TUNG-SOL

DUAL CONTROL PENTODE

MINIATURE TYPE

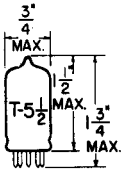
COATED UNIPOTENTIAL CATHODE

HEATER

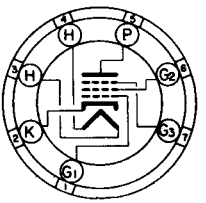
6.3 VOLTS 0.175 AMP.

AC OR DC

ANY MOUNTING POSITION



GLASS BULB



BOTTOM VIEW
MINIATURE BUTTON
7 PIN BASE
7CM

THE 5725/6AS6W/6187 IS A RUGGEDIZED, SHARP CUT-OFF PENTODE VOLTAGE AMPLIFIER OF THE SEVEN PIN MINIATURE CONSTRUCTION. A SEPARATE SUPPRESSOR GRID BASE PIN CONNECTION MAKES DUAL CONTROL APPLICATIONS SUCH AS A CONVERTER, MODULATOR, PHANTASTRON AND GATING SERVICE POSSIBLE, AS WELL AS SINGLE CONTROL USAGE SUCH AS AF, IF, AND RF AMPLIFIERS, MIXERS, ETC. CONTROLS ON THE PRODUCT AVERAGE FOR SUCH CHARACTERISTICS AS PLATE CURRENT, SCREEN CURRENT AND TRANSCONDUCTANCE ASSURE THAT THESE CRITICAL CHARACTERISTICS WILL REMAIN WELL CENTERED. SINCE THIS TUBE MUST BE ABLE TO WITHSTAND SEVERE MECHANICAL TESTS TO MEET TEST SPECIFICATIONS, THE 5725/6AS6W/6187 IS ESPECIALLY SUITED FOR USE IN MILITARY AND INDUSTRIAL AIRBORNE EQUIPMENT WHICH MAY BE SUBJECTED TO SEVERE SHOCK AND VIBRATION.

DIRECT INTERELECTRODE CAPACITANCES

	WITH SHIELD #316	WITHOUT SHIELD	
MAXIMUM GRID #1 TO PLATE (RATED)	0.02	0.025	μμf
INPUT (RATED)	4.0	3.9	μμf
MAXIMUM	4.5	---	μμf
MINIMUM	3.5	---	μμf
OUTPUT (RATED)	3.0	2.2	μμf
MAXUMUM	3.4	---	μμf
MINIMUM	2.6	---	μμf

RATINGS
ABSOLUTE MAXIMUM VALUES

HEATER VOLTAGE	6.3±10%	VOLTS
MAXIMUM DC PLATE VOLTAGE	200	VOLTS
MAXIMUM DC GRID #2 VOLTAGE	155	VOLTS
MAXIMUM DC GRID #3 VOLTAGE	30	VOLTS
MAXIMUM PLATE DISSIPATION	1.65	WATTS
MAXIMUM GRID #2 DISSIPATION	0.55	WATT
MAXIMUM HEATER CATHODE VOLTAGE	±100	VOLTS
MAXIMUM DC CATHODE CURRENT[A]	20	mA
MAXIMUM BULB TEMPERATURE	+165	°C

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

HEATER VOLTAGE	6.3	VOLTS
HEATER CURRENT	0.175	AMP.
PLATE VOLTAGE	120	VOLTS
GRID #3 VOLTAGE	0	VOLTS
GRID #2 VOLTAGE	120	VOLTS
GRID #1 VOLTAGE	-2	VOLTS

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TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS - CONT'D.

PLATE CURRENT	5.2	mA
GRID #2 CURRENT	3.5	mA
TRANSCONDUCTANCE		
GRID #1 TO PLATE	3200	μMHOS
GRID #3 TO PLATE	470	μMHOS

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

E_f = 6.3V, E_b = 120Vdc, E_{c1} =-2Vdc, E_{c2} = 120Vdc, E_{c3} = 0Vdc
EXCEPT AS MODIFIED BELOW

