

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION M.O.A./CV.4081 ISSUE 1A DATED 9th AUGUST 1959

AMENDMENT NO. 1

Page 3 Group D Capacitance

Against "Cac" amend the columns as follows:-

Min. amend "0.16" to read "0.18".

Bogey amend "0.2" to read "0.22".

Max. amend "0.24" to read "0.26".

March 1965.

T.V.C. for R.R.E.

Specification MOS/CV 4081 Issue 1A Dated 9th August 1959 To be read in conjunction with K1001, BS448 and BS1409	<u>SECURITY</u>	
	<u>Specification</u> Unclassified	<u>Valve</u> Unclassified

Indicates a change

TYPE OF VALVE - Reliable low noise R.F. triode with flexible leads.		<u>MARKING</u> See K1001/4	
ENVELOPE - Indirectly Heated		<u>BASE</u> B7G/R	
CATHODE - Glass - Unmetallised			
PROTOTYPE - VX 3519			
<u>RATINGS AND CHARACTERISTICS</u> All limiting values are absolute		<u>CONNECTIONS</u>	
	Note	Lead	Electrode
Heater Voltage (v)	6.3	1	Control grid g <sup>1</sup>
Heater current (A)	0.37	2	Cathode k
Max. Anode Voltage (v)	200	3	Heater h
→ Max. Grid current (mA)	3	4	Heater h
Max. Negative Grid Voltage (v)	20	5	Cathode k
Max. Cathode Current (mA)	20	6	Control Grid g <sup>1</sup>
Max. Bulb temperature (°C)	180	7	Anode a
→ Max. Heater-Cathode Voltage (v)	100		
→ Max. Grid Resistance			
Fixed Bias (M. ohms)	0.1		
Auto Bias (M. ohms)	0.5		
→ Mutual Conductance (mA/V)	14	A.B.	<u>DIMENSIONS</u> See K1001/A1/D11 BS448: B7G/2.1/1
Anode Impedance (ohms)	4150	A	
→ Amplification Factor	52	A	
Noise Factor, nominal (dB)	1.4	C	
Max. Accn. (Continuous operation) (g)	2.5		
Max. Shock (Short Duration) (g)	500		<u>MOUNTING POSITION</u> Any
<u>NOTES</u>			
→ A. Measured at V <sub>a</sub> (b) = 180v. R <sub>a</sub> = 3.3 Kohm R <sub>k</sub> = 68 ohms I <sub>a</sub> = 15.5 mA			
B. Measured in a mutual conductance bridge, maximum frequency 1000 c/s, max input signal to grid 0.1v r.m.s.			
C. Measured at 45 Mc/s under approved conditions.			
D. Measured at 1 Mc/s with valve and socket fully screened.			

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## TESTS

To be performed in addition to those applicable in K1001

TEST CONDITIONS - Unless otherwise stated									
	Vh (V)	Va (b) (V)	R <sub>e</sub> (kohm)		R <sub>k</sub> (ohm)				
	6.3	180	3.3		68				
K1001	TEST	TEST CONDITIONS	AQL %	Insp. Level	Symbol	LIMITS			UNITS
						Min.	Bogey	Max.	
7.1	Glass Strain	No Voltages	6.5	I					
	<u>GROUP A</u>								
	Insulation	Va-all = -100v Vg1-all = -20v		100% 100%	R R	50 20			M M
	Reverse Grid Current	Vg1 = -1.0v Rg1 = 500K max		100%	Ig1			0.7	/uA
	<u>GROUP B</u>	Combined AQL	4.0						
	Heater Current	Vhk ± 100v	0.65	II	Ih	0.33	0.37	0.41	A /uA
	Heater Cathode leakage current		0.65	II	Ihk				
	Anode Current (1)		0.65	II	Ia	12	15.5	19	mA
	Mutual Conductance	Note 1	0.65	II	gm V2	10.5	14	17.5	mA/V mA/V
	Anode Current (2)	Vg1 + -4.0v	0.65	II	Ia			2.6	mA
	Noise Factor	Frequency = 45 Mc/s R <sub>k</sub> = 68 ohms ± 5% Note 3	2.5	II	NF		1.4	1.75	dB
	<u>GROUP C</u>								
	Vibration Noise	Va(b) = 160v RL = 2K R <sub>k</sub> = 68 ohms C <sub>k</sub> = 1000 uF R <sub>g</sub> = 1K C <sub>c</sub> = 0.1 uF	2.5	I	Va AC			10	mV

