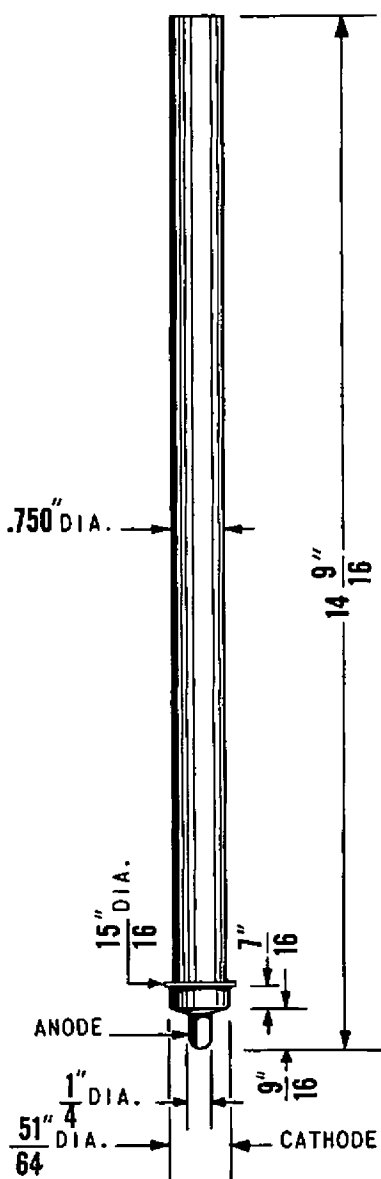
CHARACTERISTICS

THRESHOLD VOLTAGE*	(MAX) 800	VOLTS
PLATEAU LENGTH*	(MIN) 200	VOLTS
PLATEAU SLOPE*	(MAX) 3	%/100 VOLTS.
	($V_0 = 800$ TO 1000 V)	
RECOVERY TIME	100	μ SEC
BACKGROUND	200	C/M
	($V_0 = 900$ V)	
LIFE	10^9	COUNTS
	(AT 6000 C/M, $V_0 = 900$ V)	
LIFE TEST END POINT. SLOPE	10	%/100 VOLTS
	($V_0 = 850$ TO 950 V)	
ACTIVE LENGTH	11	INCHES
WALL (BRASS)	200	MG/CM ²

RATINGS

OPERATING VOLTAGE	(MIN) 850	VOLTS
	(MAX) 950	VOLTS
AMBIENT TEMPERATURE	(MIN) -10	$^{\circ}$ C
	(MAX) 100	$^{\circ}$ C
RELATIVE HUMIDITY	(MAX) 100	%

*NEW TUBES





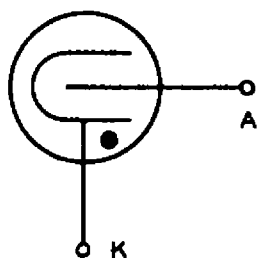
THE VICTOREEN INSTRUMENT CO.

5806 HOUGH AVE., CLEVELAND, OHIO

JUNE 1950

DATA SHEET 25

TENTATIVE



SYMBOL

1B125 THYRODE

The 1B125 Thyrode is a metal counter tube used:

1. For cosmic ray studies in which large cross-sectional area is important.
2. In searching for radioactive ores from aircraft or fast moving vehicles.
3. In the monitoring of the radioactive content of air or water.

This tube has a rugged construction that is especially suited for field operation and has a standard RMA type A1-82 coaxial tube base which may be used with Victoreen socket types 380 and 500 or Victoreen probe type 389.

Because the 1B125 Thyrode has high uniformity in electrical characteristics, a cluster of several tubes may be operated in parallel to obtain extremely high sensitivity.

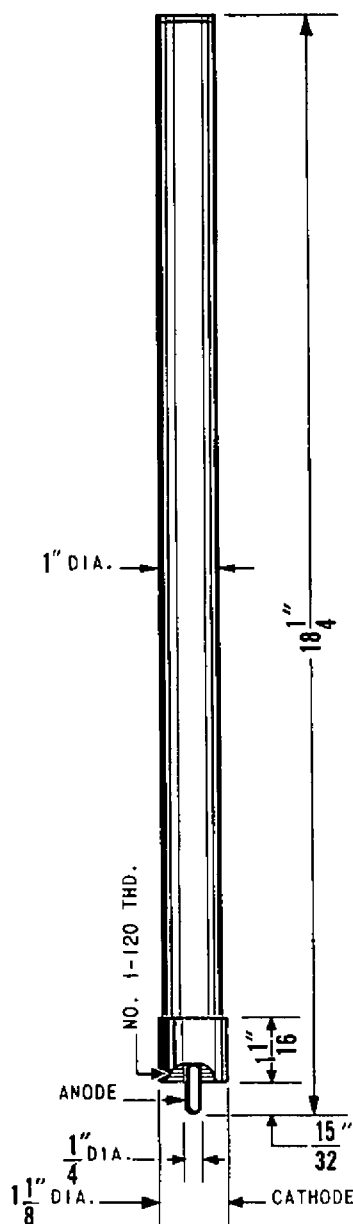
CHARACTERISTICS

THRESHOLD VOLTAGE*	(MAX)	800	VOLTS
PLATEAU LENGTH*	(MIN)	200	VOLTS
PLATEAU SLOPE*	(MAX)	3	%/100 VOLTS
	($V_0 = 800$ TO 1000 V)		
RECOVERY TIME		150	μ SEC
BACKGROUND		300	C/M
	($V_0 = 900$ V)		
LIFE		10^9	COUNTS
	(AT 6000 C/M, $V_0 = 900$ V)		
LIFE TEST END POINT, SLOPE		10	%/100 VOLTS
	($V_0 = 850$ TO 950 V)		
ACTIVE LENGTH		16	INCHES
WALL (BRASS)		300	MG/CM ²

RATINGS

OPERATING VOLTAGE	(MIN)	850	VOLTS
	(MAX)	950	VOLTS
AMBIENT TEMPERATURE	(MIN)	-10	$^{\circ}$ C
	(MAX)	100	$^{\circ}$ C
RELATIVE HUMIDITY	(MAX)	100	%

*NEW TUBES





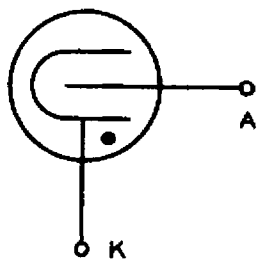
THE VICTOREEN INSTRUMENT CO.

5806 HOUGH AVE., CLEVELAND, OHIO

JUNE 1950

DATA SHEET 23

TENTATIVE



SYMBOL

1B126 THYRODE

The 1B126 Thyrode is a needle type probing counter tube used for isotope measurement. It is specifically designed for radioactive tracer work where it is desirable to obtain high definition in locating tracer material. This thyrode may be used for neurosurgical work, brain tumor surgery, and thyroid tracing using radio iodine.¹

The 1B126 Thyrode is of sturdy construction so it may be chemically sterilized and a large gas storage volume has been incorporated in the handle to insure long tube life.

The 1B126 uses a standard counter tube base, RMA type A1-82, and may be used with Victoreen socket types 380 and 500 or Victoreen probe type 389.

CHARACTERISTICS

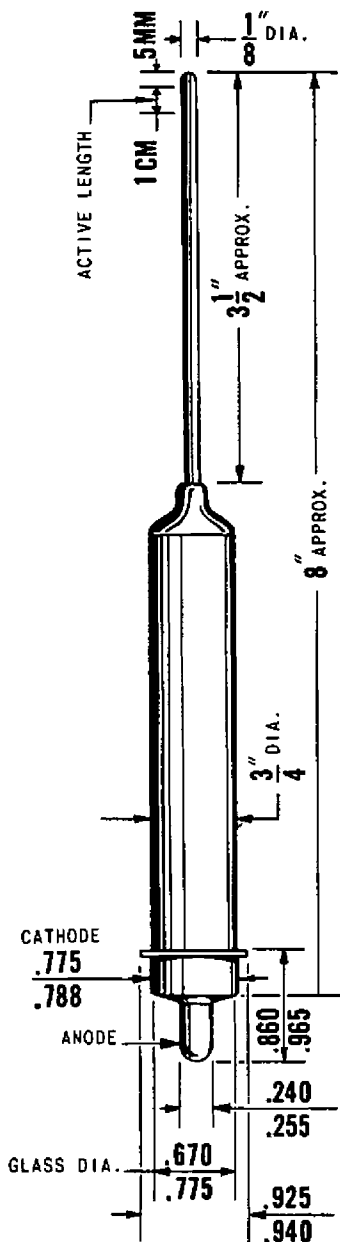
THRESHOLD VOLTAGE*	(MAX)	850	VOLTS
PLATEAU LENGTH*	(MIN)	75	VOLTS
PLATEAU SLOPE*	(MAX)	5	%/100 VOLTS
(V ₀ = 800 TO 1000 V)			
BACKGROUND		5	C/M
(V ₀ = 900 V)			
LIFE		10 ⁸	COUNTS
(AT 6000 C/M, V ₀ = 900 V)			
ACTIVE LENGTH		10	MM
WALL (STAINLESS STEEL)		200	MG/CM ²

RATINGS

OPERATING VOLTAGE	(MIN)	875	VOLTS
	(MAX)	925	VOLTS
AMBIENT TEMPERATURE	(MIN)	-10	°C
	(MAX)	100	°C
RELATIVE HUMIDITY	(MAX)	100	%

1 ROBINSON, C.V.: SMALL PROBING GEIGER-MUELLER COUNTERS. REV. SCI. INST., JAN. 1950

*NEW TUBES



Manufactured by: The Victoreen Instrument Company
Cleveland, Ohio

Reservation No. _____ Manufacturer's Designation 1B67/VG-10A
Reservation Date _____ Data Bureau Designation 1B67

COUNTER TUBE

General Characteristics

Beta gamma
Self quench

Electrical

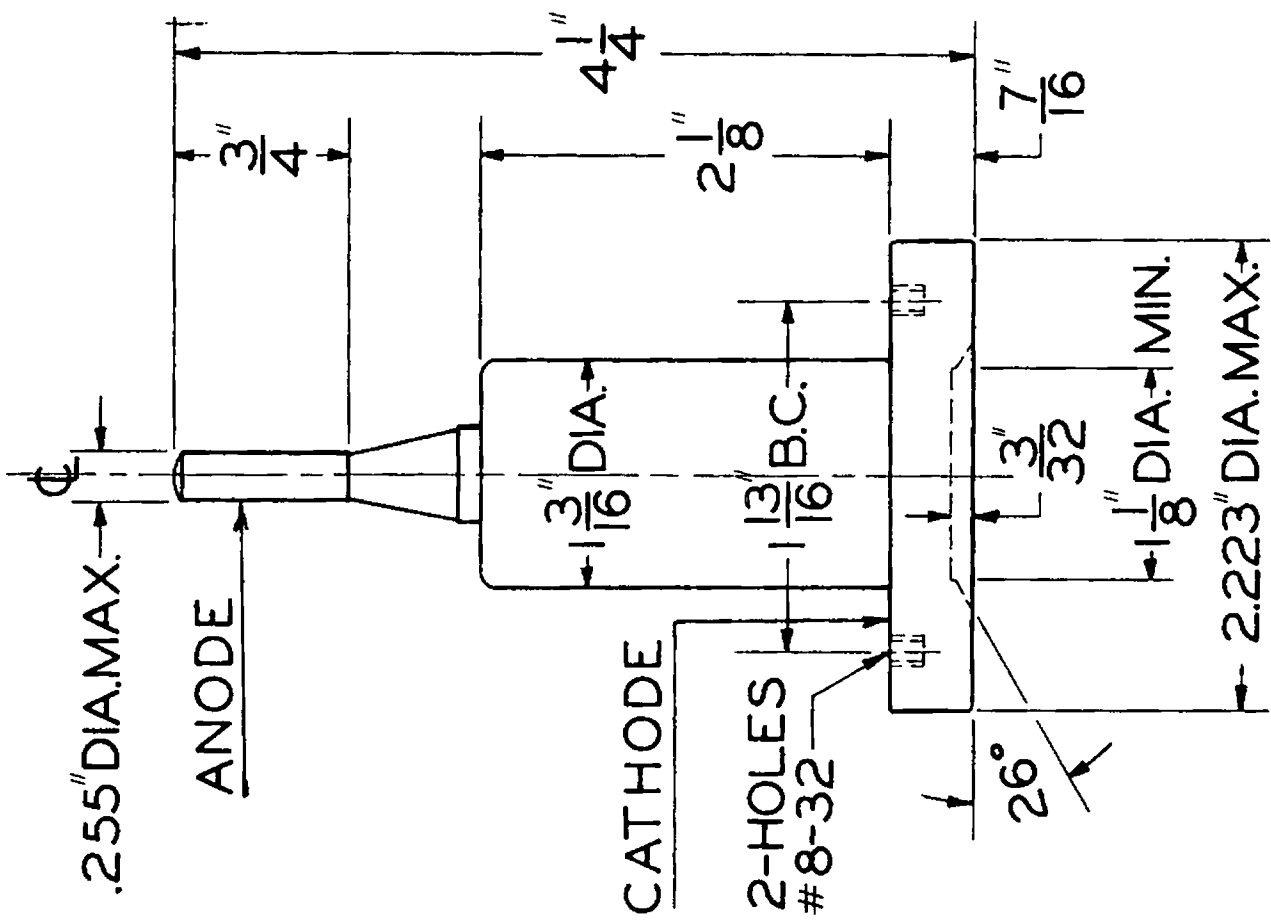
Geiger Threshold Voltage	Max	<u>1100</u>	volts d.c.
Plateau Length	Min	<u>200</u>	volts
Relative Plateau Slope	Max	<u>5.0</u>	% per 100 volts
Operating Voltage	Nom	<u>1200</u>	volts d.c.
Background at Operating Voltage	Nom	<u>45</u>	counts /min
Recovery Time	Nom	<u>300</u>	usec
Efficiency	Beta	<u>99.8</u>	%
Electrode Capacitance	Static	<u>2.3</u>	uuf

Mechanical

See outline drawing	
Base Connection	
Window thickness	<u>2.0 to 2.6</u> mg per sq. cm.
Window Diameter	<u>1-1/8</u> inch

Maximum Ratings

Ambient Temperature Range	<u>0</u> to <u>100</u> °C
---------------------------	---------------------------



Manufactured by: The Victoreen Instrument Company
Cleveland, Ohio

Reservation No. _____ Manufacturer's Designation 1B68/VG-13

Reservation Date _____ Data Bureau Designation 1B68

COUNTER TUBE

General Characteristics

Beta gamma
Self quench

Electrical

Geiger Threshold Voltage	Max <u>850</u>	volts d.c.
Plateau Length	Min <u>200</u>	volts
Relative Plateau Slope	Max <u>3.0</u>	% per 100 volts
Operating Voltage	Nom <u>900</u>	volts d.c.
Background at Operating Voltage	Nom <u>35</u>	counts /min
Recovery Time	Nom <u>100</u>	usec
Efficiency	Beta <u>99.8</u>	%
Electrode Capacitance	Static <u>2.2</u>	uuf

