

MINISTRY OF SUPPLY - D.L.R.D. (A)/R.A.E.

Specification MOS(A)CV.483	<u>SECURITY</u>	
Issue 1 Dated 7.5.56	<u>Specification</u>	<u>Valve</u>
To be read in conjunction with B.S.448, B.S.1409 & K1001	UNCLASSIFIED	UNCLASSIFIED

TYPE OF VALVE	-	R.F. Beam Power Amplifier for use in Aircraft	<u>MARKING</u>
CATHODE	-	Indirectly heated	K.1001/4
ENVELOPE	-	Glass, lower portion in metal shell	<u>BASE</u>
PROTOTYPE	-	CV.309	B.S.448/B9G

<u>RATING</u>			<u>CONNECTIONS</u>	
		Note	Pin	Electrode
Heater Voltage	(V)	6.3		
Heater Current	(A)	0.6		
Max. Operating Anode Voltage	(V)	400	A	1 h
Max. Anode Voltage ($I_a = 0$)	(V)	550	A	2 a
Max. Operating screen voltage	(V)	250	A	3 g2
Max. Screen Voltage ($I_{g2} = 0$)	(V)	550	A	4 g2
Max. Anode Dissipation	(W)	7.5	A	5 s + bp
Max. Screen Dissipation	(W)	1.75	A	6 k
Max. Heater-Cathode Voltage	(V)	±150		7 g1
Max. Cathode Current	(mA)	55	A	8 s + bp
Max. Peak Cathode Current	(mA)	330	A	9 h
Max. Operating Frequency	(Mc/s)	150	C	
Max. Bulb Temperature	(°C)	200	A	
Max. Shock (Short Duration)	(g)	259		
Max. Acceleration (continuous operation)	(g)	1.0		
Mutual Conductance	(mA/V)	3.0	B	
<u>CAPACITANCES</u> (pF)			<u>DIMENSIONS</u>	
C in (nom)		8.2	D	See K1001/A1/D2, with the metal sole cut away to have no metal within a circle radius 3.2 mm round the anode pin
C out (nom)		6.0	D	
Ca, g (nom)		0.07	D	

NOTES

- A. Absolute Value
- B. At $V_a = 250V$; $V_{g2} = 135V$; $V_{g1} = -10V$; $I_a = 30$ mA.
- C. Efficiency as Class C Amplifier at 150 Mc/s = 45%
- D. Without an external screen.

To be performed in addition to those applicable in K.1001

Test Conditions - unless otherwise specified								
Vh(V)		Va(V)		Vg2(V)		Vg1(V)		
6.3		250		135		-10		
Test	Test conditions	AQL	Insp. Level	Symbol	Limits		Units	
					Min.	Max.		
a	Electrode Insulation		100% 100% 100%	R R R	100 100 100	- - -	MΩ MΩ MΩ	
b	Reverse Grid Current		100%	Ig1	-	2.0	μA	
c	Mean Cathode Current		100%	Ik	45	-	mA	
d	Vibration Noise		100%	VaAC	-	50	mVrms	
e	Heater Current	1.5	I	Ih	540	660	mA	
f	hk Leakage Current	1.5	I	Ihk	-	20	μA	
g	Anode Current (1)	1.5	I	Ia	20	40	mA	
h	Anode Current (2)	1.5	I	Ia	-	1.0	mA	
j	Screen Current	1.5	I	Ig2	-	5	mA	
k	Mutual Conductance	1.5	I	gm	2.25	3.75	mA/V	
l	Capacitances	6.5	Ia	Cin Cout Ca,g1	7.0 5.2 -	9.4 6.8 0.09	pF pF pF	

Test	Test Conditions	AQL	Insp. Level	Sym-bol	Limits		Units
					Min.	Max.	
Fatigue	Vh = 6.9V Note 4		IA				
	<u>Post Fatigue Tests</u>						
hk Leakage Current	Combined AQL	6.5		Ihk	-	40	μA
Reverse Grid Current	Vh = 6.3V Note 2	2.5		Ig1	-	2.5	μA
Mutual Conductance	Rg1 = 500 kΩ max.	2.5		gm	2.0	3.75	mA/V
Vibration Noise	Va = Vg2 = 250V; Vg1 = 0; Rk = 1.2 kΩ; Ck = 1000μF; RL = 2.0 kΩ.	2.5		VaAC	-	100	mVrms
Life	Note 3		IA				
	<u>Life Tests</u>						
Test Point 500 hrs.	Combined AQL	6.5					
hk Leakage Current	Vhk = ± 100V Note 2	2.5		Ihk	-	40	μA
Reverse Grid Current	Rg1 = 500 kΩ max.	2.5		Ig1	-	3.0	μA
Mutual Conductance		2.5		gm	2.1	3.75	μA
Electrode Insulation	Vh = 6.3V Note 1 Vg1 to all = -100V Vg2 to all = -300V Va to all = -300V	2.5		R R R	50 50 50	- - -	MΩ MΩ MΩ
Electrical Re-test after 28 days holding period			100%				
Inoperatives		0.5					
Reverse Grid Current	Rg1 = 500 kΩ max.	0.5		Ig1	-	2.5	μA

NOTES

1. Heater and cathode strapped and considered as a single electrode.
2. Heater positive and negative successively.
3. Life Test Conditions. $V_h = 6.3V$; $V_a = 300V$. $V_{g2} = 250V$; $I_a = 25 \text{ mA}$ approx.
4. Valves shall be vibrated in each of the three required planes for not less than 24 hours and not less than 72 hours total. Heater switched one minute on three minutes off. $V_h = 6.9V$. No other voltages.
Minimum peak acceleration = $2.5g$. Frequency = $170 \pm 5 \text{ cps}$.