



Excellence in Electronics

**TYPE
CK5726/
6AL5W/
6097**

The CK5726/6AL5W/6097 is a heater-cathode type double-diode of miniature construction designed for dependable operation under conditions usually found in mobile and aircraft applications. The heaters are designed to minimize the possibility of failure under severe intermittent on-off operation. The heaters for the two diode units are internally connected in series so that a heater failure makes both units inoperative.

MECHANICAL DATA

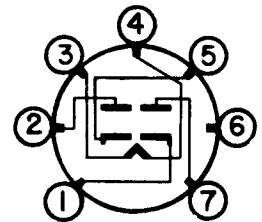
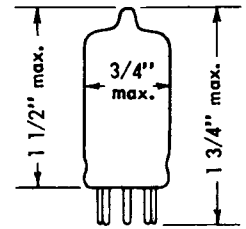
ENVELOPE: T - 5½ Glass
BASE: Miniature Button 7-Pin
TERMINAL CONNECTIONS:

- Pin 1 Cathode, Unit #1
- Pin 2 Plate, Unit #2
- Pin 3 Heater
- Pin 4 Heater
- Pin 5 Cathode, Unit #2
- Pin 6 Internal Shield
- Pin 7 Plate, Unit #1

MECHANICAL RATINGS:

Maximum Impact Acceleration (Shock Test - Note 3) 720 G
Maximum Vibrational Acceleration (96 Hour Fatigue Test - Note 4) 2.5 G
Maximum Bulb Temperature 165 °C

MOUNTING POSITION: Any



BOTTOM VIEW

6BT

ELECTRICAL DATA

Caution-----To Electron Equipment Design Engineers. Special attention should be given to the temperature at which the tubes are to be operated. Reliability will be seriously impaired if maximum bulb temperature is exceeded. The life expectancy may be reduced if conditions other than those specified for life test are imposed on the tube and will be reduced appreciably if absolute maximum ratings are exceeded. Both reliability and performance will be jeopardized if filament voltage ratings are exceeded. Life and reliability of performance are directly related to the degree that regulation of the heater voltage is maintained at its center rated value.

RATINGS AND NORMAL OPERATION:	MIL - E - 1B SYMBOL	ABSOLUTE MINIMUM	NORMAL TEST CONDITIONS (Note 6)	NORMAL OPERATION (Note 5)	ABSOLUTE MAXIMUM	MIL - E - 1B UNITS
Heater Voltage (Note 7)	Ef:	5.7	6.3	6.3	6.9	V
Plate Supply Voltage (RMS) (each plate):	Epp:	----	165	117	----	V _{ac}
Load Resistance	RL:	----	11,000	----	----	ohms
Filter Input Capacitance	CL:	----	8	8	----	µf
Peak Inverse Plate Voltage	epx:	----	----	----	360	v
Steady State Peak Plate Current (each plate)	ib/p:	----	----	----	60	mA
DC Output Current (each plate)	Io/p:	----	----	9	10	mAdc
Peak Transient Plate Current (each plate)	i surge/p:	----	----	----	350	mA
Heater - Cathode Voltage	Ehk:	----	----	----	360	V
Minimum Effective Plate Supply Impedance (per Plate)	Zp/p:	----	----	300	----	ohms

CHARACTERISTICS AND QUALITY CONTROL TESTS (Note 1)
(In the following tests, each unit is tested separately)

TEST	CONDITIONS	AQL %	MIL - E - 1B SYMBOL	MIN.	BOGIE	MAX.	MIL - E - 1B UNITS
ACCEPTANCE TESTS - GROUP C							
Continuity and Short		0.4					
ACCEPTANCE TESTS - GROUP D. COMBINED AQL=1.0%							
Heater - Current :		0.65	If:	275	300	325	mA

Tentative Data

RAYTHEON MANUFACTURING COMPANY

RECEIVING AND CATHODE RAY TUBE OPERATIONS



RELIABLE DOUBLE DIODE

ELECTRICAL DATA (cont'd)

CHARACTERISTICS AND QUALITY CONTROL TESTS (Note 1)(cont'd)