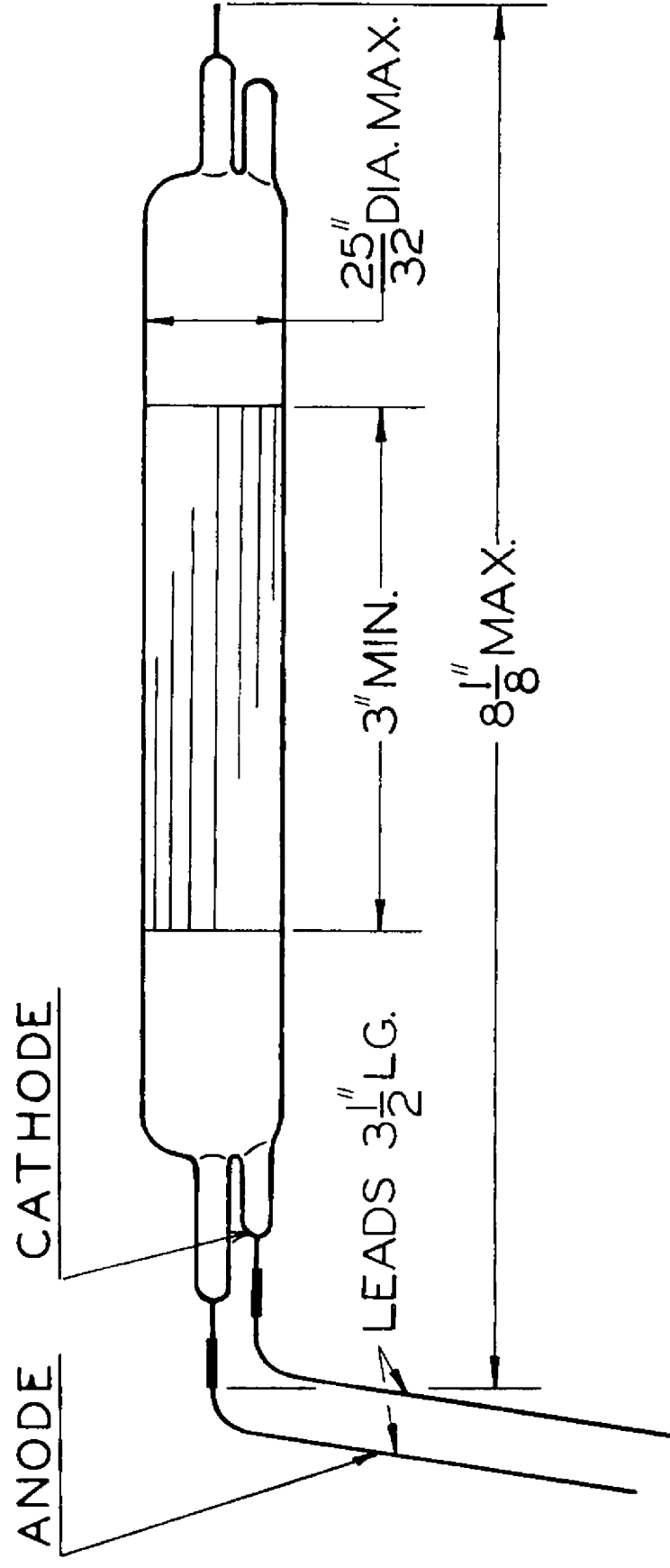
Mechanical

See outline drawing
Base Connections 3/8" wire leads 30 mg. per sq. cm.
Thickness 2-5/8 inch
Anode Length

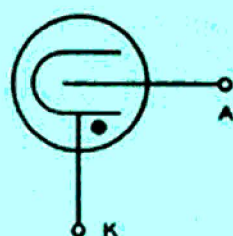
Maximum Ratings

Ambient Temperature Range 0 to 100 °C

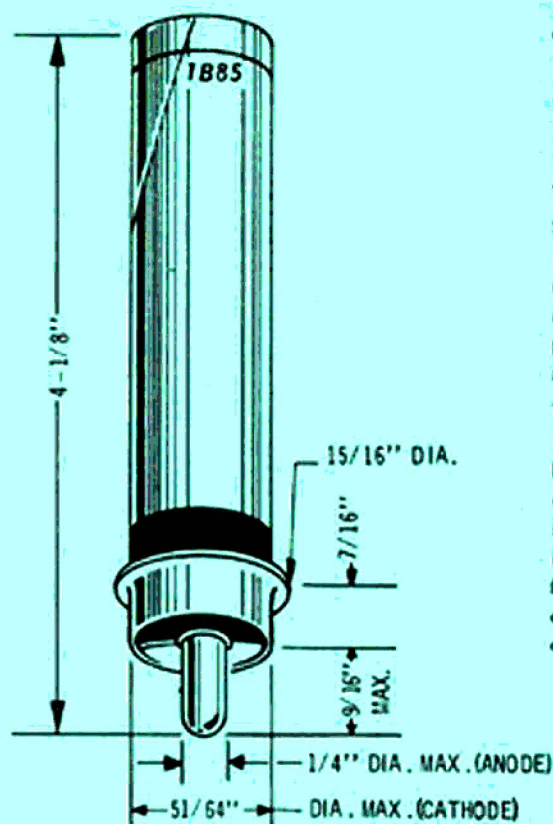
IB68



BETA GAMMA COUNTER TUBE



SYMBOL



RATINGS

OPERATING VOLTAGE.....	(MIN) 850	VOLTS
	(MAX) 950	VOLTS
AMBIENT TEMPERATURE.....	(MIN) -30	°C
	(MAX) 80	°C
RELATIVE HUMIDITY.....	(MAX) 100	%
BETA ENERGY.....	(MIN) 160	KeV

The 1B85 is a widely used metal wall, beta-gamma counter tube skillfully designed and constructed to provide consistent high performance. This general purpose tube is designed to replace most thin-walled glass tubes. Recent improvements have resulted in better low temperature performance and reduced temperature coefficients of threshold voltage.

Shock and vibration resistance is substantially greater than for glass-walled tubes. The aluminum shell, although thin, resists implosion, and even if dented the 1B85 counter will continue to operate satisfactorily.

Reliability, owing to high uniformity of construction, is an outstanding feature. Fill gas is of the self-quenching type; hence, the useful life is a function of voltage, counting rate, and life-test end point. The 1B85 is interchangeable with nearly all 900 volt counter tubes.

Simple mounting and replacement of tubes is achieved through the use of a standard RETMA type A1-82 coaxial base. Water-tight mounting is easy to obtain with the coaxial base. Several standard mountings are available: Victoreen 380-26 probe socket, 389-4 probe assembly, 631-56 probe assembly and the 5100-81-S18 Tru-arc ring for chassis mounting.

The extremely consistent uniformity and rugged construction, coupled with the simple coaxial base mounting, are features which have contributed to selection of the 1B85 counter tube as first choice for use in portable survey instruments, area monitoring instruments, and precision laboratory measuring equipment. The 1B85s are ideally suited for multiple tube counters which compare favorably with scintillation counters in cost and performance. Decoupling networks are unnecessary. The tubes are also well suited for coincidence and anti-coincidence circuits.

CHARACTERISTICS

THRESHOLD VOLTAGE*.....	(MAX) 800	VOLTS
PLATEAU LENGTH*.....	(MIN) 200	VOLTS
PLATEAU SLOPE*.....	3	%/100 VOLTS
(V ₀ = 800 TO 1000 V)		
RECOVERY TIME.....	100	μSEC
BACKGROUND (V ₀ = 900 V).....	40	C/M
LIFE (AT 6000 C/M, V ₀ = 900 V).....	10 ⁸	COUNTS
LIFE TEST END POINT, SLOPE.....	10	%/100 VOLTS
(V ₀ = 850 TO 950 V)		
ACTIVE LENGTH.....	2.75	INCHES
WALL (ALUMINUM).....	30	MG/CM ²
ELECTRODE CAPACITANCE.....	2	μμF

* NEW TUBES



THE VICTOREEN INSTRUMENT CO.

COMPONENTS DIVISION

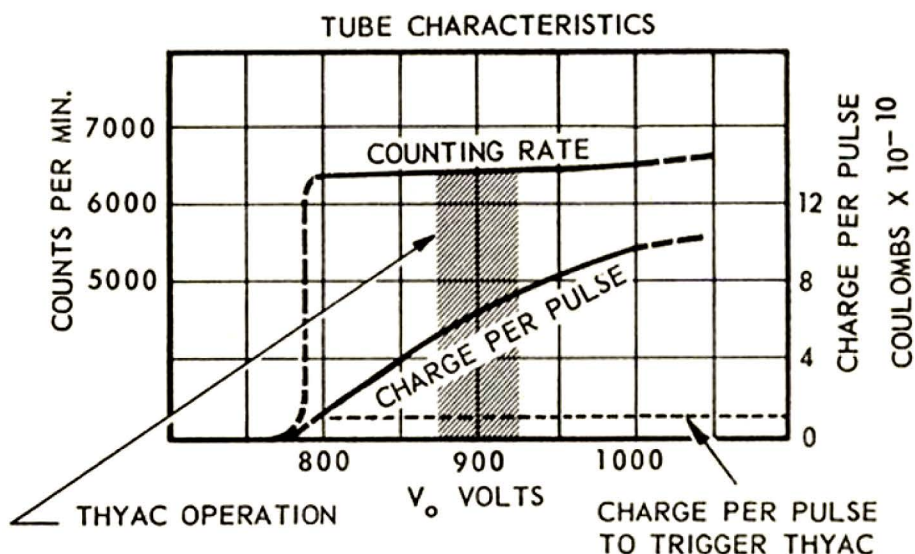
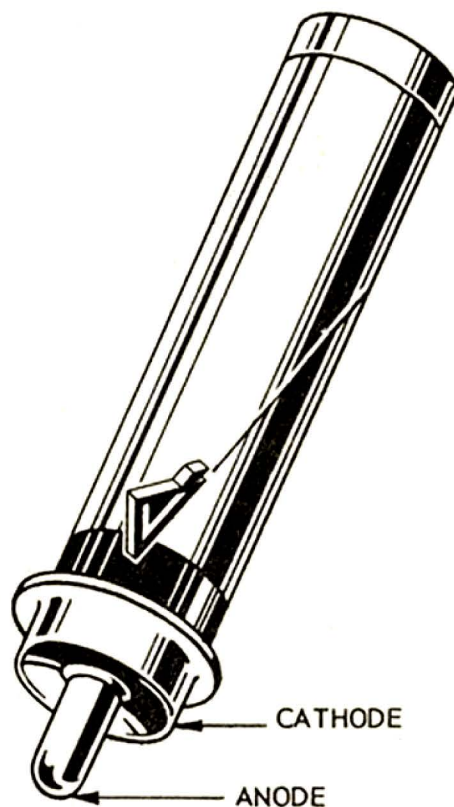
3800 PERKINS AVENUE, CLEVELAND 14, OHIO

CHARACTERISTICS

THRESHOLD VOLTAGE*	(MAX) 800	VOLTS
PLATEAU LENGTH*	(MIN) 200	VOLTS
PLATEAU SLOPE*	5	%/100 VOLTS
(V _o = 800 TO 1000 V)		
RECOVERY TIME	100	μSEC
BACKGROUND	40	C/M
(V _o = 900 V)		
LIFE	10 ⁸	COUNTS
(AT 6000 C/M, V _o = 900 V)		
LIFE TEST END POINT, SLOPE	10	%/100 VOLTS
(V _o = 850 TO 950 V)		
ACTIVE LENGTH	2.75	INCHES
WALL (ALUMINUM)	30	MG/CM ²
ELECTRODE CAPACITANCE	2	μμf
*NEW TUBES		

RATINGS

OPERATING VOLTAGE	(MIN) 850	VOLTS
	(MAX) 950	VOLTS
AMBIENT TEMPERATURE	(MIN) -10°	C
	(MAX) 100°	C
RELATIVE HUMIDITY	(MAX) 95	%
BETA ENERGY	(MIN) 160	KEV





THE VICTOREEN INSTRUMENT CO.

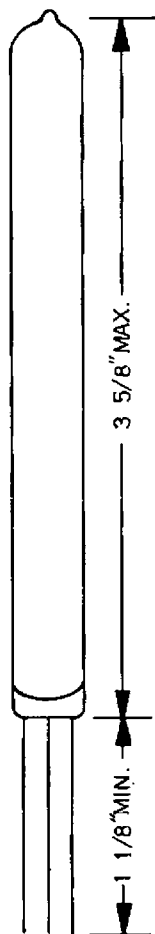
5806 HOUGH AVE., CLEVELAND, OHIO

SEPTEMBER 1949

DATA SHEET 17

TENTATIVE

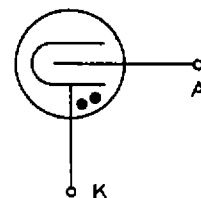
3/8" MAX.

**1B86 THYRODE**

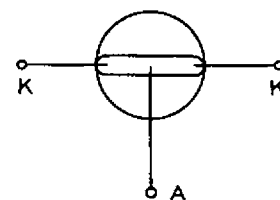
The 1B86 thyrode is a small, self-quenched, glass counter tube for gamma radiation. Low operating voltage provides economic battery operation in uranium prospecting instruments and pocket detectors. The long active length provides output pulses comparable to those from larger tubes.

The 1B86 is sensitive to very high energy beta rays, to all gamma rays, and to cosmic rays. It is not sensitive to ultra violet or visible light.

The 1B86 may be mounted in any position. It is usually clamped around the diameter with the leads soldered to a terminal board. Sockets designed for flat press subminiature tubes may be used where desirable.



