

ELECTRONIC VALVE SPECIFICATION

CV.4096 Issue 1, Dated 7.5.59

AMENDMENT NO. 1

Page 1 Base

Delete:- See Appendix 1 to CV2237

Dimensions

Delete:- See Appendix 1 to CV2237

Signals Radio Development Establishment

December, 1961.

(7731)

Specification MOS/CV4096 Issue 1, Dated 7.5.59 To be read in conjunction with K.1001, BS448 and BS4409	<u>SECURITY</u>	
	<u>Specification</u> Unclassified	<u>Valve</u> Unclassified

→ Indicates a change

Type of Valve - Reliable H.F. Beam Tetrode Sharp Cut Off Cathode - Directly Heated Envelope - Glass - Un-metallised Prototype - VX9185		<u>MARKING</u>		
		See K.1001/4, except that the valve shall only be marked with the CV Number Factory and Date Code.		
<u>RATING</u> (All limiting values are absolute)		<u>BASE</u>		
		See App. 1 to CV 2237 BS 448/B5G/F		
		<u>CONNECTIONS</u>		
		<u>PIN</u>	<u>ELECTRODE</u>	
		1	a (red dot)	
		2	g ₂	
		3	f (-), bp ₁	
		4	g ₁	
		5	f (+), bp ₂	
<u>Typical Operating Conditions</u>		<u>DIMENSIONS</u>		
Measured at $V_a = V_{g2} = 67.5V$ $V_{g1} = 0, R_{g1} = 5 M\Omega$		See App. 1 to CV 2237 See BS448/B5G/F Size Ref. No. 1		
Anode Current (mA) 1.8				
Screen Current (mA) 0.5				
Mutual Conductance (mA/V) 1.1				
<u>Capacitances (pF)</u>		<u>Dimensions (millimetres)</u>		
C _{in} (nom.) 3.4		Min.	Max.	
C _{out} (nom.) 2.1				
C _{a, g1} (max.) 0.06				
		A. Overall Length 38.15		
		Diameter 7.264		
		B. Minor 9.804		
		C. Major 38.1		
		Lead Length 38.1		
		<u>MOUNTING POSITION</u> ANY		

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TESTS

To be performed in addition to those applicable in K.1001. Tests shall be performed in the specified order unless otherwise agreed with the Inspecting Authority.

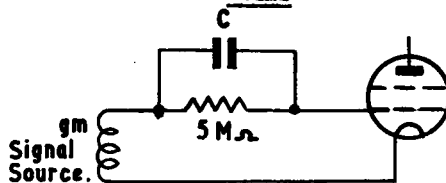
Test conditions - unless otherwise specified								
		Vf(V)	Va(V)	Vg2(V)	Vg1(V)	Rg1 (Megohms)		
		1.25	67.5	67.5	0	5		
K.1001 Ref.	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits		Units
						Min.	Max.	
7.1	Glass Strain	No voltages	6.5	I				
	<u>GROUP A</u>							
	Electrode Insulation	Vg1 - all = -100V Vg2 - all = -100V Va - all = -100V Vf = 0		100% 100% 100%	R R R	100 100 100		MΩ MΩ MΩ
	Reverse Grid Current	Vg1 = -0.5V Rg1 = 0.1 MΩ max.		100%	Ig1	-	0.5	μA
	Contact Potential	Vf = 1.25V Va = Vg2 = 0 Vg1 = + 1.8V through 200 KΩ		100%	+Ig1	0.25		μA
	<u>GROUP B</u>	Combined AQL	1.0	II				
	Filament Current		0.65	II	If	18	22	mA
	Anode Current		0.65	II	Ia	1.2	2.4	mA
	Screen Grid Current		0.65	II	Ig2	0.35	0.7	mA
	Mutual Conductance (1)	Note 1	0.65	II	gm	0.75	1.45	mA/V
	<u>GROUP C</u>	Combined AQL	4.0	I				
	Mutual Conductance (2)	Note 1 Vf = 1.0V	2.5	I	gm	0.60	1.45	mA/V
	Mutual Conductance (3)	Note 1 Vf = 1.0V Take reading after 15 minutes	2.5	I	gm	0.60	1.45	mA/V
5.12	<u>GROUP D</u>							
	Lead Fragility		6.5	IA				
	Filament Anode Short	Note 2		T.A.				

