SPECIFICATION MOS/CV.4097

Issue No. 1 dated 20.5.59

AMENDMENT NO. 1

Page 4. LIFE

Under Life Test End Point delete "250 hours"
insert "500 hours"

Same Test against Peak Anode Current
delete 100 ma (min)
insert 85 ma (min)

T.V.C.
for Signals Research and
Development Establishment

May, 1961

N.56928/D

Ministry of Supply - D.L.R.D./S.R.D.E.

VALVE ELECTRONIC **CV4097**

Specification MOS/CV 4097
Issue 1, Dated 20.5.59
To be read in conjunction with K1001, B448 and BS1409

SECURITY	
Specification	Valve
Unclassified	Unclassified

→ Indicates a change

Type of Valve - R.F. Power Amplifier Beam Tetrode
Cathode - Directly Heated
Envelope - Glass, Unmetallised
Prototype - VX6137

MARKING
K1001/4

BASE
BS.448/B9A

RATING
(All limiting values are absolute)

			NOTE
Filament Voltage (//)	(V)	2.5	
Filament Voltage (Series)	(V)	5.0	
Filament Current (//)	(mA)	460	
Filament Current (Series)	(mA)	230	
Max. Anode Voltage	(V)	150	
Max. Anode Dissipation	(W)	5.0	
Max. Screen Voltage	(V)	150	
Max. Screen Dissipation	(W)	2.0	
Anode Current	(mA)	28	A
Screen Current	(mA)	2.0	A
Mutual Conductance	(mA/V)	4.3	A
Max. Operating Frequency	(mc/s)	100	
Max. Shock (Short Duration)	(g)	500	
Max. Acceleration (Continuous operation)	(g)	2.5	

Capacitances (pF)

C_{in} (nom.)	8.5
C_{out} (nom.)	4.6
Ca, g_1 (max.)	0.17

CONNECTIONS

PIN	ELECTRODE
1	a
2	NC
3	bp
4	f(-), (f(+)//)
5	f(+)
6	g2
7	g1
8	bp
9	ftap, (f(-)//)

DIMENSIONS

See BS.448/B9A/2.1
Size Reference No. 3

Dimensions (millimetres)	Min.	Max.
A. Seated Height	-	60.5
C. Diameter	19.0	22.2
D. Overall Height	-	67.5

MOUNTING POSITION
ANY

NOTE

A. Measured Vf = 5.0, Va = Vg2 = 150, Vg1 = -10, Vbp = 0

Z.19235.

CV4097

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

Vf(V)	Va(V)	Vg_1(V)	Vg_2(V)	Vbp(V)
5.0 DC	150	-10	150	0

K.1001 Ref.	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits Min.	Limits Max.	Units
7.1	Glass Strain	No voltages	6.5	I				
	GROUP A							
	Electrode Insulation	Vf = 0 Vg_1 - all = -100V		100%	R	100		MΩ
		Vg_2 - all = -300V		100%	R	100		MΩ
		Va - all = -300V		100%	R	100		MΩ
		Vbp - all = -300V		100%	R	100		MΩ
	Reverse Grid Current			100%	Ig_1	-	2	μA
	GROUP B	Combined AQL	1.0	II				
	Filament Current		0.65	II	If	210	250	mA
	Anode Current		0.65	II	Ia	21	35	mA
	Screen Current		0.65	II	Ig_2	0	4.0	mA
	Mutual Conductance		0.65	II	gm	3.2	5.4	mA/V
	g_1 Cut-off voltage	Ia = 2 mA	0.65	II	$-Vg_1$	-	25	V
	Peak Anode Current	Va(b) = Vg_2 = 120V R_L = 320Ω Vf = 5.0V D.C. V_{sig} = 20V r.m.s. Rg_1 = 22kΩ Vg_1 = 0 (Note 1)	0.65	II	$Ia_{(pk)}$	110	-	mA
	GROUP C							
	Change in Peak Anode Current	Va(b) = Vg_2 = 120V R_L = 320Ω Vf = 4.5V D.C. V_{sig} = 20 V r.m.s. Rg_1 = 22kΩ Vg_1 = 0 (Note 1)	2.5	I	$\Delta Ia(pk)$	-	25	mA
11.1	Vibration Noise	Va(b) = Vg_2 = 150V Vg_1 = -10V Vf = 5.0 V D.C. R_L = 2kΩ (Note 2)	2.5	I	Va(AC)	-	500	mVrms

TESTS (Cont'd)