SYMBOL



BASE VIEW

CHARACTERISTICS

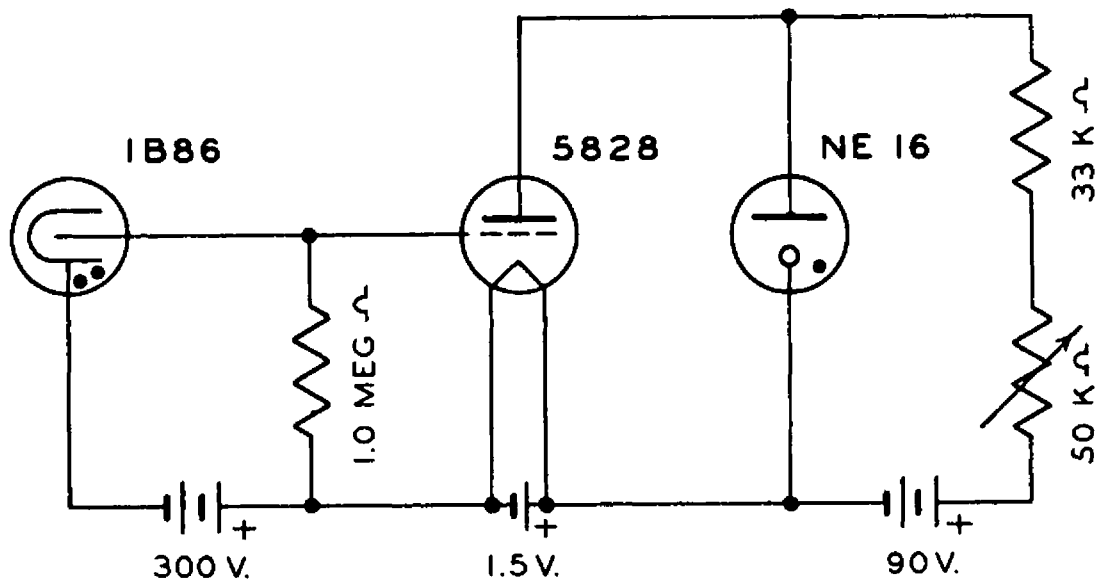
THRESHOLD VOLTAGE*	275	VOLTS
PLATEAU LENGTH*	(MIN.) 50	VOLTS
PLATEAU SLOPE*	30 %/50	VOLTS
RECOVERY TIME	100	μSEC
BACKGROUND.... (V ₀ = 300V.)	30	C/M
LIFE TEST END POINT; SLOPE	30 %/25	VOLTS
LIFE	5x10 ⁷	COUNTS
ELECTRODE CAPACITANCE	1	μμF
ANODE ACTIVE LENGTH	2.5	INCHES
WALL THICKNESS	200	MG/CM ²

RATINGS

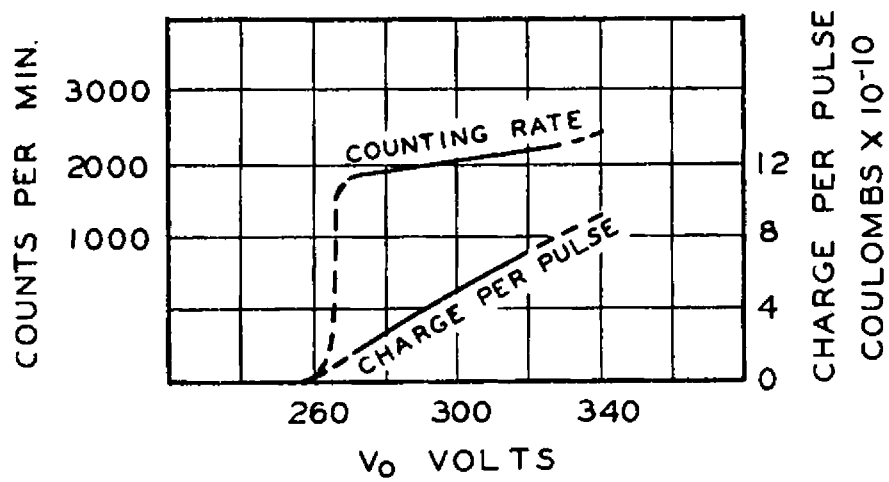
OPERATING VOLTAGE	300	VOLTS
AMBIENT TEMPERATURE..... (MIN)	-40°	C
..... (MAX)	100°	C
HUMIDITY..... (MAX)	100	%

*NEW TUBE

TYPICAL CIRCUIT



TUBE CHARACTERISTICS



Manufactured by: The Victoreen Instrument Company
Cleveland, Ohio

Reservation No. _____

Manufacturer's Designation 1B87/VXG-11

Reservation Date _____

Data Bureau Designation 1B87

General Characteristics

Gamma
Self quench

Electrical

Geiger Threshold Voltage
Plateau Length
Relative Plateau Slope
Operating Voltage
Background at Operating Voltage
Electrode Capacitance

Max	850	volts d.c.
Min	100	volts
Max	10	% per 100 volts
Nom	900	volts d.c.
Nom	12	counts/min.
Static	1	uuf

Mechanical

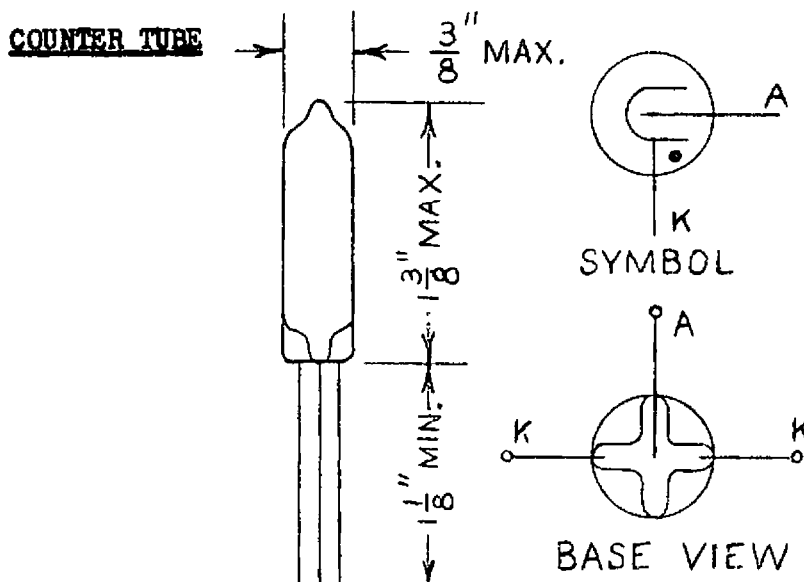
See outline drawing
Wall thickness
Cathode Length

100	mg. per sq. cm.
$\frac{3}{8}$	inch.

Maximum Ratings

Ambient Temperature Range

0 to 100° C.



OCT 18 1948



THE VICTOREEN INSTRUMENT CO.

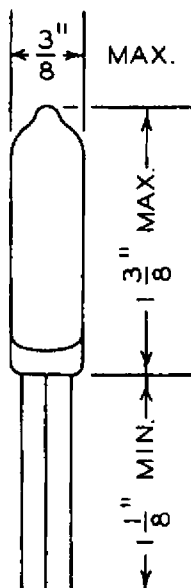
5806 HOUGH AVE., CLEVELAND, OHIO

SEPTEMBER 1949

DATA SHEET 16

TENTATIVE

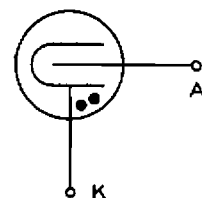
1888 THYRODE



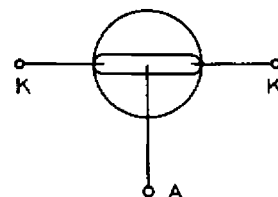
The 1888 is a self-quenched, subminiature glass thyrode designed for operation at 300 volts. It is sensitive to gamma-ray radiation, and is recommended for qualitative use only.

The 1888 is especially suited for applications requiring small physical size or low counting rates. Because of its low operating voltage, compact construction of instruments is economically accomplished.

Typical applications are found in audio detectors and visual indicators.



SYMBOL



BASE VIEW

CHARACTERISTICS

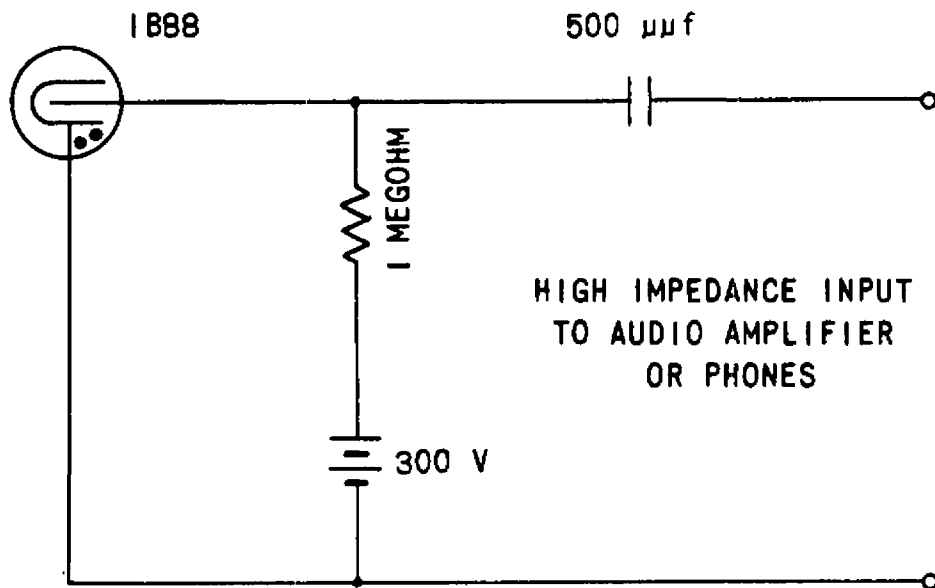
Threshold voltage*	275	volts
Plateau length*	(min) 50	volts
Plateau slope*	(Vo=275-325)..... 30%/50	volts
Recovery time.....	 100	μsec
Background.....(Vo=300 volts).....	12	c/m
Life....(at 2000 c/m: Vo=300v).....	5x10 ⁷	counts
Life test end point, slope.....	 30%/30	volts
Electrode Capacitance.....	 1	μμf
Active length.....	 1/2	inch
Wall thickness.....	 200	mg/cm ²

* New tubes

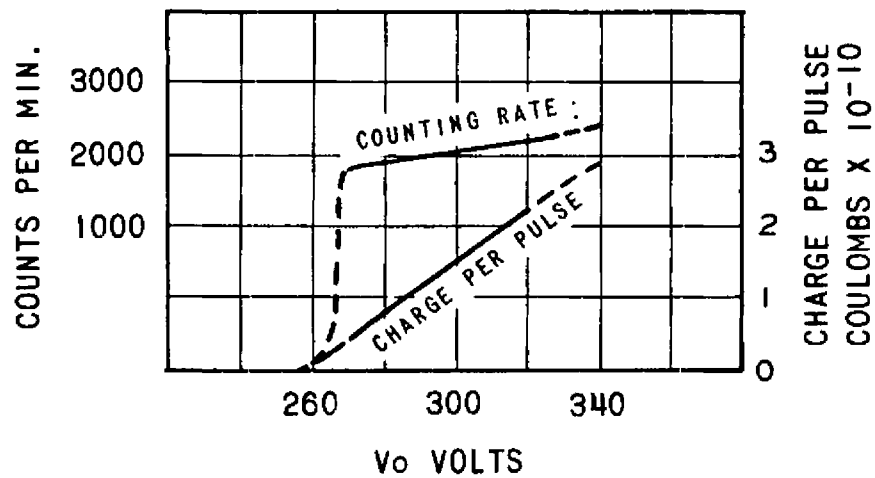
RATINGS

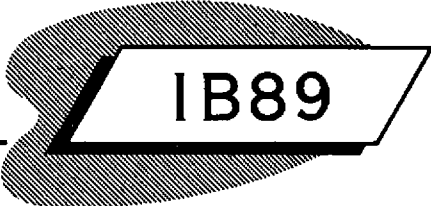
Operating voltage.....	300	volts
Ambient temperature.....(min)	-40°	C
	(max)	100°
Humidity.....	100%	

TYPICAL CIRCUIT



TUBE CHARACTERISTICS





X-RAY COUNTER TUBE

The IB89 is a self-quenched, X-ray sensitive counter tube with a 0.030 inch thick by 5/8 inch diameter beryllium window. The gas filling and internal spacing are designed to give a high quantum efficiency for 1.54 A.U. X-radiation and a low response to radiation of other wavelengths.

The IB89 is capable of linear counting to 10,000 counts per second with a circuit input sensitivity of at least 0.05 volts. It does not require excessive amplification or pulse shaping in the associated circuits.

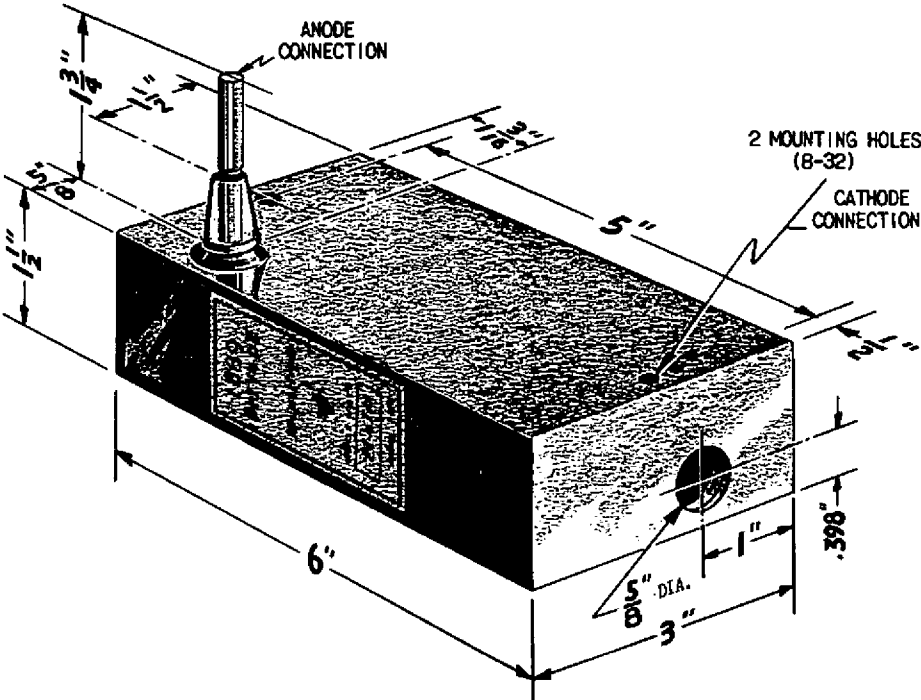
CHARACTERISTICS

THRESHOLD VOLTAGE*	1400	VOLTS	(MAX)
PLATEAU SLOPE* (V ₀ =1400 TO 1600 V)	10%/100	VOLTS	(MAX)
RECOVERY TIME	10	μ SEC	
BACKGROUND (V ₀ =1500 V)	50	C/M	(NOM)
LIFE (AT 10,000 C/M, V ₀ =1500 V)	10 ⁸	COUNTS	(MIN)
ACTIVE LENGTH	4	INCHES	
WINDOW (BERYLLIUM)	0.030" THICK X 5/8"	DIAMETER	
ELECTRODE CAPACITANCE	9	μμf	

RATINGS

OPERATING VOLTAGE	1500	VOLTS	(NOM)
AMBIENT TEMPERATURE	+10°	C	(MIN)
	+100°	C	(MAX)
RELATIVE HUMIDITY	100%		(MAX)

*NEW TUBES



SYMBOL



THE VICTOREEN INSTRUMENT CO.

5806 HOUGH AVE., CLEVELAND 3, OHIO

RADIO MANUFACTURERS ASSOCIATION

SUITE 701-4 AMERICAN BUILDING
1317 F STREET, N.W.
WASHINGTON, D. C.



R.M.A. DATA BUREAU
90 West Street
New York, N. Y.

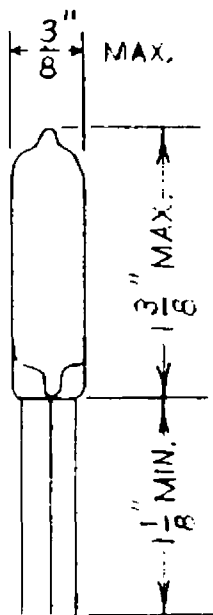
Release No. 719

December 10, 1948

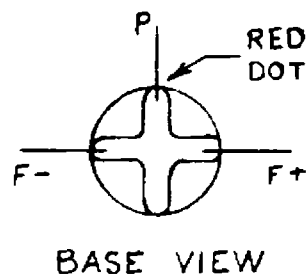
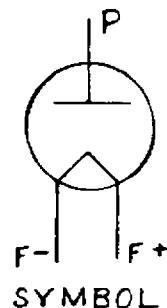
Sponsor: Victoreen Instrument Co.