TEST	CONDITIONS	AQL %	MIL - E - 1B SYMBOL	MIN.	BOGIE	MAX.	MIL - E - 1B UNITS
ACCEPTANCE TESTS GROUP D (cont'd)							
Heater - Cathode Leakage:	Ehk= 100Vdc; Heater Positive	0.65	lhk:	----	----	10	μ Adc
	Ehk= 100Vdc; Heater Negative		lhk:	----	----	10	μ Adc
Operation:	Full Wave Operation	0.65	lo:	16	18	----	mAdc
Emission (1):	Eb= 10 Vdc	0.65	ls:	40	----	----	mAdc
ACCEPTANCE TESTS - GROUP E							
Insulation of Electrodes:	Ef= 6.3V; Ep - all= -300Vdc	2.5	R (p - all):	100	----	----	Meg.
	Esd - all= -300 Vdc		R (sd - all):	100	----	----	Meg.
Emission (2):	Eb= 7.0Vdc; (Note 8)	2.5	Δ ls (2):	----	----	15	%
Plate Current:	Ebb= 0; Rp= 40,000 ohms	2.5	lb:	2	----	20	μ Adc
Plate Current Difference between diodes:	Ebb= 0; Rp= 40,000 ohms	2.5	lb:	----	----	5	μ Adc
Hum:	Ef= 7.0 Vac	2.5	Eo:	----	----	10	mVac
ACCEPTANCE TESTS - GROUP F							
Capacitance: (Note 2)	Plate #1 to Plate #2	6.5	C _{pp} :	----	----	0.026	μ ft
	Plate to (htktint.sd.txt.sd.)		C:	2.4	----	4.0	μ ft
	Cathode to (htptint.sd.txt.sd.)		C:	3.1	----	4.7	μ ft
Low Pressure Voltage Breakdown:		6.5		500	----	----	Vac
ACCEPTANCE TESTS - GROUP A							
Shock:	Hammer Angle= 48°; E _{pp} /p=0	----	-----	----	----	----	-----
Fatigue:	(Note 3)	6.5		----	----	----	-----
Post Shock and Fatigue Test End Points:	96 Hours: (Note 4)				----	----	----
Heater - Cathode Leakage:	Ehk= + 100Vdc		lhk:	----	----	15	μ Adc
	Ehk= - 100Vdc		lhk:	----	----	15	μ Adc
Operation:	Full - Wave Circuit		lo:	14	----	----	mAdc
ACCEPTANCE TESTS - GROUP B							
Glass Strain:		2.5	-----	----	----	----	-----
TESTS	CONDITIONS	AQL %	MIL - E - 1B SYMBOL	MIN.	MAX.	MIL - E - 1B UNITS	Maximum defects per Characteristics 1st Sample Combined Sample
ACCEPTANCE LIFE TEST							
Heater Cycling:	Ef= 7.5V; Ehk= + 135Vdc; Epp= 0; 1 min. on, 1 min. off	----	-----	2000	----	Cycles	
Heater Cycling Life Test End Points:							
Heater - Cathode Leakage:	Heater Positive	----	lhk:	----	20	μ Adc	
	Heater Negative	----	lhk:	----	20	μ Adc	
1 Hour Stability Life Test:	TA= Room; Ehk= Eot 117Vac; Full wave circuit	----	-----	----	----	-----	
1 Hour Stability Life Test End Points:							
Change in Emission (2) of individual tubes from initial:	Eb= 7.0 Vac (Typical sample size= 50 tubes)	1.0	Δ ls (2):	----	10	%	
100 Hour Survival Rate Life Test:	TA= Room; Ehk= Eot 117Vac; full wave circuit	----	-----	----	----	-----	
100 Hour Survival Rate Life Test End Points:							
Inoperatives:	(Typical sample size= 200 tubes)	0.65	-----	----	----	----	
500 and 1000 Hour Intermittent High Temperature Life Test:	T Bulb= 165°C; Ehk= Eot 117Vac; Full wave circuit.	----	-----	----	----	-----	

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RELIABLE DOUBLE DIODE

ELECTRICAL DATA (cont'd)

TESTS	CONDITIONS	AQL %	MIL - E - 1B Symbol	MIN.	MAX.	MIL - E - 1B UNITS	Maximum defects per Characteristics 1st Sample	Combined Samples
ACCEPTANCE LIFE TEST (cont'd)								
500 Hour Intermittent High Temperature Life End Points:	(Typical sample size=20 tubes 1st sample 40 tubes 2nd sample) (Total allowable combined defects=4 tubes 1st sample 8 tubes 1st and 2nd sample)							
Inoperatives:		----	-----	----	----	-----	1	3
Heater Current:		----	lf:	275	325	mA	1	3
Heater - Cathode Leakage:		----	lhk:	----	10	μAdc	1	3
Emission (1):		----	ls(1):	35	----	mAdc	1	3
Plate Current:		----	lb:	2	20	μAdc	2	5
Electrode Insulation:	(p-all) (sd-all)	----	Rp-all:	50	----	Meg.	2	5
		----	Rsd-all:	50	----	Meg.	2	5
Emission (2):		----	ls(2):	----	15	%	2	5
1000 Hour Intermittent High Temperature Life Test End Points:	(Typical sample size=20 tubes 1st sample 40 tubes 2nd sample)							
Inoperatives:				----	----		2	5
Heater Current:			lf:	275	325	mA	2	5
Heater - Cathode Leakage:			lhk:	----	10	μAdc	2	5
Emission (1):			ls(1):	30	----	mAdc	2	5

