MINISTRY OF SUPPLY - DLAD/RRE.

VALVE ELECTRONIC **CV 4062**

Specification MOS/CV4062	SECURITY	
	Specification	Valve
Issue 2, Dated 23 Nov. 1956	UNCLASSIFIED	UNCLASSIFIED
To be read in conjuction with K1001 , BS448 and BS1409		

Indicates a change →

TYPE OF VALVE - Reliable Low Impedance Pentode

CATHODE - Indirectly-heated

ENVELOPE - Glass

PROTOTYPE - CV2179

MARKING

See K 1001/4.

BASE

See BS 448: B7G/1.1

RATING

All limiting values are absolute.

			Note
Heater Voltage	(V)	6.3	
Heater Current	(A)	0.64	
Max. Anode Voltage	(V)	300	
Max. No-load Anode Voltage	(V)	500	
Max. Anode Dissipation	(W)	9	
Max. Screen Voltage	(V)	300	
Max. Screen Dissipation	(W)	3	
Max. Heater - Cathode Voltage	(V)	250	
Pentode Connection (Note B)			
Mutual Conductance	(mA/V)	9.5	
Amplification Factor		220	
Anode Impedance	(ohms)	23000	
Triode Connection (Note C)			
Mutual Conductance	(mA/V)	12	
Amplification Factor		10	
Anode Impedance	(ohms)	835	
Max. Bulb Temperature	(°C)	200	D
Max. Altitude for full rating	(ft)	10000	D
Max. Shock (short duration)	(g)	500	D
Max. Acceleration (continuous vibration)	(g)	2.5	D

CAPACITANCES (pF)

Cag1 (nom.)	0.45
Cgle (nom.)	11.0
Cae (nom.)	8.5

CONNECTIONS

Pin	Electrode	
1	Control grid	g1
2	Cathode & Suppressor	k + g3
3	Heater	h
4	Heater	h
5	Anode	a
6	Internally connected	i/c
7	screen grid	g2

Dimensions

See BS 448/B7G2.1.

Size Ref. No. 5

Dimensions (mm)	Min.	Max.
A seated height	-	63.5
B diameter	16	19
D overall length	-	70.5

MOUNTING POSITION

Any

NOTES

B. Measured at Va = 165V: Vg2 = 165V; Ia = 55mA

C. Measured at Va = Vg2 = 165V; Ic = 65mA

D. 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

To be performed in addition to those applicable in K1001

Tests shall be performed in the specified order unless otherwise agreed with the Inspecting Authority.

Test Conditions unless otherwise specified

Vh(V)	Va(V)	Vg2(V)	Ia(mA)
6.3	165	165	55

K1001	Test	Test Conditions	AQL %	Insp. Level	Symbol	LIMITS Min	LAL	Bogey	UAL	Max	ALD	Units
7.1	Glass Strain	No Voltages	6.5	1								
	GROUP A											
	Insulation	Vg_1 -all = -100V		100%	R	100	-	-	-	-		M
		Vg_2 -all = -300V		100%	R	100	-	-	-	-		M
		Va -all = -300V		100%	R	100	-	-	-	-		M
	Reverse Grid Current	Rg1 = 500k Max		100%	Ig1	-	-	-	-	1.5		µA
	GROUP B	Combined AQL	1.0									
	Heater Current		0.65	II	Ih	0.58	-	0.64	-	0.70		A
	H-C Leakage Current	Vhk = 250V cathode positive	0.65	II	Ihk	-	-	-	-	50		µA
				V2	Ihk	-	-	-	10.0	-		µA
	Negative Grid		0.65	II	Vg1	6	-	-	-	12		V
	Voltage (1)			V2	" "	-	7.5	9	10.5	-	3.33	V
	Screen Current		0.65	II	Ig2	7	-	-	-	11		mA
	Mutual Conductance		0.65	II	gm	7	-	-	-	12		mA/V
				V2	gm	-	8.25	9.5	10.75	-	2.78	mA/V
	GROUP C	Combined AQL	6.5									
	Negative Grid Voltage(2)	Ia = 30 µA	2.5	I	Vg1	-	-	-	-	40		V
	Emission	Ia = 120mA Anode + g1 + g2 Strapped	2.5	I	Va	-	-	-	-	20		V
	Vibration Noise	Va(b) = 250 V; Rl = 2k Rg1 = Rg2 = 10k Rk = 470, Ck = 200 uF	2.5	I	VaAC	-	-	-	-	75		mV RMS
	Amplification Factor	Note 1	2.5	I	µ	7.5	-	-	-	12.5		
	GROUP D											
7.2	Base Strain		6.5	IA								
	Capacitances	Measured on 1Mc/s bridge with the valve mounted in a fully screened socket. No shield.	6.5	IC	Cag1	-	-	0.45	-	0.6		pF
					Cge	10	-	11	-	12		"
					Cae	7.5	-	8.5	-	9.5		"