TYPE 5799*

HIGH VOLTAGE DIODE



The 5799 is a sub-miniature, high vacuum, half-wave, rectifier, designed specifically for portable equipment where low power consumption and compactness are required. Operation of the filament from 60 cycle or R.F. supply is frequently advantageous. The high inverse peak voltage rating makes this tube ideally suited for use in high voltage, low current, power supplies.



CHARACTERISTICS AS HALF WAVE RECTIFIER

		<u>Min.</u>	<u>Nom.</u>	<u>Max.</u>	
Filament Voltage	E_f	1.1	1.25	1.5	v
Filament Current	I_f	-	10	-	ma
Filament Resistance	R_f	112	125	137	ohm
Peak Inverse Voltage	E_{px}	-	-	3000	v
Peak Plate Current	i_b	-	-	600	ua
D.C. Output Current	I_b	-	-	200	ua
Capacitance	C_{pk}	-	1	-	unuf
Tube Voltage Drop ($I_b = 200$ ua D.C.)	E_b	-	-	5	v

RADIO MANUFACTURERS ASSOCIATION

SUITE 701-4 AMERICAN BUILDING
1317 F STREET, N.W.
WASHINGTON, D. C.



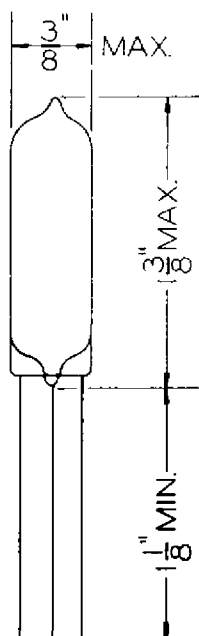
R.M.A. DATA BUREAU
90 West Street
New York, N. Y.

TYPE 5800**

Release No. 719

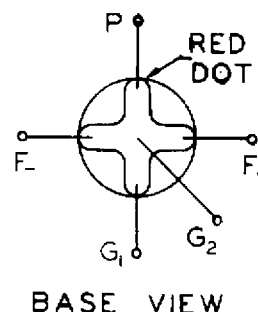
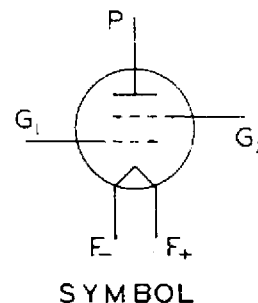
December 10, 1948

Sponsor: Victoreen Instrument Co.



ELECTROMETER TETRODE

The 5800 is a low filament power subminiature tetrode designed specifically for electrometer applications. It has been treated inside and outside to provide maximum resistance between electrode and absolute minimum control grid (G2) current when connected as an electrometer.



The cathode has been designed to provide long time stability in dc amplifier applications. For optimum results as an electrometer the tube and input circuit should be electrostatically shielded and enclosed in a light-tight compartment to reduce grid current due to photo-electric effects. For minimum emission drift, the filament voltage should be applied a second before positive voltage is applied to any other electrode and the positive voltage should be removed before the filament cools.

CHARACTERISTICS

	Min.	Nominal	Max.
Filament current	9	10	13 ma
Filament resistance	112	125	137 ohms
Total cathode current	-	250	- ua
Positive voltage on any electrode	-	-	25 volts
Capacitance: Grid 1*	-	2	- uuf
Grid 2*	-	2	- uuf
Plate *	-	3	- uuf
Leakage resistance: Grid 1*	10 ¹⁴	-	- ohms
Grid 2*	10 ¹⁵	-	- ohms
Plate *	10 ¹⁴	-	- ohms
Plate current - accelerator grid connection (If = 10 ma; Ic1 = 250 ua; Eb = 4.5 v; Ec2 = -3 v)	6	12	18 ua

* To all other electrode in parallel.

** (VX-41A)

RADIO MANUFACTURERS ASSOCIATION



SUITE 701-4 AMERICAN BUILDING
1317 F STREET, N.W.
WASHINGTON, D. C.

R.M.A. DATA BUREAU
90 West Street
New York, N. Y.

Release No. 719

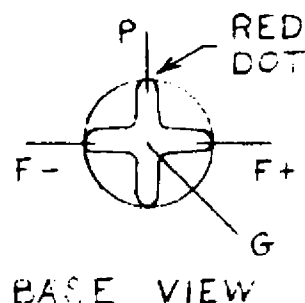
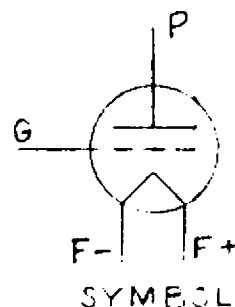
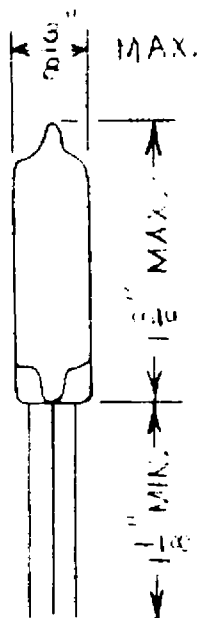
December 10, 1948

Sponsor: Victoreen Instrument Co.

Type 5801*

HIGH-MU TRIODE

The is a low filament power sub-miniature triode designed for D.C. voltage amplifier applications in radiation measuring instruments. Additional applications are found in portable equipment of all types.



CHARACTERISTICS

		<u>Min.</u>	<u>Nom.</u>	<u>Max.</u>	
Filament Voltage	E_f	1.12	1.25	1.5	v
Filament Current	I_f	-	10	-	ma
Filament Resistance	R_f	112	125	137	ohm
Total Cathode Current	I_k	-	-	500	ua
Leakage Resistance (Grid to all other elements)	R_g	-	10^{14}	-	ohm
Plate Current ($I_f = 10$ ma)					
$E_c = -2V$ ($E_b = 135$ V)	I_b	100	200	300	ua
$E_c = -5V$ ($E_b = 135$ V)	I_b	-	-	1	ua
Transconductance ($E_f = 1.25$ V, $E_b = 135$ V, $E_c = -2$ V)	G_m	-	150	-	umho
Amplification Factor		-	30	-	

*(VX-33A)

RADIO MANUFACTURERS ASSOCIATION



SUITE 701-4 AMERICAN BUILDING
1317 F STREET, N.W.
WASHINGTON, D. C.

R.M.A. DATA BUREAU
90 West Street
New York, N. Y.

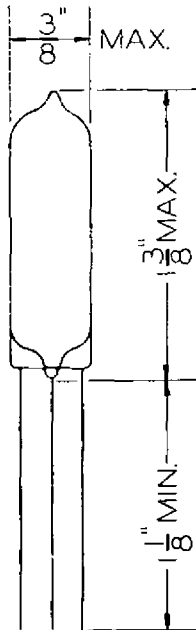
TYPE 5802*

Release No. 719

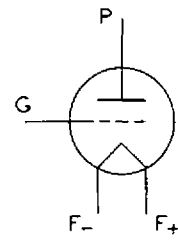
December 10, 1948

Sponsor: Victoreen Instrument Co.

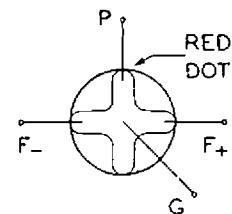
LOW-MU TRIODE



The 5802 is a subminiature triode designed for d.c. amplifiers in radiation measuring instruments. The low filament current makes possible much longer life or reduced weight to portable instruments. Although not specifically designed for electrometer use, the tube is widely used in the Alpha meter, "zeus" and "zeuto," circuits where grid currents of 10^{-14} amperes are not considered excessive. Other applications are in photo cell circuits, high impedance voltmeters and similar low current devices.



SYMBOL



BASE VIEW

The VX-32B may be used as replacement for the V-32, VX-32, or VX-32A. It has the same general characteristics as the previous tubes except that tolerances have been narrowed and microphonics have been reduced to a minimum.

CHARACTERISTICS

	<u>Min.</u>	<u>Nominal</u>	<u>Max.</u>
Filament Voltage	1.12	1.25	1.5 volts
Total Cathode Current	-	250	500 ua
Filament Current	9	10	13 ma
Transconductance To all other electrodes	-	65	- umho
Amplification Factor in parallel	-	1.6	-
Plate Resistance	-	25	- k ohm
Leakage Resistance To all other electrodes	10^{14}	-	- ohms
Capacitance: Grid & electrodes in parallel	-	2	- uuf
	-	3	- uuf
Plate Current ($I_f = 10$ ma $E_b = 10V$ $E_c = -3V$)	37	-	110 ua

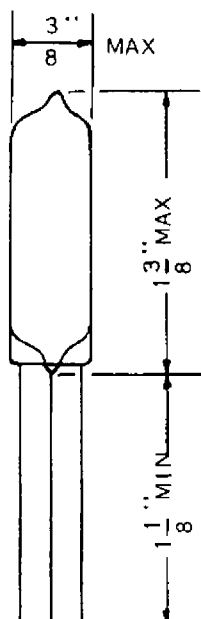
*(VX-32B)



THE VICTOREEN INSTRUMENT CO. 5806 HOUGH AVE., CLEVELAND, O.

JANUARY, 1949

DATA SHEET 1



5803 ELECTROMETER TRIODE

The 5803 is a subminiature triode designed to replace the VX-328 for radiation measuring instrumentation.

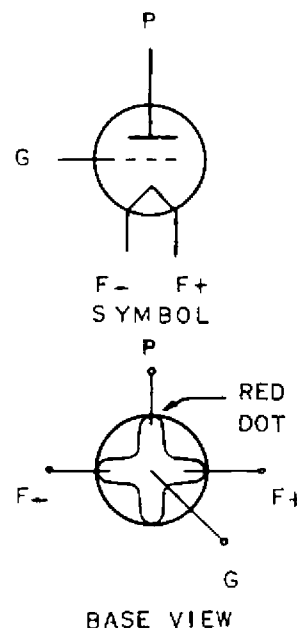
Lower plate voltage operation results in smaller grid currents.

Higher transconductance makes increased sensitivities practical in d.c. amplifiers.

Closer tolerances in plate current result in greater uniformity.

Improved filament characteristics provide longer life or reduced weight to portable equipment.

Low microphonic design features introduced in the VX-328 have been retained in the 5803.



CHARACTERISTICS

		MIN.	NOM	MAX.	
FILAMENT VOLTAGE	E_f	1.1	1.25	1.5	V
FILAMENT CURRENT	I_f	-	10	-	MA
FILAMENT RESISTANCE	R_f	112	125	137	OHM
TOTAL CATHODE CURRENT	I_k	-	-	500	μ A
LEAKAGE RESISTANCE (Grid to all other elements)	R_G	-	10^{14}	-	OHM
PLATE CURRENT ($E_f = 1.25$ V $E_b = 7.5$ V, $E_c = -1.7$ V)	I_b	60	-	120	μ A
TRANSCONDUCTANCE ($I_b = 100 \mu$ A)	G_m	100	-	-	μ MHO
AMPLIFICATION	μ	1.8	2.0	2.2	

5828

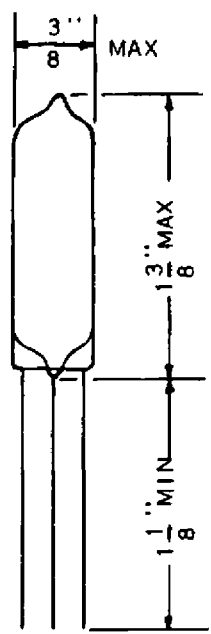


THE VICTOREEN INSTRUMENT CO.

5806 HOUGH AVE., CLEVELAND, OHIO

MARCH 1949

DATA SHEET 1

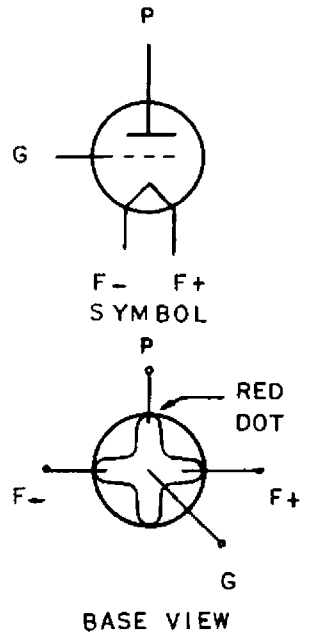


5828
MEDIUM MU TRIODE

The 5828 is a subminiature triode intended for use in portable geiger counter instruments. It is recommended as a replacement for the high-mu triode connection of the VX-41A.

Typical applications are in cathode follower preamplifier circuits, multi-vibrator pulse shaping circuits and D.C. amplifiers.

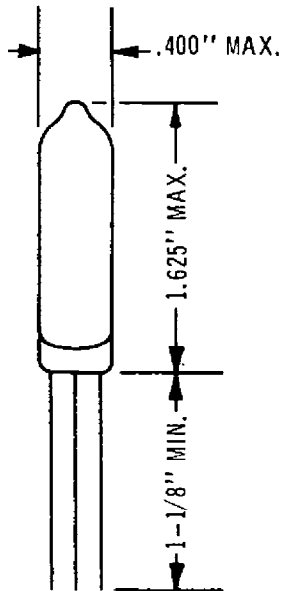
In these applications, the 5828 has the advantage of lower operating voltages and higher transconductance.



CHARACTERISTICS

		MIN.	NOM.	MAX.	
FILAMENT VOLTAGE	E_f	1.1	1.25	1.5	v
FILAMENT CURRENT	I_f	-	10	-	MA
FILAMENT RESISTANCE	R_f	112	125	137	OHM
TOTAL CATHODE CURRENT	I_k	-	-	750	μa
PLATE CURRENT (1) ($E_f = 1.25$ v; $E_b = 50$ v; $E_c = -5$ v)	I_b	400	-	700	μa
PLATE CURRENT (2) ($E_f = 1.25$ v; $E_b = 50$ v; $E_c = -4.5$ v)	I_b	-	-	1	μa
TRANSCONDUCTANCE ($E_f = 1.25$ v; $E_b = 50$ v; $E_c = .5$ v)	G_m	400	-	-	μMHO
AMPLIFICATION	μ	16		19	

CORONA VOLTAGE REGULATOR

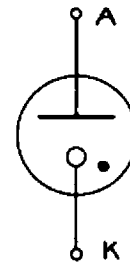


The 5841 is a subminiature corona voltage regulator or reference tube designed for use in high voltage, low current applications.

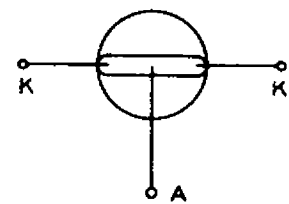
Use of this tube to stabilize the outputs of battery operated radio frequency or vibrator power supplies is economically effected. Voltage regulation in such applications is good over a suitable range of current.

Because of the small difference between the starting and regulating potentials, oscillatory operation is not generally encountered. This applies even with high values of shunt capacity.

The 5841 is used to stabilize the supply voltage for the 1B85 counter tube, or the 5819 photo multiplier tube and other similar applications.



