VALVE ELECTRONIC

CV483

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

Specification MOS(A)CV.483

Issue 1 Dated 7.5.56

To be read in conjunction with B.S.448, B.S.1409 & K1001

SECURITY	
Specification	Valve
UNCLASSIFIED	UNCLASSIFIED

TYPE OF VALVE - R.F. Beam Power Amplifier for use in Aircraft

CATHODE - Indirectly heated

ENVELOPE - Glass, lower portion in metal shell

PROTOTYPE - CV.309

MARKING

K.1001/4

BASE

B.S.448/B9G

RATING

			Note
Heater Voltage	(V)	6.3	
Heater Current	(A)	0.6	
Max. Operating Anode Voltage	(V)	400	A
Max. Anode Voltage (Ia = 0)	(V)	550	A
Max. Operating screen voltage	(V)	250	A
Max. Screen Voltage (Ig2 = 0)	(V)	550	A
Max. Anode Dissipation	(W)	7.5	A
Max. Screen Dissipation	(W)	1.75	A
Max. Heater-Cathode Voltage	(V)	±150	
Max. Cathode Current	(mA)	55	A
Max. Peak Cathode Current	(mA)	330	A
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

CAPACITANCES (pF)

C in (nom	8.2	D
C out (nom)	6.0	D
Ca, g (nom)	0.07	D

CONNECTIONS

Pin	Electrode
1	h
2	a
3	g2
4	g2
5	s + bp
6	k
7	g1
8	s + bp
9	h

DIMENSIONS

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

NOTES

A. Absolute Value

B. At Va = 250V; Vg2 = 135V; Vg1 = -10V; Ia = 30 mA.

C. Efficiency as Class C Amplifier at 150 Mc/s = 45%

D. Without an external screen.

Z.11978.R.

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 Min.	Limits Max.	Units
a	Electrode Insulation	Vh = 6.3V Note 1 Vg1 to all = -100V Vg2 to all = -300V Va to all = -300V		 100% 100% 100%	 R R R	 100 100 100	 - - -	 MΩ MΩ MΩ
b	Reverse Grid Current	Rg1 = 500 kΩ max.		100%	Ig1	-	2.0	µA
c	Mean Cathode Current	Va = Vg2 = Vg1 = 30V AC		100%	Ik	45	-	mA
d	Vibration Noise	Va = Vg2 = 250V; Vg1 = 0 Rk = 1.2kΩ; Ck = 1000µF RL = 2kΩ		100%	VaAC	-	50	mVrms
e	Heater Current		1.5	I	Ih	540	660	mA
f	hk Leakage Current	Vhk = ± 100V Note 2	1.5	I	Ihk	-	20	µA
g	Anode Current (1)		1.5	I	Ia	20	40	mA
h	Anode Current (2)	Vg1 = -50V	1.5	I	Ia	-	1.0	mA
j	Screen Current		1.5	I	Ig2	-	5	mA
k	Mutual Conductance	Peak grid swing = ± 1V max	1.5	I	gm	2.25	3.75	mA/V
l	Capacitances	Measured on 1 Mc/s bridge With valve mounted in a fully shielded socket: No external screen	6.5	Ia	Cin Cout Ca,g1	7.0 5.2 -	9.4 6.8 0.09	pF pF pF

TESTS (Cont'd)

CV483

	Test	Test Conditions	AQL	Insp. Level	Sym-bol	Limits Min.	Limits Max.	Units
	Fatigue	Vh = 6.9V Note 4		IA				
		Post Fatigue Tests						
		Combined AQL	6.5					
m	hk Leakage Current	Vh = 6.3V Note 2	2.5		Ihk	-	40	µA
m	Reverse Grid Current	Rg1 = 500 kΩ max.	2.5		Ig1	-	2.5	µA
	Mutual Conductance		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				
		Life Tests						
	Test Point 500 hrs.	Combined AQL	6.5					
	hk Leakage Current	Vhk = ± 100V Note 2	2.5		Ihk	-	40	µA
n	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%				
p	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. Vh = 6.3V; Va = 300V. Vg2 = 250V; Ia = 25 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. Vh = 6.9V. No other voltages. Minimum peak acceleration = 2.5g. Frequency = 170 ± 5 c/s.