	INITIAL				500 HOUR LIFE TEST		
	INDIVIDUAL MIN.	INDIVIDUAL MAX.	PROD. MIN.	AVG. MAX.	INDIVIDUAL MIN.	INDIVIDUAL MAX.	
HEATER CURRENT	160	190	---	---	160	190	mA
HEATER CATHODE LEAKAGE (E_{hk}=±100Vdc)	---	±10	---	---	---	±10	μAdc
GRID CURRENT (1) (R_{g1}=0.1 MEG.)	0	-0.1	---	---	0	-0.1	μAdc
PLATE CURRENT (1)	2.5	9.0	4.2	6.2	---	---	mAdc
TRANSCONDUCTANCE (1)	2500	4500	2925	3475	2200	4500	μMHOS
Δ AVERAGE TRANS-CONDUCTANCE (1)	---	---	---	---	---	15	PERCENT
INSULATION OF ELECTRODES[B] (E_f=6.3V, E(g_1 TO all)= 100Vdc, g1 neg., E(g_2-all)= 300Vdc, g2 neg., E(g_3-all)= 100Vdc, g3 neg., E(p-all)= 300 Vdc, p neg.)							
R(g1-all)	100	---	---	---	50	---	MEGOHM
R(g2-all)	100	---	---	---	50	---	MEGOHM
R(g3-all)	100	---	---	---	50	---	MEGOHM
R(p -all)	100	---	---	---	50	---	MEGOHM
PLATE CURRENT (2) (E_{c1}=-6Vdc)	5	---	---	---	---	---	μAdc
PLATE CURRENT (3) (E_{c1}=-10Vdc)	---	100	---	---	---	---	μAdc
PLATE CURRENT (4) (E_{c3}=-10Vdc, E_{c1}=-3Vdc)	---	200	---	---	---	---	μAdc
SCREEN CURRENT	1.5	5.5	2.6	4.4	---	---	mAdc
GRID CURRENT (2)[C] (E_f=7.0V)	0	-1.0	---	---	---	---	μAdc
Δ TRANSCONDUCTANCE (2)[D] (E_f=5.7V)	---	15	---	---	---	15	PERCENT
TRANSCONDUCTANCE (3) (E_{c3}=-3Vdc)	500	1300	660	960	---	---	μMHOS
TRANSCONDUCTANCE (4) (E_{c3}=-5Vdc)	900	1700	---	---	---	---	μMHOS
TRANSCONDUCTANCE (5) (E_{c3}=20Vdc)	---	25	---	---	---	---	μMHOS

SPECIAL REQUIREMENTS

	MIN.	MAX.	
VARIABLE FREQUENCY VIBRATION (R_p= 10,000)	---	150	mVac
VIBRATIONAL FATIGUE[E]	---	---	
SHOCK[F] (HAMMER ANGLE = 30°, E_{hk}=100Vdc, HEATER POS, R_{g1}=0.1 MEG)	---	---	

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SPECIAL REQUIREMENTS - CONT'D.

	MIN.	MAX.	
POST SHOCK AND VIBRATIONAL FATIGUE TEST END POINTS			
LOW FREQUENCY VIBRATION	---	450	mVac
HEATER—CATHODE LEAKAGE	---	±30	μAdc
GRID CURRENT (1)	0	-0.4	μAdc
TRANSCONDUCTANCE (1)	2200	---	μMHOS
GLASS STRAIN[G]	---	---	
CONTINUITY AND SHORT[H]			
RF NOISE [J] (E_{c1}=0, E_{ca1}=15.0 mVac, R_k=200, C_k=0.2μf)	---	3.0	mW
NOISE AND MICROPHONICS[KL] (E_f=6.3V, E_{hk}=0, E_{bb}=E_{cc2}=200Vdc, E_{c1}=0, R_p=0.1MEG., R_{g2}=0.5MEG, R_k=1000, C_{g2}=2.0μf)	---	100	mVac
LOW FREQUENCY VIBRATION[M] (R_p=10,000)	---	150	mVac
LOW PRESSURE VOLTAGE BREAKDOWN[N] (PRESSURE =55±5 mm mercury, , TEMP.=25±5°C, HUMIDITY =0, VOLTAGE =500 Vac, 60 CYCLES, SINUSOIDAL WAVEFORM)	500	---	Vac
1 HOUR STABILITY LIFE TEST INTERMITTENT LIFE TEST CONDITIONS	---	---	
STABILITY LIFE TEST END POINTS Δ AVERAGE TRANSCONDUCTANCE (1)	---	10	PERCENT
HEATER CYCLING LIFE TEST (E_f=7.5V, E_{hk}=135Vdc, HEATER POSITIVE, E_{c1}=E_{c2}=E_b=0)	---	---	
HEATER CYCLING LIFE TEST END POINTS HEATER CATHODE VOLTAGE	---	±20	μAdc
INTERMITTENT LIFE TEST (E_b=180Vdc, E_{c1}=0, E_{c2}=125Vdc, E_{hk}=135Vdc, HEATER POSITIVE, R_{g1}=0.1MEG, R_k= 130, MIN. BULB TEMP =+165°C)	---	---	