SYMBOL



BASE VIEW

CHARACTERISTICS

D. C. STARTING VOLTAGE (MAX)	940	VOLTS
D. C. REGULATED VOLTAGE (@ 20 μ a)	900	VOLTS $\pm 2\%$
VOLTAGE REGULATION (2-50 μ a) (MAX)	1.5	%
LIFE	UNLIMITED	BY USE

RATINGS

REGULATOR CURRENT* (MAX)	100	μ a
RELATIVE HUMIDITY (MAX)	100	%
AMBIENT TEMPERATURE RANGE	-60 to +100	$^{\circ}$ C

* MINIMUM SERIES RESISTANCE, MUST BE SUCH AS TO LIMIT THE CURRENT TO 100 μ a UNDER THE MINIMUM LOAD CONDITIONS WITH MAXIMUM SUPPLY VOLTAGE APPLIED.

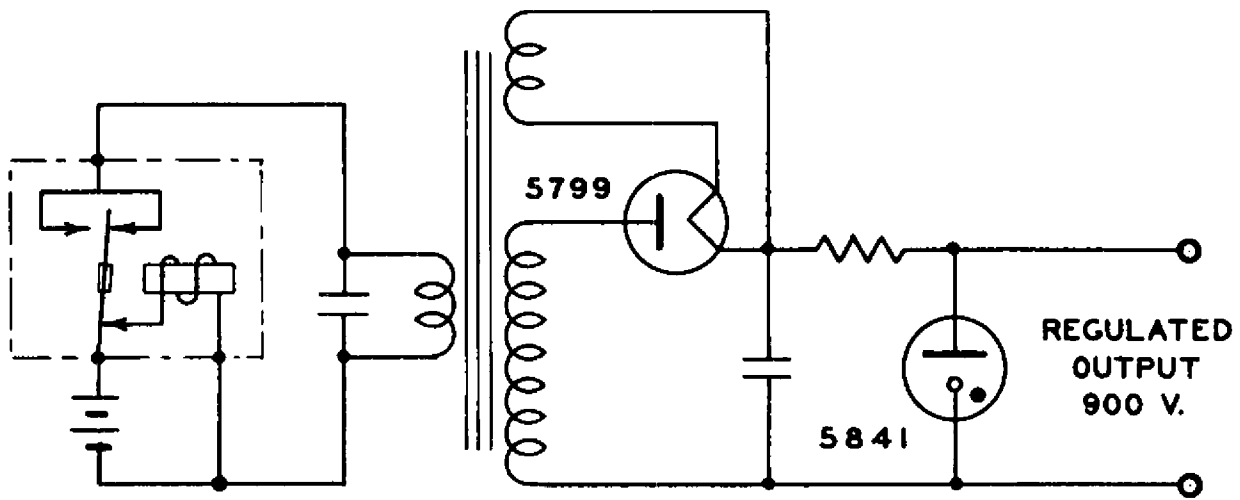


THE VICTOREEN INSTRUMENT CO.

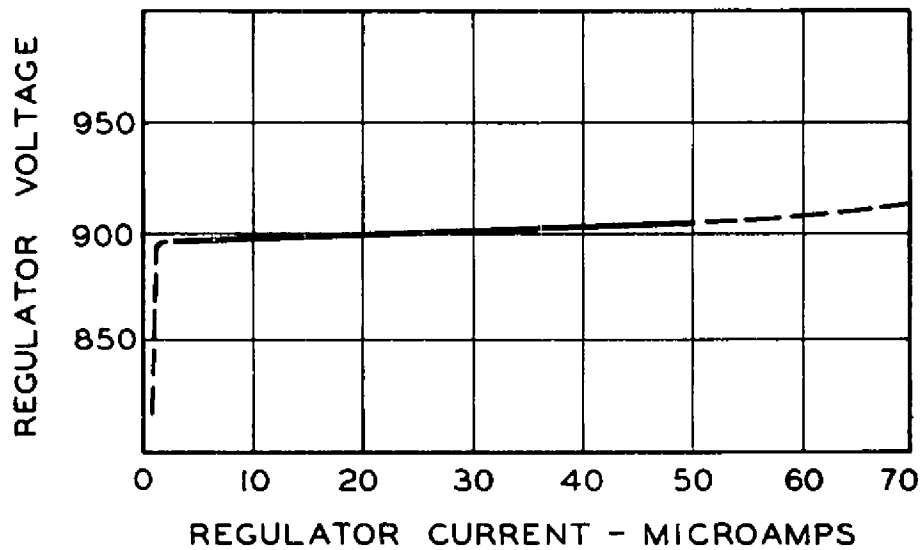
COMPONENTS DIVISION

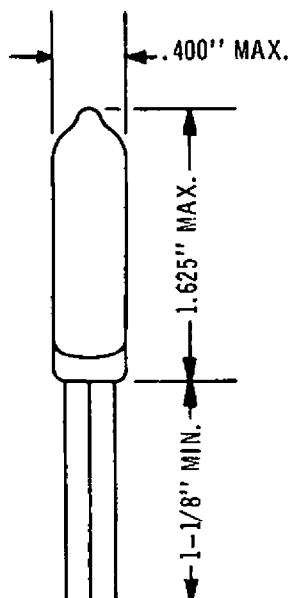
3800 PERKINS AVENUE, CLEVELAND 14, OHIO

TYPICAL CIRCUIT



TUBE CHARACTERISTICS



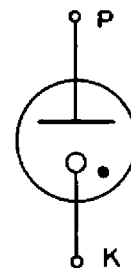
CORONA VOLTAGE REGULATOR

The 5950 is a subminiature corona voltage regulator or reference tube designed for use in high voltage, low current applications.

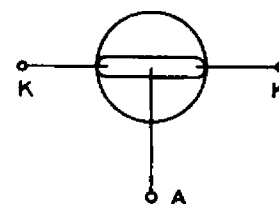
Use of this tube to stabilize the outputs of battery operated radio frequency or vibrator power supplies is economically effected. Voltage regulation in such applications is good over a suitable range of current.

Because of the small difference between the starting and regulating potentials, oscillatory operation is not generally encountered. This applies even with high values of shunt capacity.

The 5950 is suitable for use with most of the 700 volt halogen quench counter tubes.



SYMBOL



BASE VIEW

CHARACTERISTICS

D. C. STARTING VOLTAGE. (MAX)	735	VOLTS	
D. C. REGULATED VOLTAGE (@ 20 μa)	700	VOLTS	$\pm 2\%$
VOLTAGE REGULATION (2-50 μa) (MAX)	1.5	%	
LIFE	UNLIMITED BY USE		

RATINGS

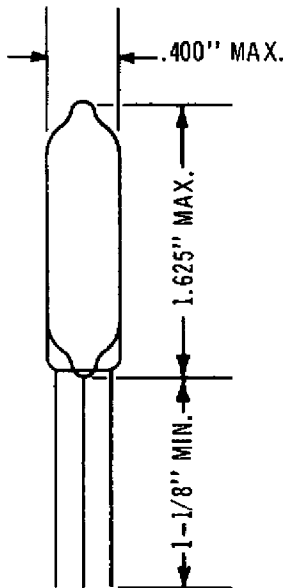
REGULATOR CURRENT* (MAX)	100	μa
RELATIVE HUMIDITY. (MAX)	100	%
AMBIENT TEMPERATURE RANGE	-65 to +100	$^{\circ}C$

* MINIMUM SERIES RESISTANCE. MUST BE SUCH AS TO LIMIT THE CURRENT TO 100 μa UNDER THE MINIMUM LOAD CONDITIONS WITH MAXIMUM SUPPLY VOLTAGE APPLIED.

**THE VICTOREEN INSTRUMENT CO.**

COMPONENTS DIVISION

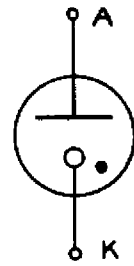
3800 PERKINS AVENUE, CLEVELAND 14, OHIO

CORONA VOLTAGE REGULATOR

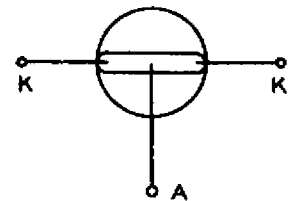
The 6119 is a subminiature corona voltage regulator designed for use in high voltage, low current applications.

Use of this tube to stabilize the outputs of battery operated radio frequency or vibrator power supplies is economically effected. Voltage regulation in such applications is good over a suitable range of current.

Because of the small difference between the starting and regulating potentials, oscillatory operation is not generally encountered. This applies even with high values of shunt capacity.



SYMBOL



BASE VIEW

CHARACTERISTICS

D. C. STARTING VOLTAGE (MAX)	2100	VOLTS	
D. C. REGULATED VOLTAGE (@ 20 μ a)	2000	VOLTS	$\pm 2\% \pm 2.5\%$
VOLTAGE REGULATION (2-50 μ a) (MAX)		1.5	%
LIFE		UNLIMITED	BY USE

RATINGS

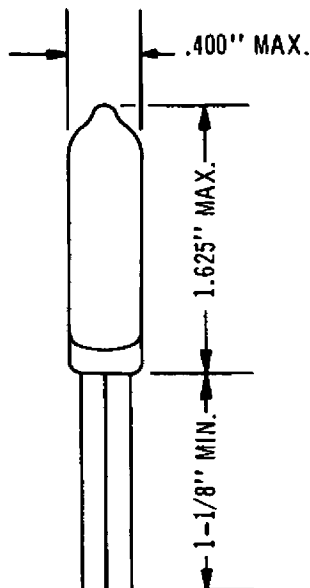
REGULATOR CURRENT* (MAX)	55	μ a
RELATIVE HUMIDITY (MAX)	100	%
AMBIENT TEMPERATURE RANGE	-60 to +100	$^{\circ}$ C

* MINIMUM SERIES RESISTANCE. MUST BE SUCH AS TO LIMIT THE CURRENT TO 55 μ a UNDER MINIMUM LOAD CONDITIONS WITH MAXIMUM SUPPLY VOLTAGE APPLIED.

**THE VICTOREEN INSTRUMENT CO.**

COMPONENTS DIVISION

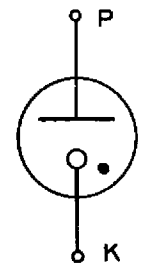
3800 PERKINS AVENUE, CLEVELAND 14, OHIO

CORONA VOLTAGE REGULATOR

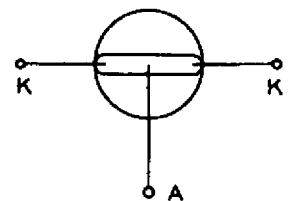
The 6143 is a subminiature corona voltage regulator designed for use in high voltage, low current applications.

Use of this tube to stabilize the outputs of battery operated radio frequency or vibrator power supplies is economically effected. Voltage regulation in such applications is good over a suitable range of current.

Because of the small difference between the starting and regulating potentials, oscillatory operation is not generally encountered. This applies even with high values of shunt capacity.



SYMBOL



BASE VIEW

CHARACTERISTICS

D. C. STARTING VOLTAGE (MAX)	1260	VOLTS	
D. C. REGULATED VOLTAGE (@ 25 μa)	1200	VOLTS	$\pm 2\%$
VOLTAGE REGULATION (2-50 μa) (MAX)	1.5	%	
LIFE	UNLIMITED BY USE		

RATINGS

REGULATOR CURRENT* (MAX)	100	μa
RELATIVE HUMIDITY (MAX)	100	%
AMBIENT TEMPERATURE RANGE	-65 to +100	$^{\circ}C$

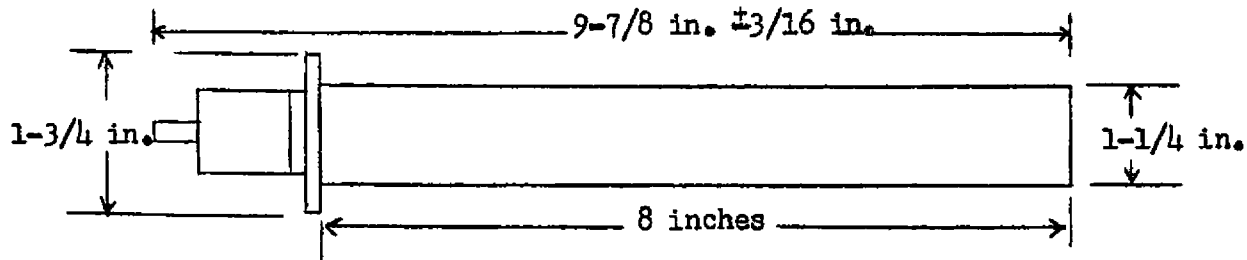
* MINIMUM SERIES RESISTANCE. MUST BE SUCH AS TO LIMIT THE CURRENT TO 100 μa UNDER MINIMUM LOAD CONDITIONS WITH MAXIMUM SUPPLY VOLTAGE APPLIED.

**THE VICTOREEN INSTRUMENT CO.**

COMPONENTS DIVISION

3800 PERKINS AVENUE, CLEVELAND 14, OHIO

VERY HIGH VOLTAGE REGULATOR TUBE



The 6353 is a corona regulator tube suitable for regulating very high voltages in moderate current power supplies.

The tube is designed for stabilizing the second anode potential of cathode ray tubes in both color and monochrome television receivers, cathode ray oscilloscopes, monitors video camera tubes, projection T.V. equipment, image converters, and image dissectors.

PHYSICAL CHARACTERISTICS

Overall length	9-7/8 inches
Overall diameter	1-3/4 inches
Body diameter	1-1/4 inches
Body length	8 inches
Weight	9 ounces
Anode Cap. Dia.	1/4 inch

ELECTRICAL CHARACTERISTICS

D.C. Starting Voltage (Max)	21,000 V
D.C. Regulating Voltage (100 μ a)	
	19,300 V
Tolerance	$\pm 2\%$
Regulation (Max)	1.5%/250 μ a
Dynamic Impedence. . . .	1 Megohm

RATINGS

Maximum current * . . . 1000 μ a

Minimum current 25 μ a

* Minimum series resistance must be such as to limit the current to 1000 μ a under minimum load conditions and maximum supply voltage applied.

This current is dependent upon the amount of heat that can be dissipated by the tube in a particular application.

THE VICTOREEN INSTRUMENT COMPANY - 3800 PERKINS AVENUE, CLEVELAND 14, OHIO, U.S.A.
 Components Division

ELECTRON TUBE

TENTATIVE

HIGH VOLTAGE PENTODE

TYPE
7683

... DESCRIPTION

The VICTOREEN 7683 is a beam-type pentode designed for use with plate voltages as high as 1 KV. Its high (20 ma) plate current and high (15 w) plate dissipation make it ideal for use in medium voltage power supplies as the shunt regulator tube or in higher voltage power supplies as the series regulator tube. Its high (5000) transconductance suggests its use in medium power, medium voltage amplifier circuits.

The VICTOREEN 7683 is constructed in a standard T-6 1/2 envelope and employs a nine pin miniature base.