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K.100 Ref.	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits Min.	Limits Max.	Units
	GROUP D							
7.2	Base Strain		6.5	IA				
	Capacitances	Measured on 1 Mc/s Bridge with the valve mounted in a fully screened socket. No shield or skirt.	6.5	IC	C_{a,g_1}	-	0.17	pF
					C_{in}	6.5	10.5	pF
					C_{out}	5.6	7.6	pF
	Functional Test			TA		The valve shall operate satisfactorily in W.S. A.41 and A.42.		
	GROUP E							
11.2	Resonance Search	$V_{a(b)} = V_{g_2} = 150V$ $V_f = 5.0V$ $V_{g_1} = -10V$ $R_L = 2k\Omega$ (1) 25-200 c/s	2.5	IC	Va(AC)	To be recorded mV rms		
		(2) 200-500c/s (Note 2)			Va(AC)	To be recorded mV rms		
11.3	Fatigue	$V_f = 5.0V$ r.m.s. $V_a = V_{g_2} = 150V$ $V_{g_1} = -10V$ Voltages switched 1 min on 3 min. off. Frequency = 170 c/s Min. peak acceleration=5g Duration = 30, 39, 30 hrs.		IA				
	Post Fatigue Tests							
	Reverse Grid Current		2.5		Ig1	-	4	μA
	Peak Anode Current	As in Group B			Ia(pk)	To be recorded mA		
	Vibration Noise	As in Group C	2.5		Va(AC)	-	1000	mVrms
11.4	Shock	Hammer angle = 30° No voltages		IA				
	Post Shock Tests							
	Reverse Grid Current		2.5		Ig1	-	4	μA
	Peak Anode Current	As in Group B			Ia(pk)	to be recorded mA		
	Vibration Noise	As in Group C	2.5		Va(AC)	-	1000	mVrms

TESTS (Cont'd)

K.1001 Ref.	Test	Test Conditions	AQL %	Insp. Level	Sym-bol	Limits Min.	Limits Max.	Units
	GROUP F							
A VI/ 5	Life	Va = 150 V Vg1 = Adjust to give I_a = 33mA Vg_2 = 150 V Vf = 5.0 V r.m.s.						
A VI/ 5.1	Stability Life Test							
	Change in Peak Anode Current	As in Group B	1.0	I	Ia(pk)	-	20	%
	Life Test End point (250hrs.)	Combined AQL	6.5	IA				
A VI/ 5.6	Inoperatives		2.5					
	Reverse Grid Current		2.5		Ig1	-	4	µA
	Peak Anode Current	As in Group B	2.5		Ia(pk)	100	-	mA
11.2	Electrode Insulation	Vf = 0	4.0					
		Vg_1-all = -100V			R	50		MΩ
		Vg_2-all = -300V			R	50		MΩ
		Va-all = -300V			R	50		MΩ
		Vbp-all = -300V			R	50		MΩ
	GROUP G							
A IX/ 2.5	Electrical re-test after 28 days holding period			100%				
A VI/ 5.6	Inoperatives		0.5					
	Reverse Grid Current		0.5		Ig1	-	3	µA

NOTES

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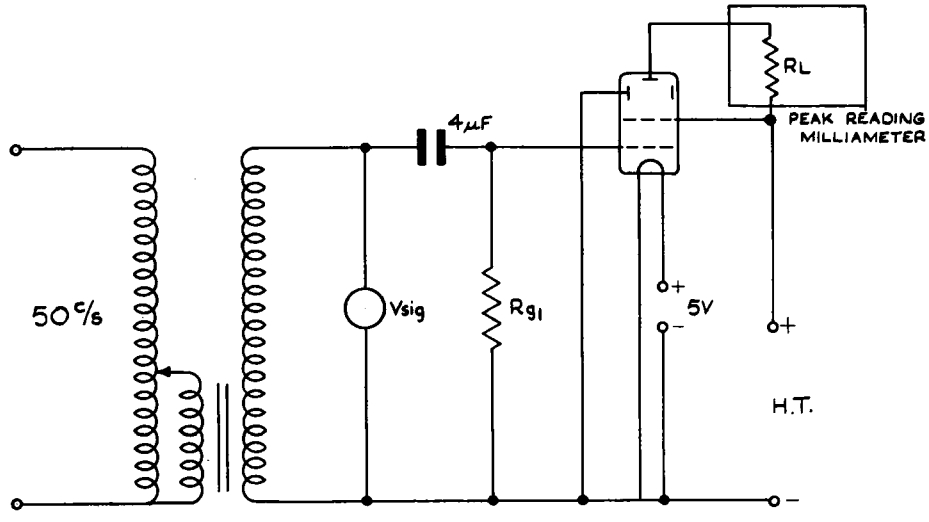
1. Test in circuit:-



All power supplies shall have negligible impedance to operating frequency. Grid signal impedance shall be less than 5 ohms; voltage sinusoidal.

2. Preheat for 15 minutes before testing under the following conditions:-

Va = Vg2 = 150V
Vg1 = -10V
Vf = 5.0V