NOTES

[A] DIFFICULTY MAY BE ENCOUNTERED IF THE TUBE IS OPERATED FOR LONG PERIODS OF TIME WITH VERY SMALL VALUES OF CATHODE CURRENT.

[B] SEE MIL-E-1C 4.8.2

[C] PRIOR TO THIS TEST TUBES TO BE PREHEATED 5 MINUTES AT CONDITIONS INDICATED BELOW. TEST IMMEDIATELY AFTER PREHEATING. E_f=7.0V, E_{c1}=0Vdc, R_k=130 OHMS, R_{g1}=0.1 MEG., E_b=180Vdc, E_{c2}=125 Vdc.

[D] THE VALUE OF TRANSCONDUCTANCE (2) SHALL APPLY TO INDIVIDUAL TUBES AND IS EXPRESSED:

$$\frac{(\text{SM AT } 6.3)-(\text{SM AT } 5.7)}{(\text{SM AT } 6.3)} \times 100$$

[E] SEE MIL-E-1C 4.9.20.6

[F] SEE MIL-E-1C 4.9.20.5

[G] TEST CONSISTS OF COMPLETELY SUBMERGING THE TUBE INTO BOILING WATER (97°C-100°C) FOR A PERIOD OF 15 SECONDS, THEN IMMEDIATELY PLUNGING INTO COLD WATER (0°C±3°C). THE AMOUNT OF WATER SHALL BE AT LEAST 2 LITERS PER FIFTEEN TUBES. TUBES FOR THIS TEST WILL HAVE BEEN EXHAUSTED A MINIMUM OF 48 HOURS PRIOR TO PERFORMANCE OF THIS TEST. REJECT FOR EVIDENCE OF AIR LEAK.

[H] SEE MIL-E-1C 4.7.5

[J] SEE MIL-E-1C 4.10.3.1

[K] SEE MIL-E-1C 4.10.3.5

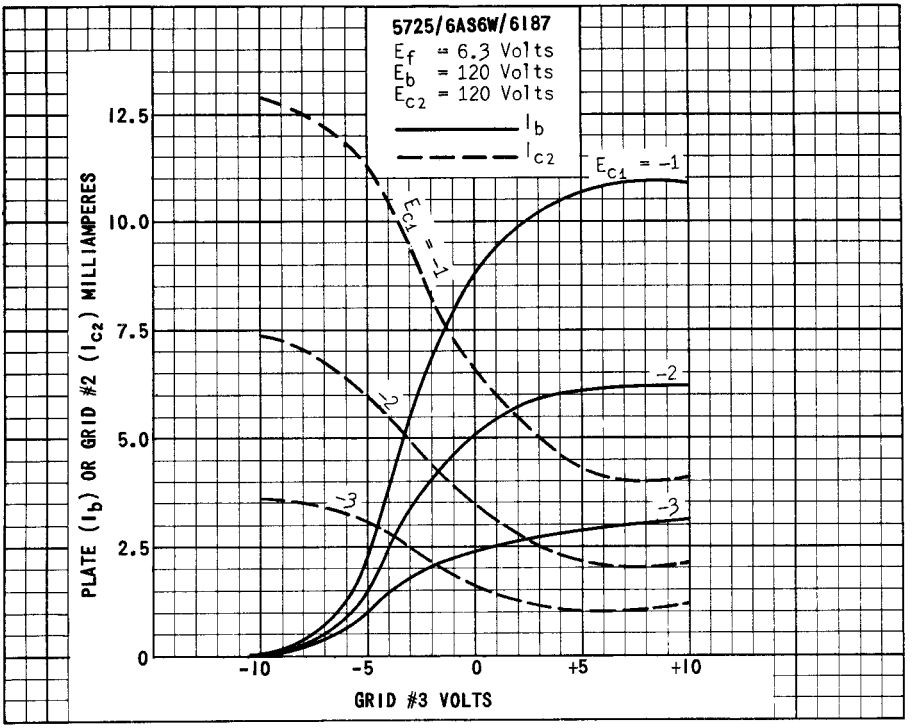
[L] THE CATHODE RESISTOR SHALL BE SHUNTED WITH A CAPACITIVE REACTANCE NOT EXCEEDING 3 OHMS @ 60 CYCLES.