ELECTRICAL DATA

Heater Voltage 6.3 V
Heater Current 150 ma
Cathode Heating Time . . . 12 sec.
Transconductance (Sm) . . . 5000
Plate Resistance (rp) . . . 30 K
Capacitance:
G1 to P —
G1 to K —
P to K 3.45µuf

MECHANICAL DATA

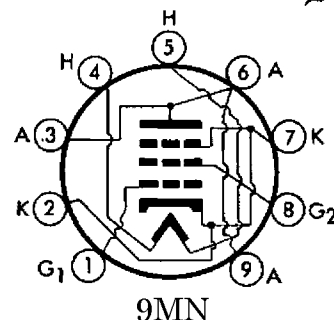
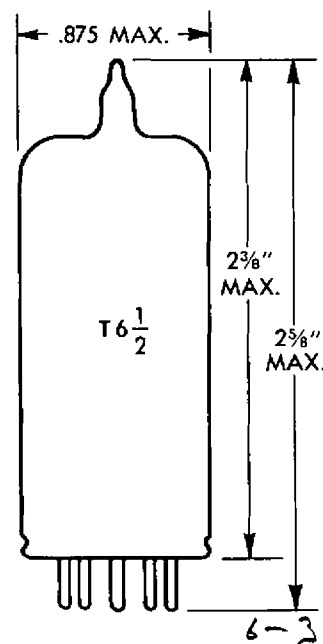
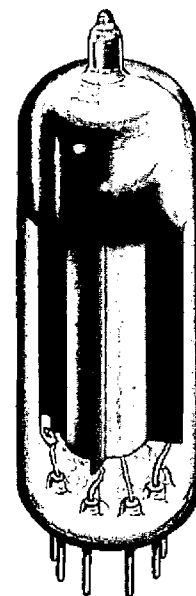
Mounting Position Any
Bulb T-6 1/2
Base 9 pin min.
~~Cap~~ ~~Cl-3~~
Av. Net Weight 4 oz.
Max. Shock —
Max. Vibration —
Life 500 hrs.
(Life test end point) Δ Sm = 25%

RATINGS, ABSOLUTE VALUES

	Min.	Max.
Plate Dissipation (Pp)		15 W
Plate Current (Ib)		20 ma
Plate Voltage (Eb)		1000 V
Heater-Cathode Voltage (Ehk)		±300 V
Grid Voltage (Ec1)		-100 V
Heater Voltage (Ef)	5.7 V	6.9 V
Envelope Temperature		220°C
Grid Resistor		0.5 M
Screen Voltage (Ec2)		250 V
Screen Dissipation (Pg2)		0.7 w

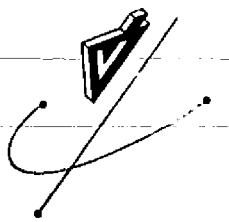
For applications requiring characteristics beyond those listed or for engineering data, contact VICTOREEN'S Application Engineering Dept.

from JEDEC release #2836, June 13, 1960



Victoreen

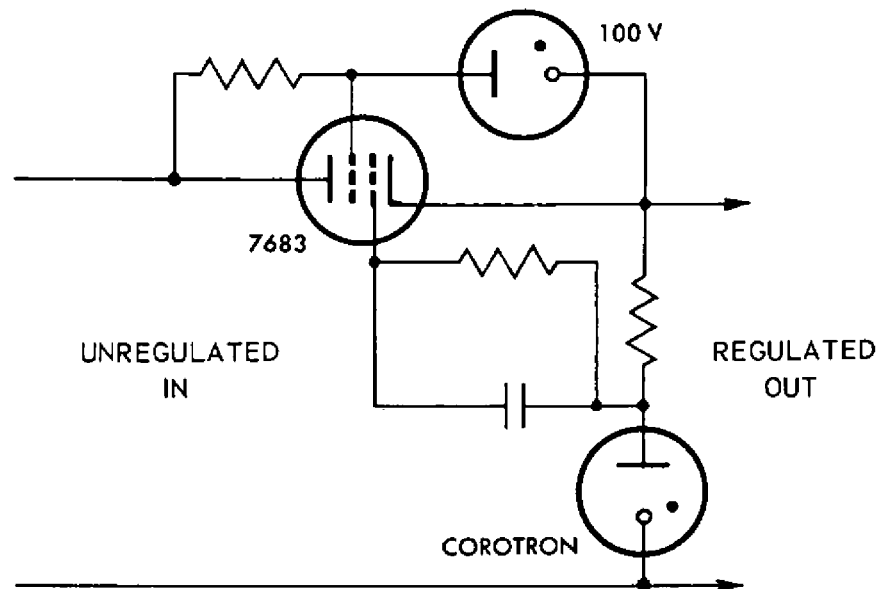
TYPE 7683



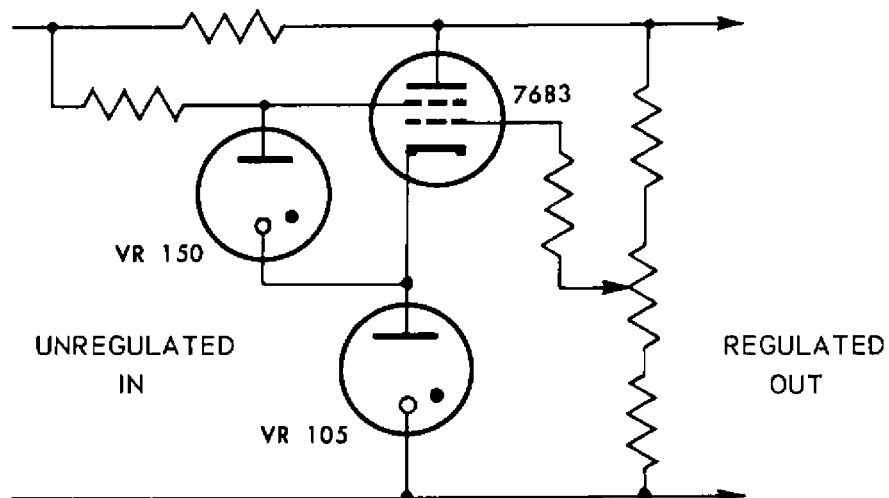
TYPICAL OPERATION — AMPLIFIER

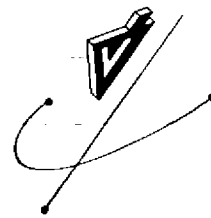
Heater Voltage (E_f)	6.3 V	6.3 V	6.3 V
Heater Current (I_f)	150 ma	150 ma	150 ma
Plate Voltage (E_b)	300 V	600 V	800 V
Grid Voltage (E_{c1})	-0.5 V	-1 V	-1 V
Screen Voltage (E_{c2})	250 V	250 V	250 V
Plate Current (I_b)	12.6 ma	10.6 ma	12 ma
Screen Current (I_{c2})	2.2 ma	1.7 ma	1.6 ma
Plate Resistance (r_p)	28,000	34,000	35,000
Transconductance (S_m)	4200	4200	4200

TYPICAL OPERATION SERIES REGULATOR



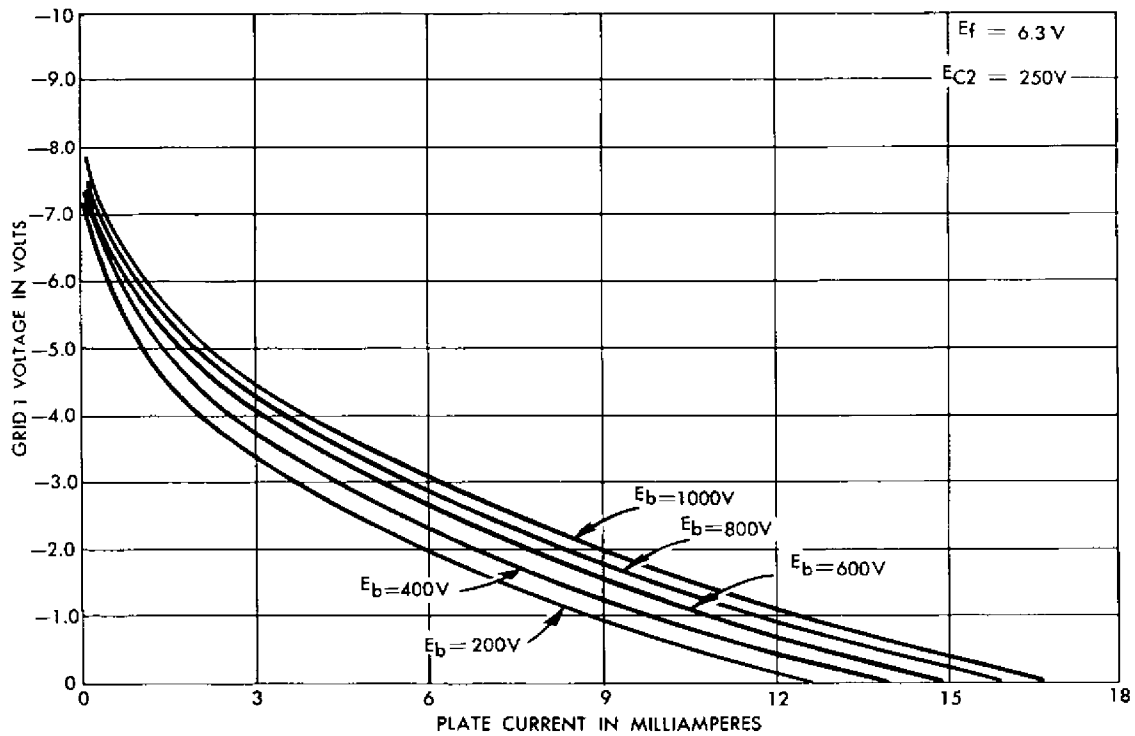
TYPICAL OPERATION SHUNT REGULATOR



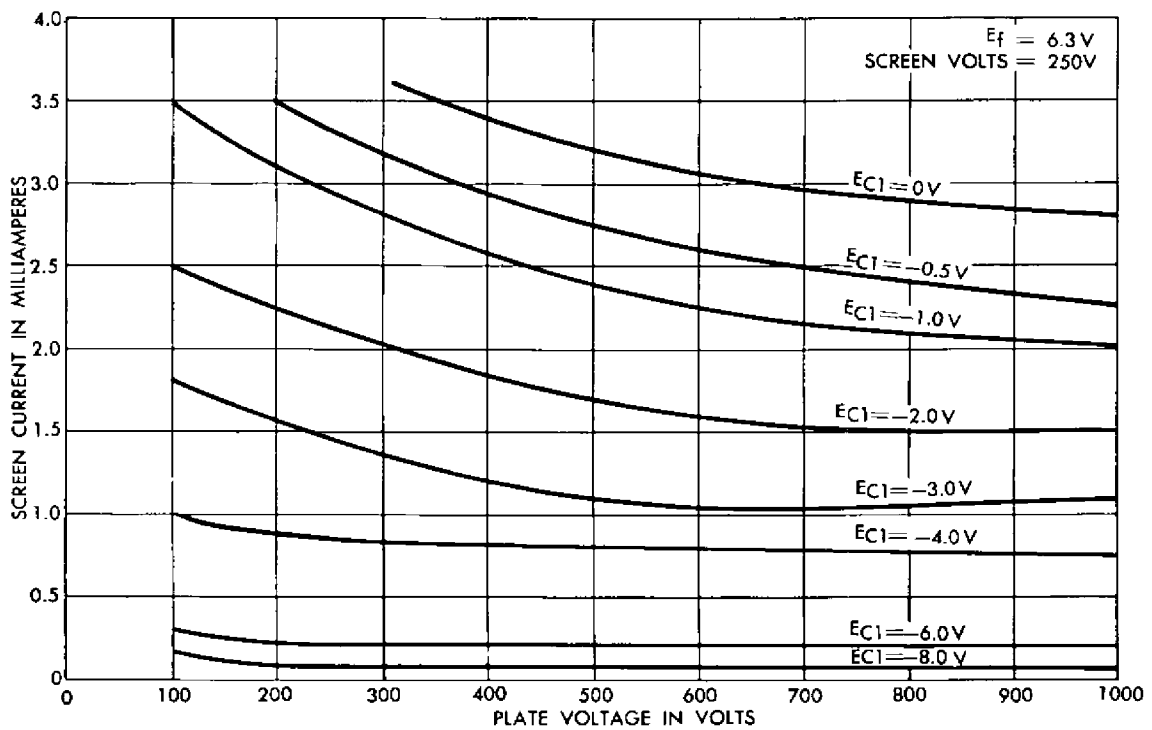


TYPE 7683

TRANSFER CHARACTERISTICS



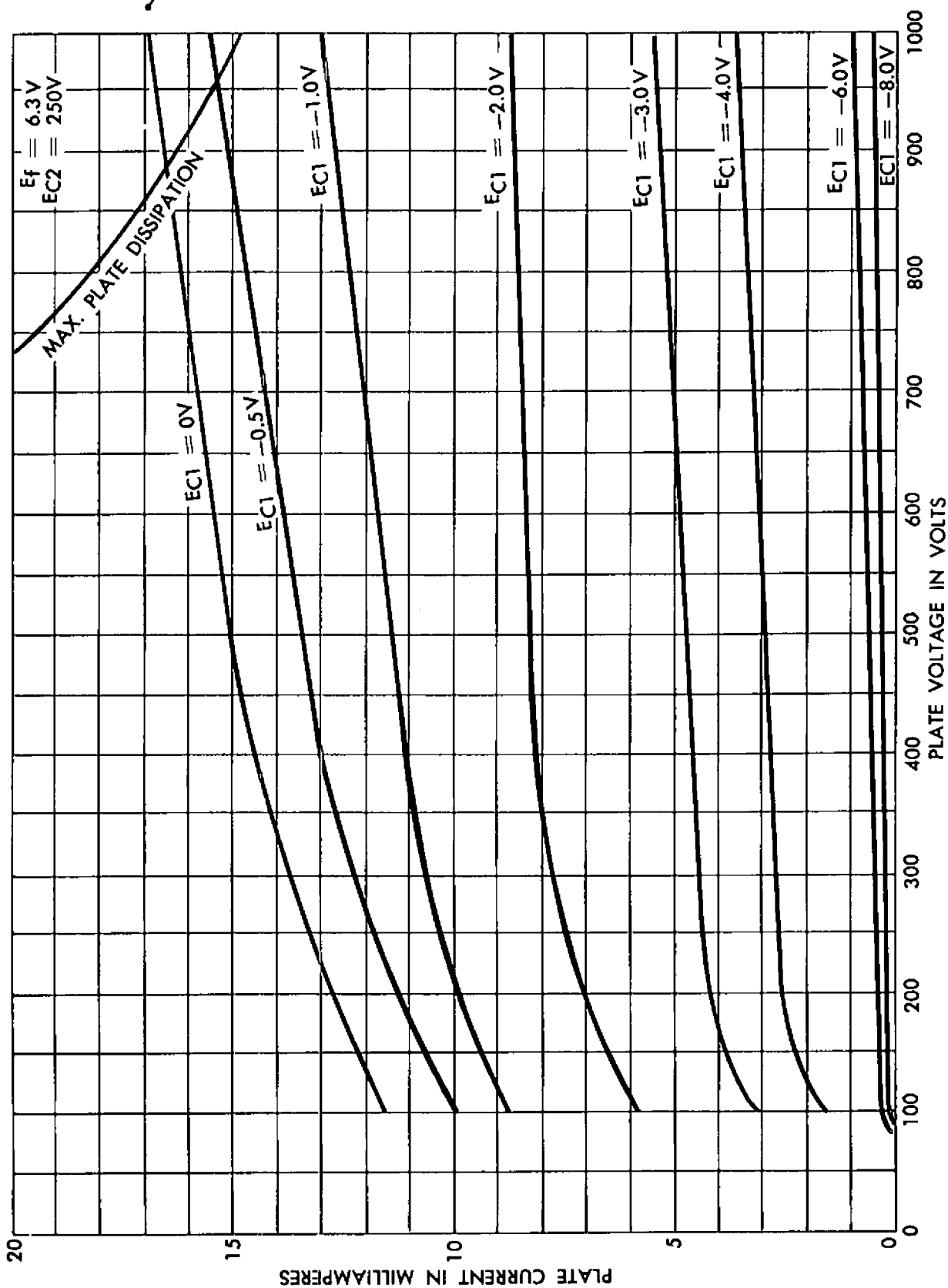
SCREEN CHARACTERISTICS



Victoreen

TYPE 7683

PLATE CHARACTERISTICS



Litho in U.S.A.