K.1001 Ref.	Test	Test Conditions	AQL	Insp. Level	Sym- bol	Limits		Units
						Min.	Max.	
	<u>GROUP D</u> (Cont'd) Capacitance Functional Test	Measured on a 1 Mc/s bridge with the valve mounted in a fully screened socket. No shield.	6.5	IC	Ca, g1 Cin Cout		0.06 3.0 1.7	pF pF pF
				T.A.				The valves shall operate satisfac- torily in W.S. A40 and A41.
11.3	<u>GROUP E</u> Fatigue <u>Post Fatigue</u> <u>Tests</u>	Acceleration = 5g peak min. Time = 99 hrs. Note 3		IA				
11.4	Mutual Conductance (1) Shook <u>Post Shock</u> <u>Tests</u>	Note 1 Hammer Angle 30° No voltages Note 1	2.5 2.5	IA IA	gm	0.60		mA/V mA/V
A VI/ 5	<u>GROUP F</u> Life							
A VI/ 5.1	<u>Stability</u> <u>Life Test</u> Mutual Conductance (2)	Note 1 VF = 1.0V	1.0	I	gm	0.60		mA/V
A VI/ 5.3	<u>Intermittent</u> <u>Life Test</u> <u>Life Test</u> <u>End Point</u> (500 hrs.)	Combined AQL	6.5	IA				
A VI/ 5.6	Inoperatives Mutual Conductance (1)	Note 1	2.5 2.5		gm	0.60		mA/V

K.1001 Ref.	Test	Test Conditions	AQL	Insp. Level	Sym- bol	Limits		Units
						Min.	Max.	
A VI/ 5.6	<u>GROUP F</u> (Contd.)							
	Electrode Insulation	V _f = 0 V _{g1} - all = -100V V _{g2} - all = -100V V _a - all = -100V	4.0		R R R	50 50 50		MΩ MΩ MΩ
	<u>Life Test</u> <u>End Point</u> <u>1,000 hrs.</u>	Combined AQL	10	1A				
	Inoperatives		4.0					
	Mutual Conductance (1)	Note 1	4.0		gm	0.60		mA/V
	Reverse Grid Current	As in Group A	4.0		I _{g1}	-	1.0	μA
	Electrode Insulation	V _f = 0 V _{g1} - all = -100V V _{g2} - all = -100V V _a - all = -100V	6.5		R R R	30 30 30		MΩ MΩ MΩ
Contact Potential	As in Group A			+I _{g1}	To be recorded		μA	
A IX/ 2.4 & 2.5	<u>GROUP G</u> Electrical Retest after 28 days holding period							
A VI/ 5.6	Inoperatives		0.5	100%				
	Mutual Conductance (1)	Note 1			gm	0.75	1.45	mA/V
	Reverse Grid Current	As in Group A	0.5		I _{g1}	-	0.5	μA

NOTES

1. Test in circuit



Bypass capacity C shall have a resistance of less than 20,000 ohms at the test frequency.

2. Raise V_f until filament opens. Test for filament to anode short only. After performance of the filament burn out test, if the short circuit shall pass in excess of five times the rated filament current without burning out the short circuit, the valve shall be deemed a failure. This test shall be performed by a Service

Laboratory on three valves which shall be in addition to the required number for Type Approval samples. Manufacturer's data are not required for this test.

3. Filament voltage and H.T. voltage are switched simultaneously 1 min. on 3 min. off throughout the duration of the test. Frequency = 170 cps. The valves to be vibrated in each of three mutually perpendicular planes in turn for periods of 30, 30 and 39 hours. One plane to include the longitudinal axis of the valve.

CV 4096/1/5