ADVANCE DATA

The Sylvania Type 6948 is a subminiature high mu double triode. This type is characterized by extraordinary freedom from interelement short circuits of short term duration, by high resistance to interelement leakage, and by stable performance. In addition, vibrational output when the tube is subjected to wide band (White Noise) vibration is held to a very low value. It is suitable for service at high altitudes and where severe conditions of mechanical shock, vibration and high temperature are encountered. These characteristics give the type special value in guided missile applications.

MECHANICAL DATA

Bulb	T-3
Base	E8-10 Subminiature Button
Outline	3-11
Basing	8DG
Cathode	Coated Unipotential
Mounting Position	Any

RATINGS [1]

Bulb Temperature (At Hottest Point)	250	°C	Max.
Operational Altitude	80,000	Ft	Max.

DURABILITY CHARACTERISTICS [2]

Impact Acceleration[3]	100	G
Vibrational Acceleration for an Extended Period [4]	10	G
On-Off Heater Cycles [5]	2000	

ELECTRICAL DATA

HEATER CHARACTERISTICS

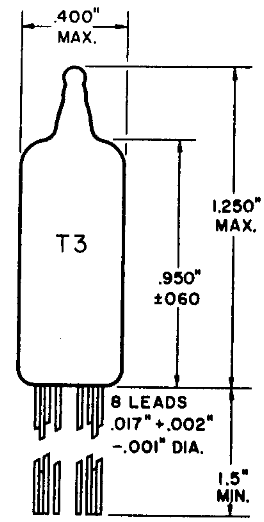
Heater Voltage	6.3	V	
Heater Current	350	mA	
Heater-Cathode Voltage (Absolute Values)	200	v	Max.

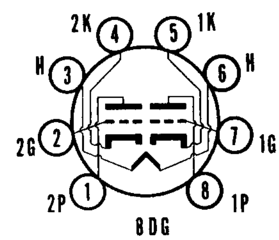
CONTROLLED DETRIMENTS

Interelectrode Insulation [6]	250	Meg	Min.
Total Grid Current [7]	-0.3	μAdc	Max.
Grid Emission [8]	-0.5	μAdc	Max.
Hum Output [9]	15	mv pk-pk	Max.
White Noise Vibration Output [10]	60	mv pk-pk	Max.
	10	mV rms	Max.
Heater-Cathode Leakage [11]	5.0	μAdc	Max.

QUICK REFERENCE DATA

The Sylvania Type 6948 is a subminiature general purpose high mu double triode designed specifically for guided missile service.





SYLVANIA ELECTRIC PRODUCTS INC.

RADIO TUBE DIVISION
EMPORIUM, PA.

Prepared and Released By The TECHNICAL PUBLICATIONS SECTION EMPORIUM, PENNSYLVANIA

May 6, 1957

DIRECT INTERELECTRODE CAPACITANCES (Without External Shield)

Grid to Plate	0.75	μμf	
Input: g to (h + k)	1.6	μμf	
Output Triode No. 1: p to (h + k)	0.20	μμf	
Output Triode No. 2: p to (h + k)	0.25	μμf	
Coupling			
Grid to Grid	0.014	μμf	Max.
Plate to Plate	0.86	μμf	Max.

RATINGS[1] (Absolute Values)

Heater Voltage Variation	6.3 ± 10%	V	Max.
Instantaneous Plate Voltage	360	v	Max.
Plate Voltage	250	Vdc	Max.
Plate Dissipation (Each Plate)	0.5	W	Max.
Plate Current (Each Plate)	10	mAdc	Max.
Positive Grid Voltage	0	Vdc	Max.
Negative Grid Voltage	55	Vdc	Max.
External Grid Circuit Resistance	1.0	Meg	Max.

AVERAGE CHARACTERISTICS (Each Section)

Conditions:			
Heater Voltage	6.3	V	
Plate Voltage	100	Vdc	
Cathode Bias Resistor	1500	Ohms	
Plate Current	0.8	mAdc	
Transconductance	1650	μmhos	
Amplification Factor	70		
Grid No. 1 Voltage for Ib = 10 μA	-3.5	Vdc	
Plate Current Difference between Sections	0.2	mAdc	Max.
Operation Time[12] (maximum)	20	secs	

NOTES:

1. Limiting values beyond which normal tube life and normal tube performance may be impaired.

2. Tests performed as a measure of the mechanical durability of the tube structure.

3. Force as applied in any direction by the Navy Type High Impact (Flyweight) Shock Machine for Electronic Devices. Shock duration = 4 milliseconds.

4. Vibrational forces applied in any direction for a period of six hours repeatedly sweeping the range from 30 cps to 3000 cps and back, with the period of the sweep cycle being three minutes.

5. One cycle consists of the application of E_f = 7.0 V for one minute and interruption of the filament voltage for four minutes. A voltage of E_{hk} = 140 Vac is applied continuously.

NOTES: (Cont'd)

6. Measure each section separately with Ef = 6.3 V; Eg-all = -100 Vdc; Ep-all = -300 Vdc; cathode is positive so that no cathode emission occurs.

7. Measure each section separately with Ef = 6.3 V; Eb = 150 Vdc; Rk = 820 Ohms; Rgl = 1.0 Meg.

8. Each section preheated for five minutes with Ef = 7.5 V; Eb = 250 Vdc; Rk = 1500 Ohms; Rg = 1.0 Meg; then each section tested separately with Ef = 7.5 V; Eb = 100 Vdc; Ecl = -3.5 Vdc; Rg = 1.0 Meg. This is a destructive test and therefore must be conducted on a sample basis.

9. Test each section separately with Ef = 6.3 V (400 cps), Eb = 150 Vdc; Rk = 820 Ohms; RL = 10,000 Ohms; measure the hum output across RL in the frequency band from 20 cps to 5000 cps.

10. Test each section separately with Ef = 6.3 V; Eb = 100 Vdc; Rk = 1500 Ohms; Rp = 10,000 Ohms. The White Noise voltage across Rp is filtered to roll off approximately 35 db between 10,000 cps and 13,000 cps and is then measured with both a peak to peak meter and an rms meter. The vibrational force applied to the tube under test is such that the instantaneous values of acceleration form a White Noise spectrum from 100 cps to 5000 cps. Energy within this spectrum is distributed such that each octave of bandwidth delivers 2.3 G's rms acceleration. The degree of clipping is such that peak values of acceleration exceed 15 G's.

11. Measure each section separately with Ef = 6.3 V; Ehk = ±100 Vdc.

12. Operation time is the time required for a tube to reach a value of plate current equal to 85% of that value attained after three minutes.