Form: 2158-9

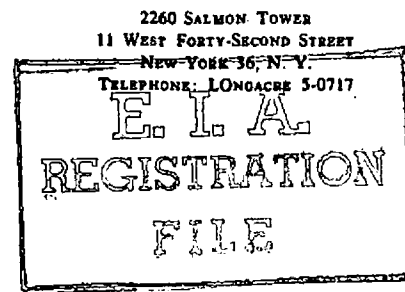
JOINT ELECTRON DEVICE ENGINEERING COUNCIL



Announcement of Electron Device Type Registration

Release No. 3100

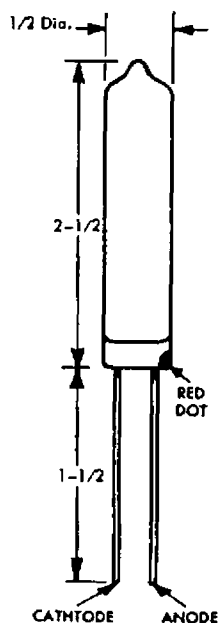
January 9, 1961



The Joint Electron Device Engineering Council announces the registration of the following electron device designation

7859

according to the ratings and characteristics found on the attached data sheet and the outline shown below on the application of



The Victoreen Instrument Company
Cleveland 3, Ohio

October 27, 1960

Electron Tube Type 7859

The 7859 is a two electrode gas filled cold cathode tube primarily for use in voltage regulator applications.

Maximum Ratings, Absolute Values

Maximum Average Starting Current	_____	Milliamperes
Maximum Averaging Time	_____	Seconds
Maximum DC Cathode Current peak pulse	1.10	Milliamperes
Minimum DC Cathode Current	.02	Milliamperes
Ambient Temperature Limits and/or Bulb Temperature Limits	-55°C to +125°C	Centigrade

Electrical Data, throughout life

	<u>Initial 1000 Hour Life</u>				
	<u>Min.</u>	<u>Max.</u>	<u>Min.</u>	<u>Max.</u>	
Anode Voltage Drop (1) at 100 mA	1723	1777	1700	1790	Volts
Anode Voltage Drop (2) at 700 mA	1753	1807	1730	1820	Volts
Anode Breakdown Voltage (1) in Darkness		1925			Volts
(2) in Light		1925			Volts
Regulation .02 to .70 mA		55		65	Volts
*Drift Rate at _____ hours (Note 1)					Volts
Repeatability (Note 2)		10			Volts
*Voltage Jump (Constant Current, _____ mA)					Volts
Voltage Jump (Current Varies, _____ to _____ mA)					Volts
Temperature Coefficient of Voltage Drop (Note 3)		85		105	mV/°C
-55°C to +25°C Ambient		40			mV/°C
+25°C to +125°C Ambient		45			mV/°C
Warm-up Time					

Mechanical Data

Mounting Position	any
Net Weight, Maximum	.32 Ounces

Outline

Format as recommended by RETMA Standard ET-105

Basing

RETMA Basing Designation two lead flat press. Anode lead marked by red dot.

Note 1: Tube operated at _____ ma. of current at _____°C ambient temperature.

Note 2: Maximum change of Tube Voltage Drop, as measured at 100 ua before and after a 7 day non-operational holding period.

Note 3: Tube operated at 100 ma.

*Primarily applicable to voltage reference types.

JOINT ELECTRON DEVICE ENGINEERING COUNCIL



Announcement
of
Electron Device Type Registration

E. I. A.
REGISTRATION
FILE

Release No. 3337

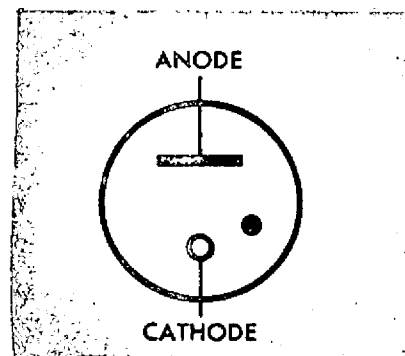
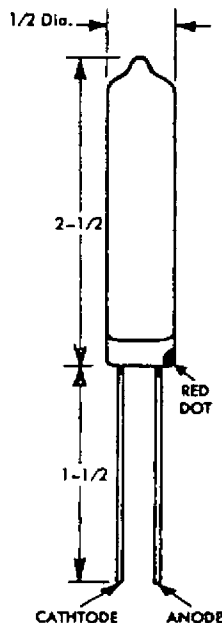
July 10, 1961

The Joint Electron Device Engineering Council announces the registration of the electron device designation

7894

according to the ratings and characteristics found on the attached data sheet and the outline shown below on the application of

The Victoreen Instrument Company
Cleveland, Ohio



JOINT ELECTRON TUBE ENGINEERING COUNCIL

J2-C1-5

Page 1

Nov. 23, 1961

Electron Tube Type

7894

The 7894 is a two electrode gas filled cold cathode tube primarily for use in voltage regulator applications.

Maximum Ratings, Absolute Values

Maximum Average Starting Current	_____	Milliamperes
Maximum Averaging Time	_____	Seconds
Maximum DC Cathode Current - Peak Pulse	<u>1.6</u>	Milliamperes
Minimum DC Cathode Current	<u>.03</u>	Milliamperes
Ambient Temperature Limits	<u>-55°C</u> to <u>+125°C</u>	Centigrade
and/or Bulb Temperature Limits		

Electrical Data, Throughout Life

	<u>Minimum</u>	<u>Bogey</u>	<u>Maximum</u>	
Anode Voltage Drop (1) at 100 ua	2955	3000	3045	Volts
Anode Voltage Drop (2) at 850 ua	3035	3080	3125	Volts
Anode Breakdown Voltage (1) in Darkness			3300	Volts
(2) in Light			3300	Volts
Regulation .03 to .85 mA		85	95	Volts
*Drift Rate at _____ hours (Note 1)				Volts/_hr.
Repeatability (Note 2)		10	15	Volts
*Voltage Jump (Constant current, _____ mA)				Volts
Voltage Jump (Current varied, _____ to _____ mA)				Volts
Temperature Coefficient of Voltage Drop (Note 3)		280	325	mV/°C
-55°C to + 25°C Ambient		170		mV/°C
+25°C to +125°C Ambient		110		mV/°C
Warm-up Time				

Mechanical Data

Mounting Position	any
Net Weight, Maximum	.32 ounces

Outline

Format as recommended by RETMA Standard ET-105

Basing

RETMA Basing Designation _____ Two lead flat press, anode marked by red dot.

Note 1: Tube operating at _____ mA. of current at _____ °C ambient temperature.

Note 2: Maximum change of Tube Voltage Drop, as measured after 7 days (time) of non-conduction of _____ mA. of current.

Note 3: Tube operated at 100 ua.

*Primarily applicable to voltage reference types.

METAL CORONA DISCHARGE VOLT REGULATOR TUBES

TYPE 8069

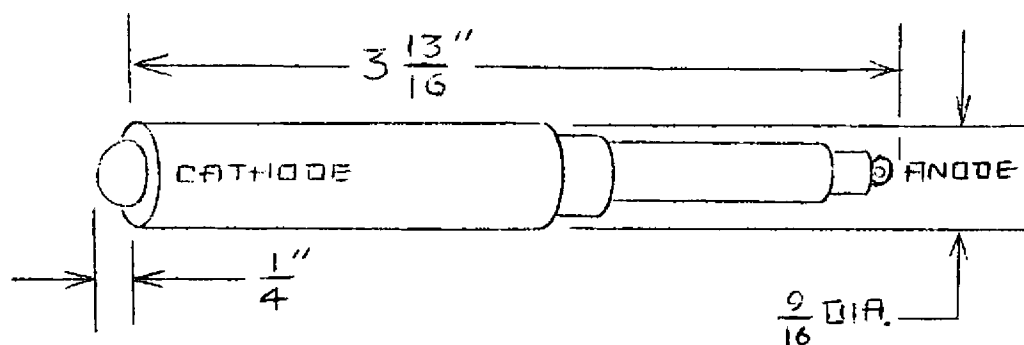
RATINGS:	Minimum current for stable operation	25 ua
	Maximum operating current.	1000 ua
	Peak current (transients).	1500 ua
	Regulation 25ua - 1000ua	650 V
	Firing voltage in darkness	8800 V

Top terminal - anode

Bottom terminal - cathode

Do not use projection on bottom of shell
for cathode connection.

SPECIFICATIONS:		MIN.	MAX.
Eb1 Regulated voltage @300 ua and R. T.		7800	8200
Eb2 Regulated voltage @1000ua and R. T.		8150	8550
Regulation 25 ua to 1000 ua			650 V
Life Test 1000 hrs. @ 300 ua			
end points	Eb1	7600	8200
	Eb2	7950	8550
	Reg.		700 V
	Ez		8800 V
Temperature coefficient -55° C to +85° C			100 V



CORONA DISCHARGE VOLTAGE REGULATOR TUBE

TYPE 8089

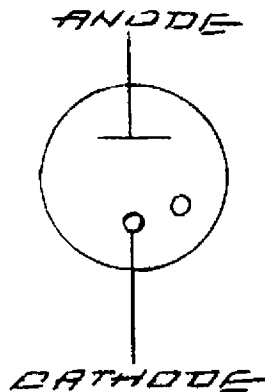
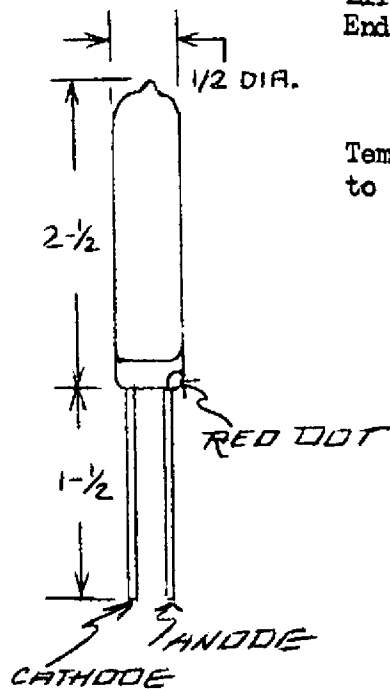
RATINGS:

Minimum current for stable operation . . .	20 ua
Maximum operating current.	800 ua
Peak current (transients).	1100 ua
Regulation 20 ua - 800 ua.	65 V
Firing voltage in darkness	1760 V

Flat press stem two flexible leads
Anode marked by red dot.

SPECIFICATIONS:

	<u>Min.</u>	<u>Max.</u>
Eb1 Regulated voltage @ 20 ua	1570 V	1630 V
Eb2 Regulated voltage @800 ua	1590 V	1660 V
Regulation 20 ua - 800 ua		65 V
Life test 1000 hours @ 100 ua		
End points Eb1	1540 V	1630 V
Eb2	1560 V	1660 V
Reg.		70 V
Ez.		1760 V
Temperature coefficient -55°C to +85°C @ 100 ua		14 V



CORONA DISCHARGE VOLTAGE REGULATOR TUBE

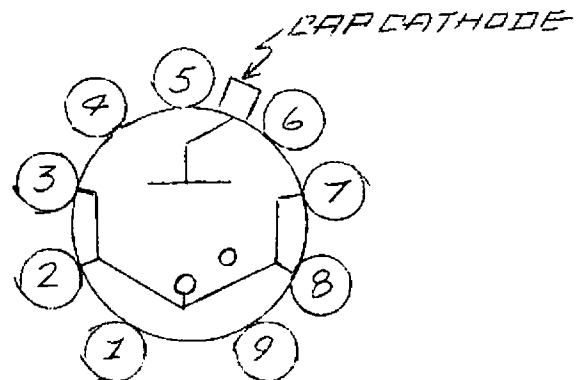
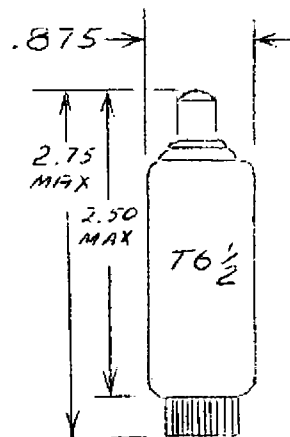
TYPE 8090

RATINGS:

Minimum current for stable operation . . .	50 ua
Maximum operating current	1000 ua
Peak current (transients)	1500 ua
Regulation 50 ua - 1000 ua	100 V
Firing voltage in darkness	3700 V

Miniature nine pin base
Top cap - anode

		<u>Min.</u>	<u>Max.</u>
SPECIFICATIONS:	Eb1 Regulated current @ 50 ua	3400 V	3530 V
	EB2 Regulated current @1000ua	3460 V	3590 V
	Regulation 50 ua to 1000 ua		100 V
	Life test 1000 hours @ 500 ua		
	End points Eb1	3300 V	3530 V
	Eb2	3360 V	3590 V
	Reg.		105 V
	Ez		3700 V
	Temperature coefficient -55°C		
	to +85°C @ 500 ua		70 V



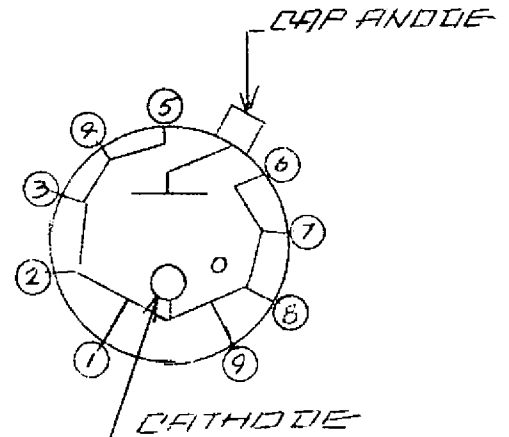
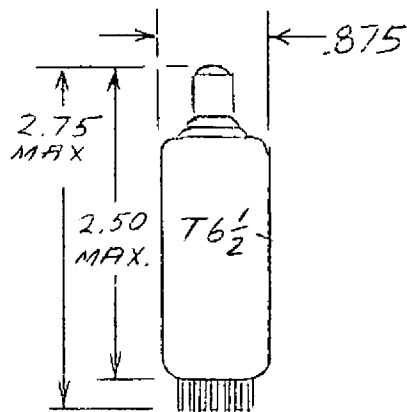
CORONA DISCHARGE VOLTAGE REGULATOR TUBE

TYPE 8091

RATINGS: Minimum current for stable operation . . 50 ua
 Maximum operating current 600 ua
 Peak current (transients) 1000 ua
 Regulation 50 ua - 600 ua 50 V
 Firing Voltage in darkness 4400 V Max.