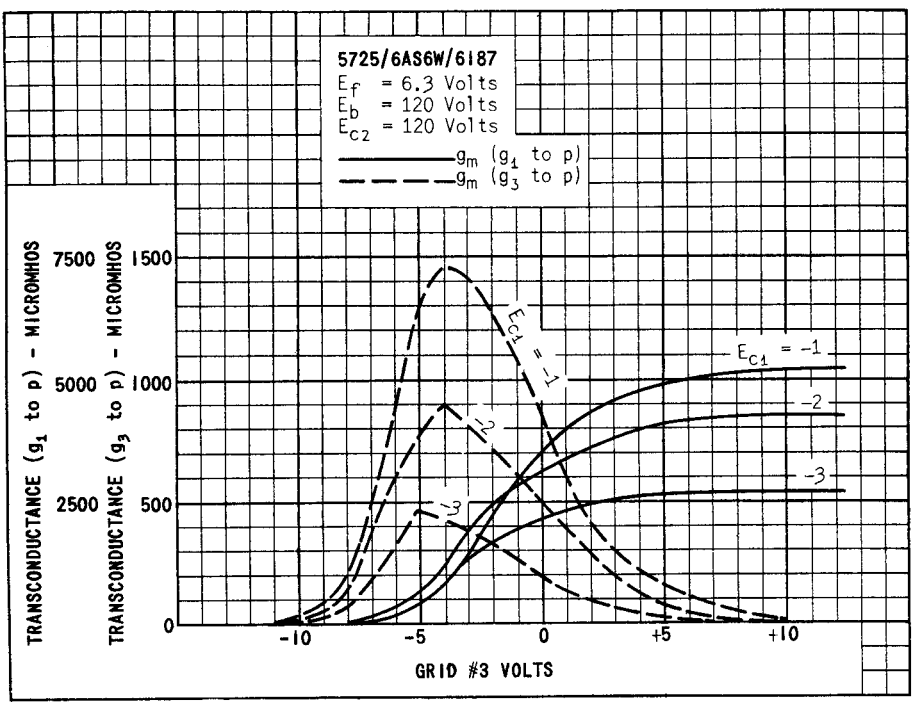
[M] SEE MIL-E-1C 4.9.20.4

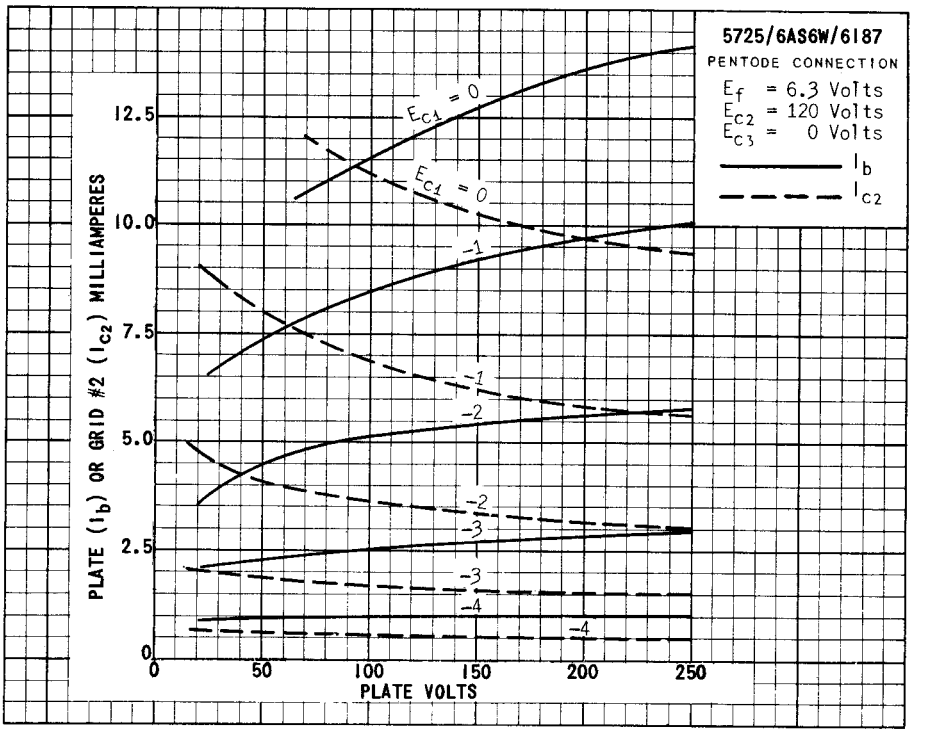
[N] BREAKDOWN SHALL BE DEFINED AS THE VOLTAGE AT WHICH ARCING OCCURS BETWEEN ANODE BASE PIN AND ADJACENT PINS.