K1001	TEST	TEST CONDITIONS	AQL	Insp. Level	Symbol	LIMITS			UNITS
						Min.	Bogey	Max	
	<u>GROUP D</u>								
	Amplification Factor		6.5	IA	/u	36	52	68	
	Capacitance	Measured on a 1 Mc/s bridge with valve mounted in a fully screened socket. Valve Shielded Note 4	6.5	IA	Cge Cac Cag	2.1 0.16 0.8	2.7 0.2 1.1	3.3 0.24 1.4	pF pF pF
	<u>GROUP E</u>								
5.12	Lead Fragility	No Voltages	6.5	IA					
11.2	<u>Resonance Search</u>	RL = 2K Freq = 50 -1000 c/s	2.5	IC	V <sub>a</sub> AC	To be recorded and agreed later			
11.3	<u>Fatigue</u>	V <sub>h</sub> = 6.9v switched 1 min on 3 mins off. V <sub>a</sub> = 0 Min. pk. accel = 5g Duration = 30,39 30 hours							
	<u>Post fatigue tests</u>	Combined AQL	6.5						
	Vibration Noise	Note 5	2.5		V <sub>a</sub> AC			20	mV
	Heater Cathode leakage current	V <sub>hk</sub> ± 100v	2.5		I <sub>hk</sub>			20	/uA
	Reverse Grid current	V <sub>g1</sub> = -1.0v R <sub>g1</sub> = 500K max	2.5		I <sub>g</sub>			1.4	/uA
	Mutual conductance	Note 1	2.5		g <sub>m</sub>	10			ma/V
11.5	<u>Shock Test</u>	Hammer angle = 30° No voltages							
	<u>Post Shock Tests</u>	Combined AQL	6.5						
	As for Post Fatigue Tests								

K1001	TEST	TEST CONDITIONS	AQL %	Insp. Level	Symbol	LIMITS			Units
						Min.	Begey	Max	
	<u>GROUP F</u>								
AV1/5	<u>Life Test</u>	Vh = 6.3v Va(b) = 180v RL = 3.3K Rk = 68 ohms Vhk = 50 r.m.s 50 c/s							
AV1/5.1.	<u>Stability Life Test</u> Change in mutual Conductance		1.0	I	gm		10	%	
AV1/5.3	<u>Intermittent Life Test</u>	See above		IA					
	<u>Life Test end point (500 hrs)</u>	Combined AQL	6.5						
	Inoperatives		2.5						
	Heater cathode leakage current	Vhk ± 100v	2.5		Ihk		35	µA	
	Reverse grid current	Vg1 = -1.0v Rg1 = 500K max	2.5		Ig		1.0	µA	
	Mutual conductance	Note 1	2.5		gm	8.0		mA/V	
	do. Average change		2.5		gm		20	%	
	Noise Factor	Freq. = 45 Mc/s Rk = 68 ohms ± 5% Note 3	4		NF		2.0	dB	
	<u>Life Test end point (1000 hrs)</u>								
	Noise Factor	Freq. = 45 Mc/s. Rk = 68 ohms ± 5% Note 3.	4		NF		2.2	dB	
	<u>GROUP G.</u>								
AIX/2.5	Electrical re-test after 28 days holding period			100%					
	Inoperatives Reverse grid current	Vg1 = -1.0v Rg1 = 500K max	0.5 0.5		Ig1		1.2	µA	

NOTES

1. Measured with a mutual conductance bridge or any approved method.
2. For variables test IAL = 12.2 Bogey = 14 and UAL = 15.8. mA/V, the ALD = 4.7 mA/V.
3. To be measured under approved conditions.  $R_L = 3.3K$   $V_a(b) = 180v$ .
4. Capacitance connections as follows:-

Capacitance	HP	LP	E
C <sub>ge</sub>	1. 6	2.3.4.5	C.7
C <sub>ae</sub>	7	2.3.4.5	C.1.6.
C <sub>ag</sub>	7	1.6	2.3.4.5.C

5. The conditions specified for the vibration noise test in Group C shall apply.