Miniature nine pin button base
 Top cap - anode

SPECIFICATIONS:		<u>Min.</u>	<u>Max.</u>
Eb1 Regulated voltage @ 50 ua and R.T.		3900 V	4100 V
Eb2 Regulated voltage @600 ua and R.T.		3950 V	4150 V
Regulation 50 ua to 600 ua			50 V
Life test 1000 hours @ 100 ua			
End points Eb1		3700 V	4100 V
Eb2		3800 V	4200 V
Reg.			55 V
Ez			4400 V
Temperature coefficient -55°C to +85°C			140 V
at 100 ua			



JOINT ELECTRON TUBE ENGINEERING COUNCIL
ELECTRON TUBE TYPE
8256

J2-C1-5
3-13-62

The 8256 is a two electrode gas filled cold cathode tube primarily for use in voltage regulator applications operating in the corona mode.

MAXIMUM RATINGS, Absolute Values

Maximum dc Cathode Current - peak pulse	1900 ua
Minimum dc Cathode Current	35 ua
Ambient Temperature Limits	-65 to + 125 °C
and/or Bulb Temperature Limits	

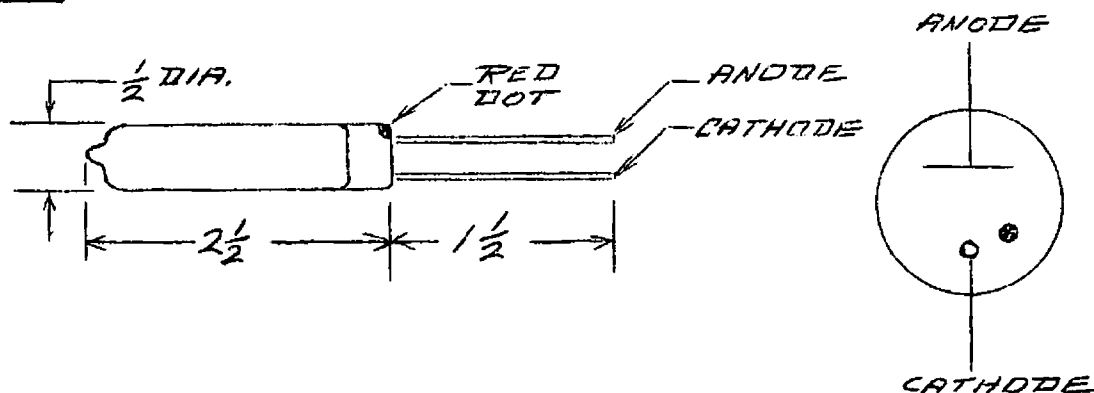
ELECTRICAL DATA Throughout Life

	Minimum	Range	Maximum
Anode Voltage Drop at 100 ua	3430	3500	3570 Volts
Anode Breakdown Voltage (1) in Darkness			3700 Volts
(2) in Light			3700 Volts
Regulation 35 to 700 ua			100 Volts
*Voltage Jump (Constant current, ___ua)			Volts
Voltage Jump (Current varied, ___to___ua)			Volts
Temperature Coefficient of Voltage Drop (Note 3)		280	mV/°C
-65°C to +125°C Ambient			
Repeatability Note 1 and 2			20 Volts

MECHANICAL DATA

Mounting Position	any
Net Weight, Maximum	.3

OUTLINE



BASING

RETMA Basing Designation - Lead with red dot - anode
Remaining lead - cathode

- Note 1: Tube operated at 100 ua of current at 25°C ambient temperature.
Note 2: Maximum change of Tube Voltage Drop, as measured before and after a seven-day non-operating hold period.
Note 3: Tube operated at 100 ua

*Primarily applicable to voltage reference tube types.

JOINT ELECTRON TUBE ENGINEERING COUNCIL
ELECTRON TUBE TYPE
8257

J2-C1-5
3-13-62

The 8257 is a two electrode gas filled cold cathode tube primarily for use in voltage regulator applications operating in the corona mode.

MAXIMUM RATINGS, Absolute Values

Maximum dc Cathode Current - Peak pulse	750 ua
Minimum dc Cathode Current	15 ua
Ambient Temperature Limits and/or Bulb Temperature Limits	-65°C to +125 °C

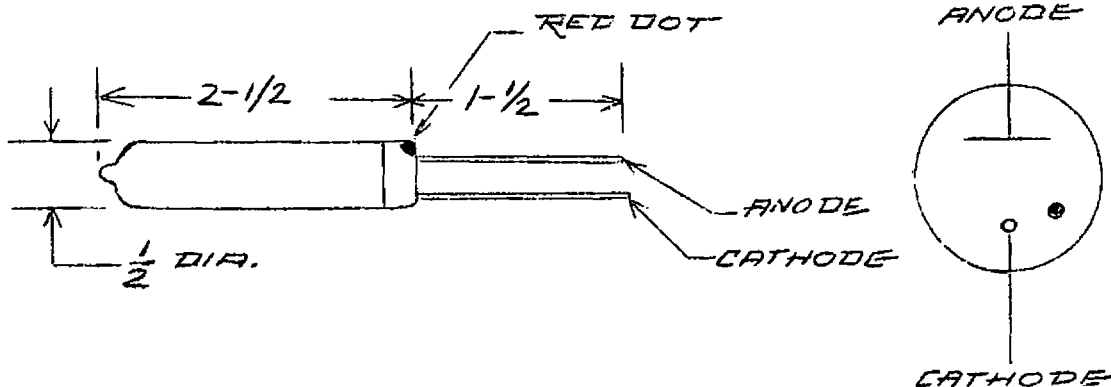
ELECTRICAL DATA THROUGHOUT LIFE

	<u>Minimum</u>	<u>Boqey</u>	<u>Maximum</u>
Anode Voltage Drop at 100 ua	1180	1200	1220 Volts
Anode Breakdown Voltage (1) in Darkness			1320 Volts
(2) in Light			1320 Volts
Regulation 15 to 600 ua			30 Volts
*Voltage Jump (Constant current, ___ua)			Volts
Voltage Jump (Current Varied, ___to___ua)			Volts
Temperature Coefficient of Voltage Drop (Note 3)		175	mV/°C
-65°C to +125°C Ambient			6 Volts
Repeatability Notes 1 and 2			

MECHANICAL DATA

Mounting Position	any
Net Weight, Maximum	.3

OUTLINE



BASING

RETMA Basing Designation - Lead with red dot - anode
Remaining lead - cathode

Note 1: Tube operated at 100 ua of current at 25°C ambient temperature.

Note 2: Maximum change of Tube Voltage Drop, as measured before and after a seven-day non-operating hold period.

Note 3: Tube operated at 100 ua.

*Primarily applicable to voltage reference types.

ELECTRON TUBE TYPE

8469

The 8469 is a two electrode gas filled cold cathode tube primarily for use in voltage regulator applications operating in the corona mode.

Maximum Ratings, Absolute Values

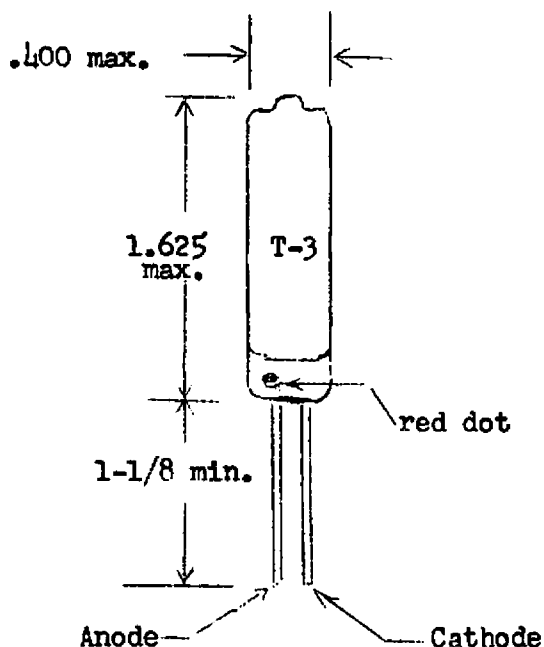
Maximum dc Cathode Current - peak pulse	400	μa
Minimum dc Cathode Current	5	μa
Ambient Temperature Limits	-55°C to 125°C	°C
and/or Bulb Temperature Limits		

<u>Electrical Data Throughout Life</u>	<u>Min.</u>	<u>Bogey</u>	<u>Max.</u>	
Anode Voltage Drop at 50μa	390	400	410	Volts
Anode Breakdown Voltage (1) in Darkness			440	Volts
(2) in Light			440	Volts
Regulation 5 to 300μa			20	Volts
Temperature Coefficient of Voltage Drop (Note 3)		50		mV/°C
-55°C to +125°C Ambient				
Repeatability Notes 1 & 2			5	Volts

Mechanical Data

Mounting Position	any
Net Weight, Maximum	.5 oz.

Outline



Basing

Two Flying leads. Anode marked by red dot.

Note 1: Tube operated at 50μa of current at 25°C ambient temperature.

Note 2: Maximum change of Tube Voltage Drop, as measured before and after a seven-day non-operating hold period.

Note 3: Tube operated at 50μa.

JOINT ELECTRON TUBE ENGINEERING COUNCILELECTRON TUBE TYPE 8514/GV5A-1000

The 8514 is a two electrode gas filled cold cathode tube primarily for use in voltage regulator applications operating in the corona mode.

Maximum Ratings, Absolute Values

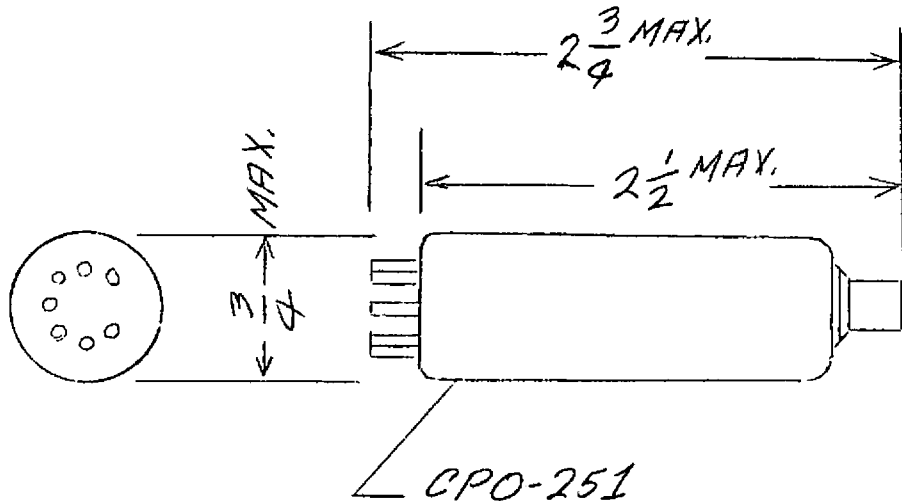
Maximum d.c. Cathode Current - peak pulse	800	ua
Minimum d.c. Cathode Current	10	ua
Ambient Temperature Limits	-65° to +125	°C
and/or Bulb Temperature Limits		

Electrical Data Throughout Life

	<u>Min.</u>	<u>Bogey</u>	<u>Max.</u>	
Anode Voltage Drop at 100 ua	975	1000	1025	Volts
Anode Breakdown Voltage (1) in Darkness			1200	Volts
(2) in Light			1200	Volts
Regulation 10 to 650 ua			20	Volts
Temperature Coefficient of Voltage Drop (Note 3)		80		mV/°C
-65 to +125° C Ambient				
Repeatability Note 1 & 2			10	Volts

Mechanical Data

Mounting Position, any	Bulb	T 5½
Net Weight, Maximum, .5 oz.	Base	E7-1
	Top Cap	C1-3

OutlineBasing

Pin	1	2	3	4	5	6	7	Top Cap
	K	K	K	K	K	K	K	Anode

Note 1: Tube operated at 100 ua of current at 25° C ambient temperature.

Note 2: Maximum change of Tube Voltage Drop, as measured before and after a seven-day non-operating hold period.

Note 3: Tube operated at 100 ua.

JOINT ELECTRON TUBE ENGINEERING COUNCILELECTRON TUBE TYPE 8515/GV5A-1600

The 8515 is a two electrode gas filled cold cathode tube primarily for use in voltage regulator applications operating in the corona mode.

Maximum Ratings, Absolute Values

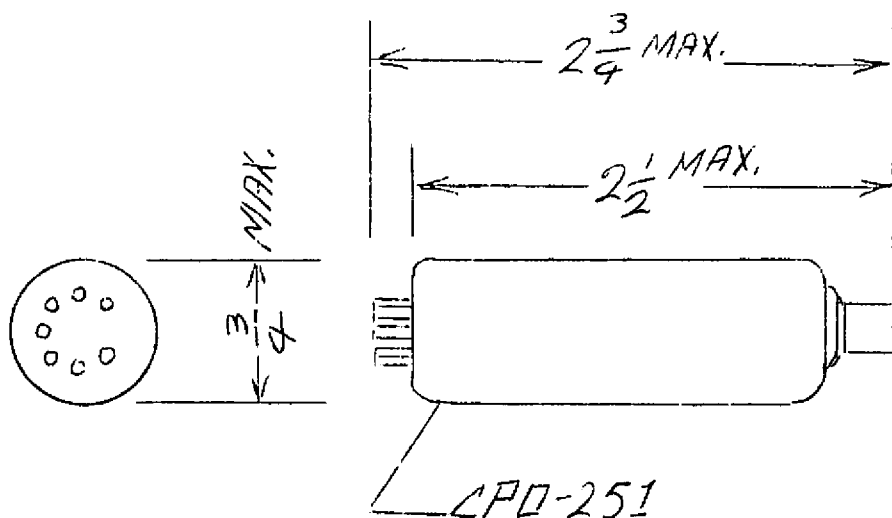
Maximum d.c. Cathode Current - peak pulse	950	ua
Minimum d.c. Cathode Current	20	ua
Ambient Temperature Limits	-65° to +125	°C
and/or Bulb Temperature Limits		

Electrical Data Throughout Life

	<u>Min.</u>	<u>Bogey</u>	<u>Max.</u>	
Anode Voltage Drop at 100 ua	1560	1600	1640	Volts
Anode Breakdown Voltage (1) in Darkness			1800	Volts
(2) in Light			1800	Volts
Regulation 20 to 800 ua			42	Volts
Temperature Coefficient of Voltage Drop (Note 3)		105		mV/°C
-65°C to +125°C Ambient				
Repeatability Note 1 & 2			12	Volts

Mechanical Data

Mounting Position - any	Bulb	T 5½
Net Weight, Maximum - .5 oz.	Base	E7-1
	Top Cap	C1-3

OutlineBasing

Pin	1	2	3	4	5	6	7	Top Cap
	K	K	K	K	K	K	K	Anode

Note 1: Tube operated at 100 ua of current at 25° C ambient temperature.

Note 2: Maximum change of Tube Voltage Drop, as measured before and after a seven-day non-operating hold period.

Note 3: Tube operated at 100 ua.