Excellence in Electronics

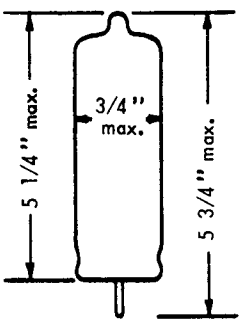
TYPE CK1049

The CK1049 is a low-cost glass, thin wall, halogen-quenched counter tube for use in detecting beta and gamma radiation.

A halogen quenched counter tube has a marked superiority over conventional organic quenched counters. The major improvements are:

1. Relatively unlimited life (Note 1)
2. Not damaged by accidental over voltages (Note 2)
3. Increased pulse height
4. Operation over a wider temperature range (Note 3)

The CK1049 is designed for use in inexpensive prospectors units and demonstration units.



MECHANICAL DATA

ENVELOPE: T-5½ Glass. Thin wall section approximately 3" long. Nominal 35 mg per sq. cm.

BASE: None (.030" pin. Length: 3/8" approximately)

TERMINAL CONNECTIONS:

Anode: Pin at end of tube
Cathode: Connect to graphite coating on outside of bulb (Note 4)

MOUNTING POSITION: Any

ELECTRICAL DATA

Ratings and Normal Operation	Absolute Minimum	Normal Operation	Absolute Maximum	Units
Starting Voltage	700	750	800	Vdc
Operating Voltage	----	900	----	Vdc
Plateau Length (Note 6)	200	----	----	Vdc
Plateau Slope (Note 6)	----	0.10	0.20	%/V
Background at 900 V (Note 7)	----	150	300	cpm
Operating Temperature	-55	25	+75	°C
Life	Unaffected by operation			

Note 1 The life of organic quenched counters is limited because the quenching mechanism results in the dissociation of a definite number of organic molecules per pulse. The end of life in an organic quenched tube is reached when the amount of quenching gas is exhausted. This does not happen in a halogen quenched tube because the halogen gas is not consumed during life.

Note 2 When overvoltages are accidentally applied, the halogen quenched tube will not be damaged even when the tube goes into a continuous discharge.

Note 3 Halogen quenched counters will operate satisfactorily over a temperature range of -50°C to +75°C. The organic quenched tubes operate over a much narrower range because the quenching gas condenses out of the filling mixture.

Note 4 The cathode is an externally applied film of colloidial graphite, which will not scratch or peel off. Connection may be made by any type of spring clamp or wire strap which can contact the cathode area. Do not place clamps around the 3 inch long thin wall section in the center of the bulb.

Note 5 Starting voltage for this tube is that voltage at which uniform pulses of 1/4 volt amplitude appear across a 1 megohm series resistor (500 $\mu\mu$fs coupling condenser).

Note 6 The characteristics of a counter tube can be seriously affected by the associated circuit. The following conditions were used in obtaining the above data.

A scaler was used having a resolving time of 1 microsecond, series resistor of 1 megohm, and a coupling condenser of 500 micromicrofarads. Average counting rate was 100 counts per second.

Note 7 No shielding. Ambient light-5-50 ft. candles. The CK1049 is non-photosensitive, so it is not generally necessary to enclose the tube in a light-tight box or shield.