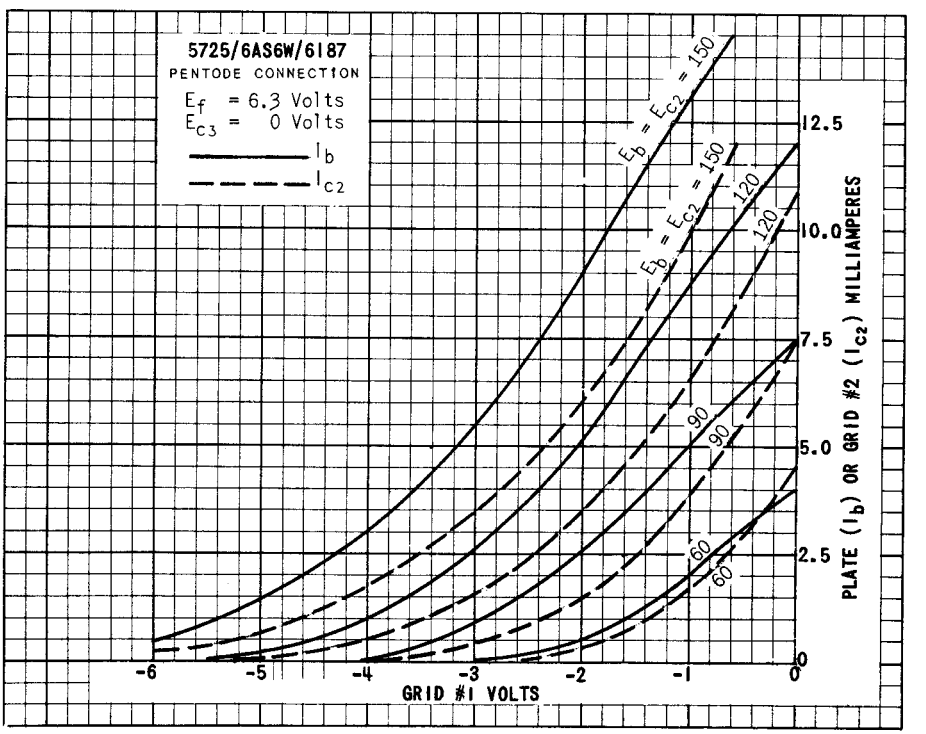
5725/6AS6W/6187

PREMIUM TUBE






5725/6AS6W/6187
PENTODE CONNECTION
E_f = 6.3 Volts
E_{c2} = 120 Volts
E_{c3} = 0 Volts
I_b
I_{c2}
E_{c1} = 0
-1
-2
-3
-4
PLATE (I_b) OR GRID #2 (I_{c2}) MILLIAMPERES
PLATE VOLTS
0
2.5
5.0
7.5
10.0
12.5
50
100
150
200
250


5725/6AS6W/6187
PENTODE CONNECTION
E_f = 6.3 Volts
E_{c3} = 0 Volts
I_b
I_{c2}
$E_b = E_{c2}$ = 150
150
120
90
60
PLATE (I_b) OR GRID #2 (I_{c2}) MILLIAMPERES
GRID #1 VOLTS
0
2.5
5.0
7.5
10.0
12.5
-6
-5
-4
-3
-2
-1
0

5725/6AS6W/6187
PREMIUM TUBE