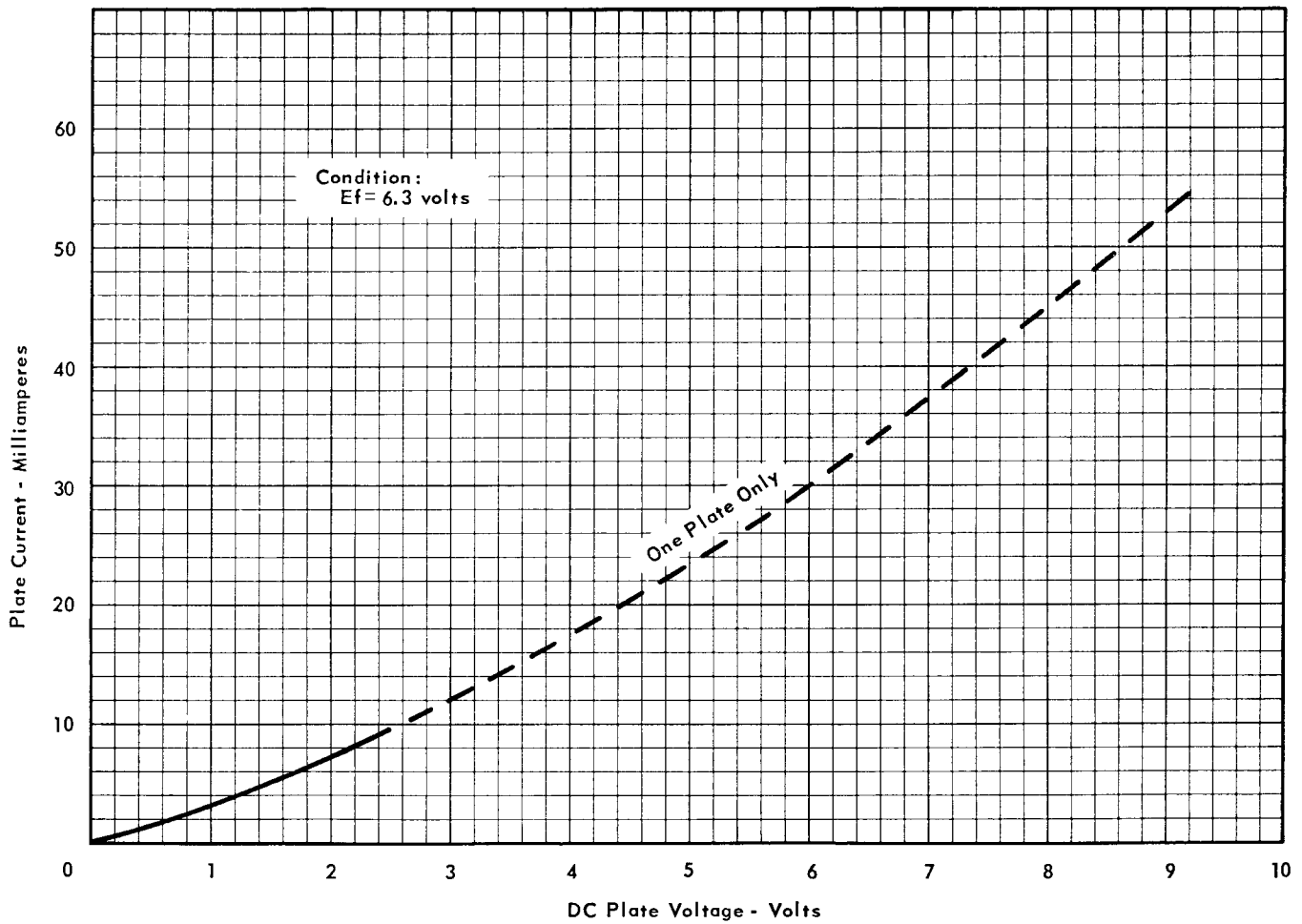
NOTES

- Note 1: Characteristics, Quality Control Test Procedures, and Inspection Levels are made according to the appropriate paragraphs of MIL - E - 1B, "Inspection Instructions for Electron Tubes," and MIL - STD - 105A.
- Note 2: With Shield #316.
- Note 3: Test Conditions and Acceptance Criteria per Shock Test Procedures of Mil - E - 1B basic specifications.
- Note 4: Test Conditions and Acceptance Criteria per Fatigue Test Procedures of MIL - E - 1B basic specifications.
- Note 5: These normal values represent conditions at which control of reliability may be expected.
- Note 6: These normal test conditions are used for all characteristic tests unless otherwise stated under the individual test item.
- Note 7: For most applications the performance will not adversely be affected by ±10% heater voltage variation, but when the application can provide a closer control of heater voltage an improvement in reliability will be realized.
- Note 8: Change of emission (2) for individual tubes from that value measured at Ef=6.3 V to that value measured at Ef=5.7 V.



RELIABLE DOUBLE DIODE

AVERAGE PLATE CHARACTERISTICS



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RECEIVING AND CATHODE RAY TUBE OPERATIONS



RELIABLE DOUBLE DIODE

AVERAGE CHARACTERISTICS
Half-Wave Rectification - Single Diode