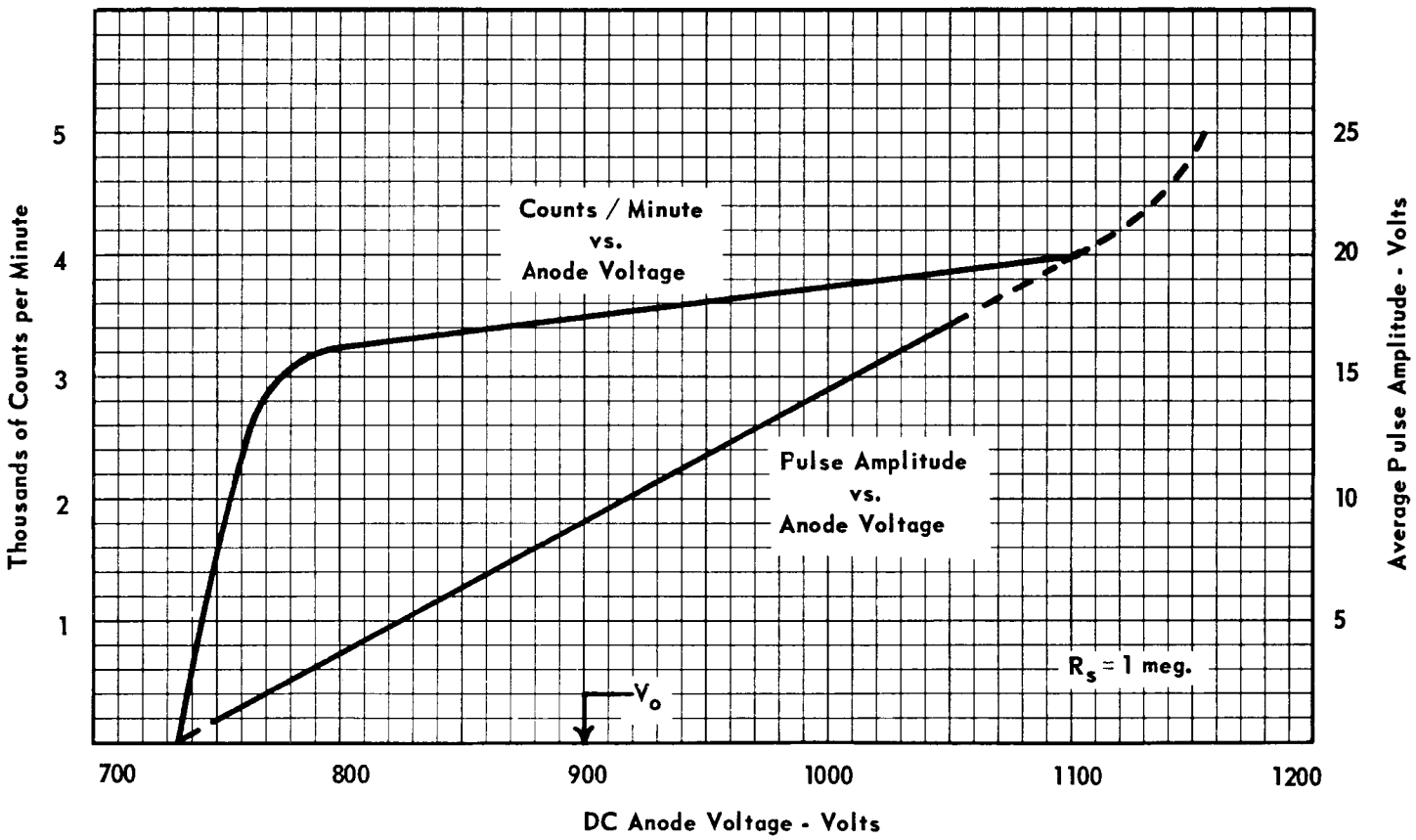
Tentative Data

Printed in U.S.A.

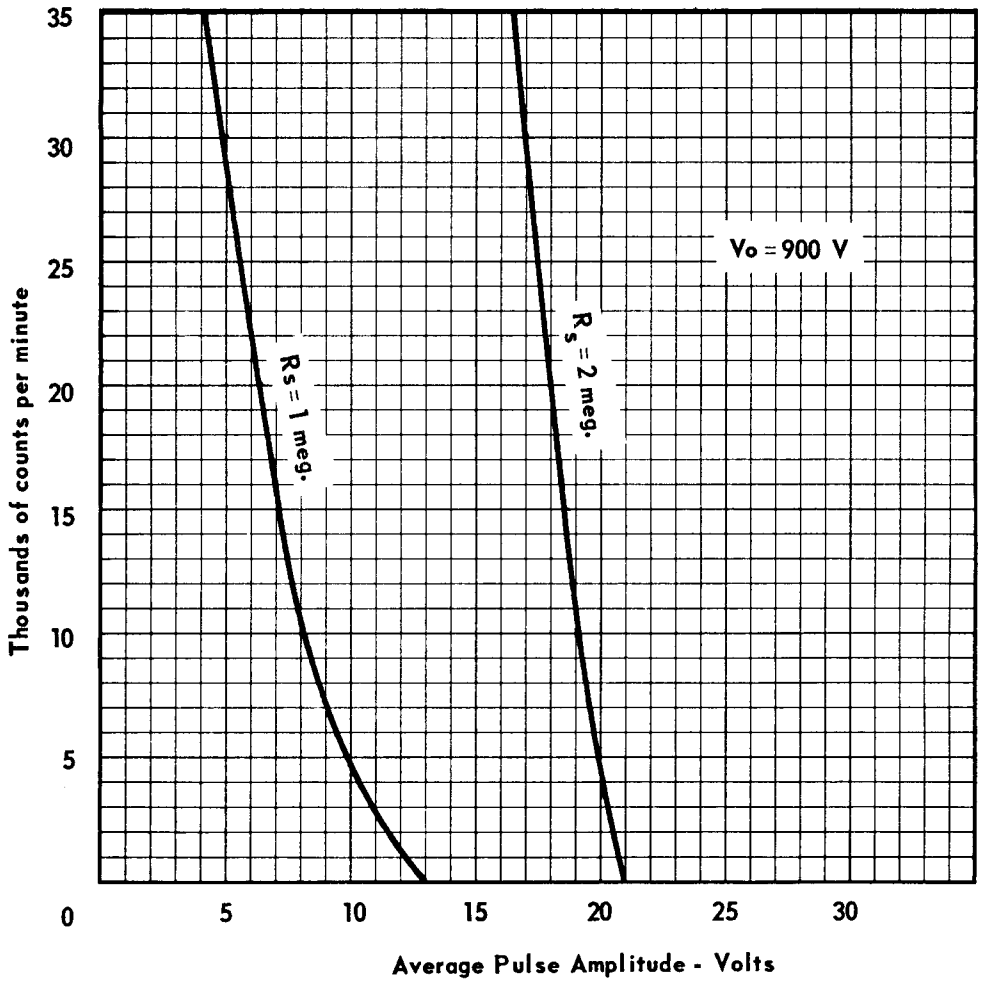
RAYTHEON MANUFACTURING COMPANY

RECEIVING AND CATHODE RAY TUBE OPERATIONS

August 15, 1955 NEWTON 58, MASS.


Counts / Minute
vs.
Anode Voltage
Pulse Amplitude
vs.
Anode Voltage
R_s = 1 meg.
V_o
Thousands of Counts per Minute
Average Pulse Amplitude - Volts
DC Anode Voltage - Volts
1
2
3
4
5
5
10
15
20
25
700
800
900
1000
1100
1200

GEIGER - MUELLER



TEST CIRCUIT