TESTS (Cont'd)

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K1001	Test	Test Conditions	AQL %	Insp Level	Symbol	LIMITS Min	LAL	Bogey	UAL	Max	ALD	Units
	GROUP E											
11.2	Resonance Search	RL = 2.2K Frequency = 25-500 c/s	2.5	IC	Va(AC) f	- 200	-	-	-	record. -		mV RMS c/s
11.3	Fatigue	Vh = 6.9V switched 1 min. on 3 mins. off Va = Vg2 = 0 Acceleration = 5g; Duration = 30, 39, 30 hrs Frequency = 1700c/s		IA								
	Post Fatigue Tests	Combined AQL	6.5									
	H-C Leakage Current	Vhk = 250V	2.5		Ihk	-	-	-	-	100		µA
	Reverse Grid Current	Rg1 = 500k max	2.5		Ig1	-	-	-	-	2.5		µA
	Mutual Conductance		2.5		gm	6.5	-	-	-	-		mA/V
	Vibration Noise	Note 2	2.5		Va (AC)	-	-	-	-	100		mV RMS
11.4	Shock	Hammer angle = 30° No voltages		IA								
	Post Shock Tests	Combined AQL	6.5									
	H-C Leakage Current	Vhk = 250V	2.5		Ihk	-	-	-	-	100		µA
	Reverse Grid Current	Rg1 = 500 k max	2.5		Ig1	-	-	-	-	2.5		µA
	Mutual Conductance		2.5		gm	6.5	-	-	-	-		mA/V
	Vibration Noise	Note 2	2.5		Va (AC)	-	-	-	-	100		mV RMS
	GROUP F											
AV1/5	Life	Va = 165V Ia = 55mA Vg2 = 165V Vhk = 200V AC										
AV1/5.1	Stability Life Test Change in Mutual Conductance		1.0	I	gm	-	-	-	-	10		%
AV1/5.3	Intermittent Life Test			IA								
	Life Test End-point (500 hours)	Combined AQL	6.5									
	Inoperatives		2.5									
	Heater Current		2.5		Ih	0.58	-	-	-	0.7		A
	H-C Leakage Current	Vhk = 250V	2.5		Ihk	-	-	-	-	75		µA
	Reverse Grid Current	Rg1 = 500 k max	2.5		Ig1	-	-	-	-	2		µA
	Mutual Conductance		2.5		gm	6.5	-	-	-	12		mA/V
	do Average change				gm	-	-	-	-	15		%
	Negative Grid Voltage		4.0		Vg1	5.5	-	-	-	12		V
	Electrode Insulation	See Group A	4.0		R	50	-	-	-	-		M
	Life Test End-point (1000 hours)	Combined AQL	10									
	Inoperatives		4.0									
	Heater Current		4.0		Ih	0.58	-	-	-	0.7		A
	H-C Leakage Current	Vhk = 250V	4.0		Ihk	-	-	-	-	100		µA
	Reverse Grid Current	Rg 1 = 500 k max	4.0		Ig1	-	-	-	-	2.5		µA
	Mutual Conductance		4.0		gm	6.0	-	-	-	12		mA/V
	Negative Grid Voltage		6.5		Vg1	5.0	-	-	-	12		V

K1001	Test	Test Conditions	AQL %	Insp. Level	Symbol	LIMITS						Units
						Min.	LAL	Bogey	UAL	Max.	Ald	
	GROUP C											
AIX/ 2.5	Re-test after 28 days holding period											
AVI/ 5.6	Inoperatives		0.5	100%								
	Reverse Grid Current	Rg1 = 500K Max	0.5	100%	Ig1	-	-	-	-	2.5		μA

NOTES

1. Measured with anode and screen grid connected together.

   Va + Vg2 = 165V

   Ia = 65mA

2. The test conditions for the Vibration Noise test in Group C shall apply.