

Specification MCS/CV4094 Issue 1 Dated 8.1.59 To be read in conjunction with K.1001, BS448 and BS1409	<u>SECURITY</u>	
	<u>Specification</u> Unclassified	<u>Valve</u> Unclassified

→ Indicates a change

Type of Valve - Reliable R.F. Beam Tetrode Sharp Cut Off Cathode - Directly Heated Envelope - Glass Metallised Prototype - VX9186		<u>MARKING</u>		
		See K1001/4 except that the valve shall only be marked with the CV No. factory and date code		
<u>RATING</u> (All limiting values are absolute)		<u>BASE</u>		
		See App. 1 to CV2237. BS 448/B5G/F		
		<u>CONNECTIONS</u>		
		<u>FIN</u>	<u>ELECTRODE</u>	
		1	a (red dot)	
		2	g <sub>2</sub>	
		3	f (-), bp <sub>1</sub> , M	
		4	g <sub>1</sub>	
		5	f (+), bp <sub>2</sub>	
<u>Typical Operating Conditions</u> Measured at $V_a = V_{g2} = 45V, V_{g1} = 0$ $R_{g1} = 2 M\Omega$		<u>DIMENSIONS</u>		
		See BS448/B5G/F Size Reference No. 1 See App. 1 to CV2237		
		Anode Current (mA)	3.0	
		Screen Current (mA)	0.9	
		Mutual Conductance (mA/V)	2.0	
<u>Capacitances (pF)</u>				
		C <sub>in</sub> (nom.)	4.0	
		C <sub>out</sub> (nom.)	4.0	
		C <sub>a, g1</sub> (max.)	0.01	
		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		

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)	Vg <sub>2</sub> (V)	Vg <sub>1</sub> (V)	Rg <sub>1</sub> (Megohms)				
1.25	45	45	0	2				
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	Vf = 0 Vg <sub>1</sub> - all = -100V Vg <sub>2</sub> - all = -100V Va - all = -100V		100%	R R R	100 100 100		MΩ MΩ MΩ
	Reverse Grid Current	Rg <sub>1</sub> = 500 kΩ max. Va = Vg <sub>2</sub> = 55V Vg <sub>1</sub> = -1.0V		100%	Ig <sub>1</sub>	-	0.5	μA
	Contact Potential	Vf = 1.25V Va = Vg <sub>2</sub> = 0 Rg <sub>1</sub> = 200 kΩ		100%	Ig <sub>1</sub>	0.25		μA
	<u>GROUP B</u>	Combined AQL	1.0	II				
	Filament Current		0.65	II	If	88	122	mA
	Anode Current		0.65	II	Ia	1.9	4.1	mA
	Screen Grid Current		0.65	II	Ig <sub>2</sub>	0.5	1.3	mA
	Mutual Conductance (1)		0.65	II	gm	1.5	2.5	mA/V
	<u>GROUP C</u>	Combined AQL	6.5	I				
	Mutual Conductance (2)	Vf = 1.0V	2.5	I	gm	1.2	2.5	mA/V
	Mutual Conductance (3)	Vf = 1.0V Take reading after 15 mins.	2.5	I	gm	1.2	2.5	mA/V
	Anode Resistance		2.5	I	Ra	0.2		MΩ
	R.F. Noise	E <sub>sig</sub> = 30 mVrms Ref. K.1006 (4.10.3.1)	2.5	I				

K.1001 Ref.	Test	Test conditions	AQL %	Insp. Level	Sym- bol	Limits		Units
						Min.	Max.	
5.12	<u>GROUP D</u> Lead Fragility		6.5	IA				
	Filament Anode Short	Note 1		T.A.				
	Capacitances	Measured on a 1Mc/s bridge with the valve mounted in a fully screened socket. No shield.	6.5	IC	C <sub>g1</sub> C <sub>in</sub> C <sub>out</sub>		0.01 5 5	pF pF pF
	Functional Test			T.A.				The valves shall operate satisfac- torily in W.S. A40 and A41
11.3	<u>GROUP E</u> Fatigue	Acceleration = 5g peak min. Time = 99 hours Note 2		IA				
	<u>Post Fatigue Tests</u> R.F. Noise	Combined AQL As in Group C	4.0 2.5					
	Mutual Conductance (1)		2.5		gm	1.2		mA/V
	11.4	Shock	No voltages. Hammer Angle 30°		IA			
<u>Post Shock Tests</u> R.F. Noise		Combined AQL As in Group C	4.0 2.5					
Mutual Conductance (1)			2.5		gm	1.2		mA/V
A VI/5 A VI/ 5.1		<u>GROUP F</u> Life	R <sub>g1</sub> = 5 MΩ					
	<u>Stability Life Test</u>							
	Mutual Conductance (2)	V <sub>f</sub> = 1.0V	1.0	I	gm	1.2		mA/V

