MINISTRY OF SUPPLY - DLRD/RRL

VALVE ELECTRONIC **CV4042**

Specification MOS/CV4042 Issue 2 Dated 30th April, 1958 To be read in conjunction with K1001, BS448 & BS1409	SECURITY Specification: UNCLASSIFIED Valve: UNCLASSIFIED

Indicates a change ←

TYPE OF VALVE - Reliable High-vacuum, Half-wave Rectifier with flexible leads

CATHODE - Indirectly-heated

ENVELOPE - Glass

PROTOTYPE - CV 371

MARKING
See K1001/4

BASE
B7G/F

CONNECTIONS

Lead	Electrode
1	Internally connected
2	Cathode
3	Heater
4	Heater
5	Internally connected
6	Internally connected
7	Internally connected
TC	Anode

RATING

All limiting values are absolute

			Note
Heater Voltage	(V)	4.0	
Heater Current	(A)	0.5	
→ Max. Anode Voltage (r.m.s.)	(kV)	2.0	
→ Max. Working Peak Inverse Voltage	(kV)	5.0	
→ Max. No-load Peak Inverse Voltage	(kV)	6.0	
Max. DC Output Current	(mA)	30	
Max. Heater-cathode Voltage	(V)	10	A
Max. Peak Cathode Current	(mA)	180	
Max. Reservoir Condenser (50 c/s)	(uF)	1.1	
→ Min. Limiting Impedance	(ohms)	4,500	
Min. H.T. Switching Delay for full rating	(secs)	20	
Max. Shock (short duration)	(g)	500	
Max. Acceleration (continuous operation)	(g)	2.5	

TOP CAP

See K1001/A.I/D5.2 and in addition a flexible lead 38 mm min. Length

DIMENSIONS
See K1001/A.I/D11

Dimension (mm)	Min.	Max.
A. Seated height	-	54
B. Diameter	16	19
D. Lead length	38	-

MOUNTING POSITION
Any

NOTES

A. The valve shall be operated with cathode connected to one side of the heater.

B. Caution to Electronic Equipment Design Engineers: Special attention should be given to the temperature of valves to be operated in aircraft. Reliability will be seriously impaired if the maximum bulb temperature is exceeded. The life expectancy may be reduced if conditions other than those specified for life test are imposed on the valve and will be reduced appreciably if absolute maximum ratings are exceeded. Both reliability and performance will be jeopardised if heater voltage ratings are exceeded: life and reliability performance are directly related to the degree that regulation of the heater voltage is maintained at its centre-rated value.

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TESTS

CV4042

To be performed in addition to those applicable in K1001

Test Conditions - unless otherwise specified

Vh (V)	Va (V)	C (uF)	
4.0	55	1.0	Note 1

K1001	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits Min.	Limits Bogey	Limits Max.	Units
→ 7.1	Glass Strain	No voltages	6.5	I					
	GROUP A								
	Voltage Breakdown	Notes 2 and 3		100%					
	GROUP B	Combined AQL	1.0						
	Heater Current		0.65	II	Ih	0.45	0.5	0.55	A
	Anode Current	Note 1	0.65	II	Ia	50	-	-	mA
	Heater-cathode Leakage Current	Vhk = 10V	0.65	II	Ihk	-	-	10	uA
	GROUP C								
5.12	Lead Fragility	No voltages	6.5	IA					
	GROUP D	Combined AQL	6.5						
→ 11.3	Fatigue	Vh = 4.0V switched 1 min on, 3 mins off Va = 0 Min pk accel = 5g Frequency = 170 c/s Duration = 30, 39, 30 hrs.		IA					
	Post Fatigue Tests								
	Voltage Breakdown	Notes 2 and 3	2.5						
	Heater Current		2.5		Ih	0.45	-	0.55	A
	Anode Current	Note 1	2.5		Ia	48	-	-	mA
11.4	Shock	Hammer angle = 30° No voltages		IA					
	Post Shock Tests								
	Voltage Breakdown	Notes 2 and 3	2.5						
	Heater Current		2.5		Ih	0.45	-	0.55	A
	Anode Current	Note 1	2.5		Ia	48	-	-	mA

K1001	Test	Test Conditions	AQL %	Insp. Level	Sym-bol	Limits Min.	Bogey	Max.	Units
	GROUP E								
A VI /5	Life	Note 2							
A VI /5.1	Stability Life Test			I					
	Change in Anode Current		1.0		IA	-	-	10	%
A VI /5.3	Intermittent Life Test	Note 2		IA					
	Life Test End-point (500 hrs)	Combined AQL	6.5						A
A VI /5.6	Inoperatives		2.5						
	Heater Current		2.5		Ih	0.45	-	0.55	A
	Anode Current	Note 1	2.5		Ia	48	-	-	mA
	GROUP F								
A IX /2.5	Electrical retest after 28-day holding period			100%					
A VI /5.6	Inoperatives		0.5						

NOTES

1. Alternatively, the valve may be tested at Ia = 50mA when the following limits shall apply:

   GROUP B: Va = 55V max

   GROUP D: Post Fatigue Tests: Va = 56.5V max
   Post Shock Tests : Va = 56.5V max

   GROUP E: Life Test: Va = 56.5V

2. The valve shall be tested in a half-wave rectifier circuit with 2.0 kV r.m.s. 50 c/s input applied through a total external impedance of 4,500 ohms including effective transformer impedance. The load resistance shall be adjusted to give 30 mA.

3. The load conditions shall be maintained for 10 seconds, then the H.T. voltage shall be switched on and off 3 times at 5-second intervals. There shall be no persistent sparking, blue glow or distortion of the electrodes.