K.1001 Ref.	Test	Test Conditions	AQL %	Insp. Level	Sym- bol	Limits		Units
						Min.	Max.	
A VI/ 5.3	<u>GROUP F</u> (Cont'd)							
	<u>Intermittent Life Test</u>							
	<u>Life Test End Point (500 hrs.)</u>	Combined AQL	6.5	IA				
A VI/ 5.6	Inoperatives		2.5					
	Mutual Conductance (1)		2.5		gm	1.2		mA/V
	Electrode Insulation	Vf = 0 Vg <sub>1</sub> - all = -100V Vg <sub>2</sub> - all = -100V Va - all = -100V	4.0		R R R	50 50 50		MΩ MΩ MΩ
	<u>Life Test End Point (4,000hrs.)</u>	Combined AQL	10	IA				
A VI/ 5.6	<u>500 HRS</u> Inoperatives		4.0					
	Mutual Conductance (1)		4.0		gm	1.2		mA/V
	Reverse Grid Current	As in Group A	4.0		Ig <sub>1</sub>	-	1.0	μA
	Contact Potential	Vf = 1.25V Va = Vg <sub>2</sub> = 0 Rg <sub>1</sub> = 200kΩ	4.0		Ig <sub>1</sub>	To be recorded		
	Electrode Insulation	Vf = 0 Vg <sub>1</sub> - all = -100V Vg <sub>2</sub> - all = -100V Va - all = -100V	6.5		R R R	30 30 30		MΩ MΩ MΩ
A IX/ 2.4 and 2.5	<u>GROUP G</u> Electrical retest after 28 days hold- ing period			100%				
A VI/ 5.6	Inoperatives		0.5					
	Mutual Conductance (1)				gm	1.5	2.5	mA/V
	Reverse Grid Current	As in Group A	0.5		Ig <sub>1</sub>	-	0.5	μA

1. 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. Manufacturers' data are not required for this test.
2. Filament voltage and H.T. voltage switched simultaneously 1 min. on and 3 min. off throughout duration of 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.

ELECTRONIC VALVE SPECIFICATIONS  
SPECIFICATION MOS/CV4094  
ISSUE NO.1 DATED 8.1.59.

AMENDMENT NO.2

On Page 4, under GROUP F  
 (Cont'd)  
Intermittent  
Life Test

- (1) Delete Life Test End Point (500 hours) o/k
- (2) Immediately following the above, in column headed "Test"  
Amend Life Test to read Life Test  
End Point (1,000 hours) End Point (500 hours)

TVC for SRDE

August, 1959

N.71076/D

SPECIFICATION CV.4094

ISSUE 1 DATED 8.1.59

AMENDMENT No. 1

Page 2 GROUP C

Immediately following the test for "Mutual Conductance (3)"

Add new test as follows:-

<u>Test</u>	<u>Test</u> <u>Conditions</u>	<u>AQL</u> <u>%</u>	<u>Insp.</u> <u>Level</u>	<u>Sym-</u> <u>bol</u>	<u>Limits</u>		<u>Units</u>
					<u>Min.</u>	<u>Max.</u>	
Mutual Conductance (4)	Vf = 0.8V	2.5	I	gm	1.1	-	mA/V

April, 1959.  
 N.54788/D.

T.V.C. for S.R.D.E.

ELECTRONIC VALVE SPECIFICATION

CV.4094 Issue 1 Dated 8.1.59

AMENDMENT NO. 3

Page 1 Base

Delete:- See Appendix 1 to CV.2237

Dimensions

Delete:- See Appendix 1 to CV.2237

Signals Radio Development Establishment

JANUARY, 1962.  
 (8533)