ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION MOA/CV.7054

Issue No. 1 Dated 18th December, 1959

AMENDMENT No.1

Page 1

Under PACKAGING please add:-

Mica washers and bushes to be packed with each device.

DIRD/RRE
MINISTRY OF AVIATION

February, 1961.

NS.47135/D

ELECTRONIC VALVE SPECIFICATION

CV7054. ISSUE 1. DATED 18.12.59.

AMENDMENT NO.2

Page 1. RATINGS

(i) Collector current. Delete "or DC" and amend "(A) -1.0" to read "(A) -2.0"

(ii) Insert below new line reading "Max D.C. collector current (A) -1.0 Note B"

(iii) Emitter current. Delete "or DC" and amend "(A) 1.2" to read "(A) 2.2"

(iv) Insert below new line reading "Max. D.C. emitter current (A) 1.2 Note B".

(v) Max. junction temperature, Delete "75" and insert "90".

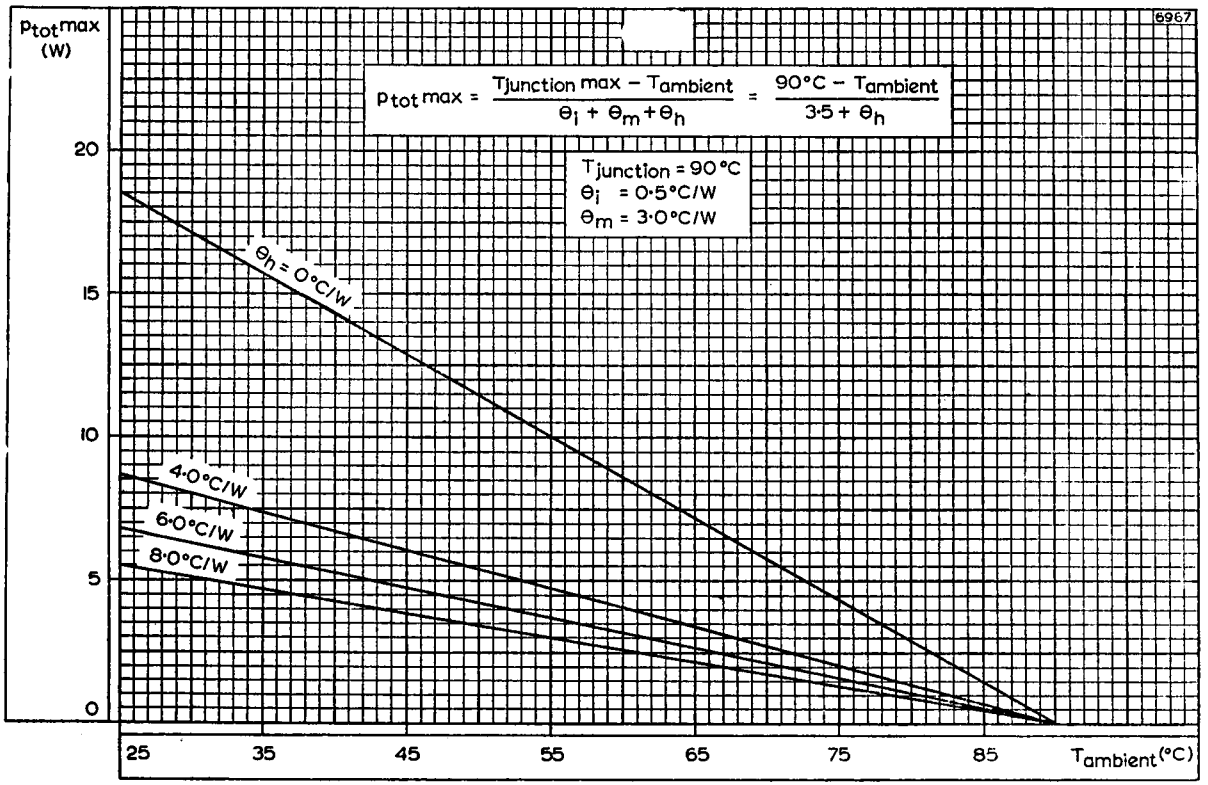
(vi) Base Current. Delete "pk. or".

Page 2. CURVE

Delete existing curve and insert attached curve.

R.R.E.

January, 1962.


6967
P_{tot} max (W)
$P_{tot\,max} = \frac{T_{junction\,max} - T_{ambient}}{\theta_j + \theta_m + \theta_h} = \frac{90°C - T_{ambient}}{3{\cdot}5 + \theta_h}$
$T_{junction}$ = 90 °C
θ_j = 0·5 °C/W
θ_m = 3·0 °C/W
θ_h = 0 °C/W
4·0 °C/W
6·0 °C/W
8·0 °C/W
20
15
10
5
0
25
35
45
55
65
75
85
$T_{ambient}$ (°C)

ELECTRONIC VALVE SPECIFICATIONS
SPECIFICATION CV7054

ISSUE 1. DATED 18.12.64

Amendment No. 3

Page 1	Dimensions:	Delete:	Existing wording
		Insert:	K1007 Issue 3 10.3.2.1. Type A and 10.4.2.1

Ministry of Aviation/R.R.E.

December, 1964. (310252)

MINISTRY OF AVIATION - DLRD/RRE

VALVE ELECTRONIC SEMICONDUCTOR DEVICE **CV7054**

Specification MOA/CV7054 Issue 1 dated 18.12.59 To be used in conjunction with K1007	SECURITY Specification: Unclassified Valve: Unclassified

indicates a change

TYPE OF DEVICE - Germanium High Current Switching Transistor
CONSTRUCTION - Metal body
PROTOTYPE - OC23

MARKING
See K1007/4
CV number and if possible factory and date codes

RATING

All limiting values are absolute

			Note
Max.pk.collector-emitter voltage Z_{be} <100 ohms or $+V_{be}$ > 0.5v	(V)	-40	
Max.average or D.C. V_{ce} (Z_{be} 100 ohms or V_{be} >0.5v)	(V)	-24	B
Max.pk. V_{ce} (Z_{be} >10 Kohm)	(V)	-16	
Max.average or D.C. V_{ce} (Z_{b-e} >10 Kohm)	(V)	-10	B
Max.pk. reverse base-emitter voltage	(V)	15	
Max. average or D.C. V_{be}	(V)	12	B
Max.pk. or DC. collector current	(A)	-1.0	
Max.pk. or D.C. emitter current	(A)	1.2	
Max.pk. or DC. base current	(A)	0.2	
Max.junction temperature	(°C)	75	
Max. thermal resistance junction to transistor mounting base θm	(°C/W)	3.0	A
Thermal resistance transistor mounting base to flat heat sink θi			A
(a) with mica washer as supplied	(°C/W)	0.7	
(b) without mica washer	(°C/W)	0.3	
Max.dissipation			A
Max.Storage temperature	(°C)	75	
Min. do. do.	(°C)	-55	
Max. Continuous vibration	(g)	10	
Max. Shock	(g)	500	

DIMENSIONS
See K1007/A1
(Outline) D4A
(Base) D4B

MOUNTING POSITION
Any
Mica washers supplied must be used when insulation from chassis is necessary.

PACKAGING
K1007/14

NOTES

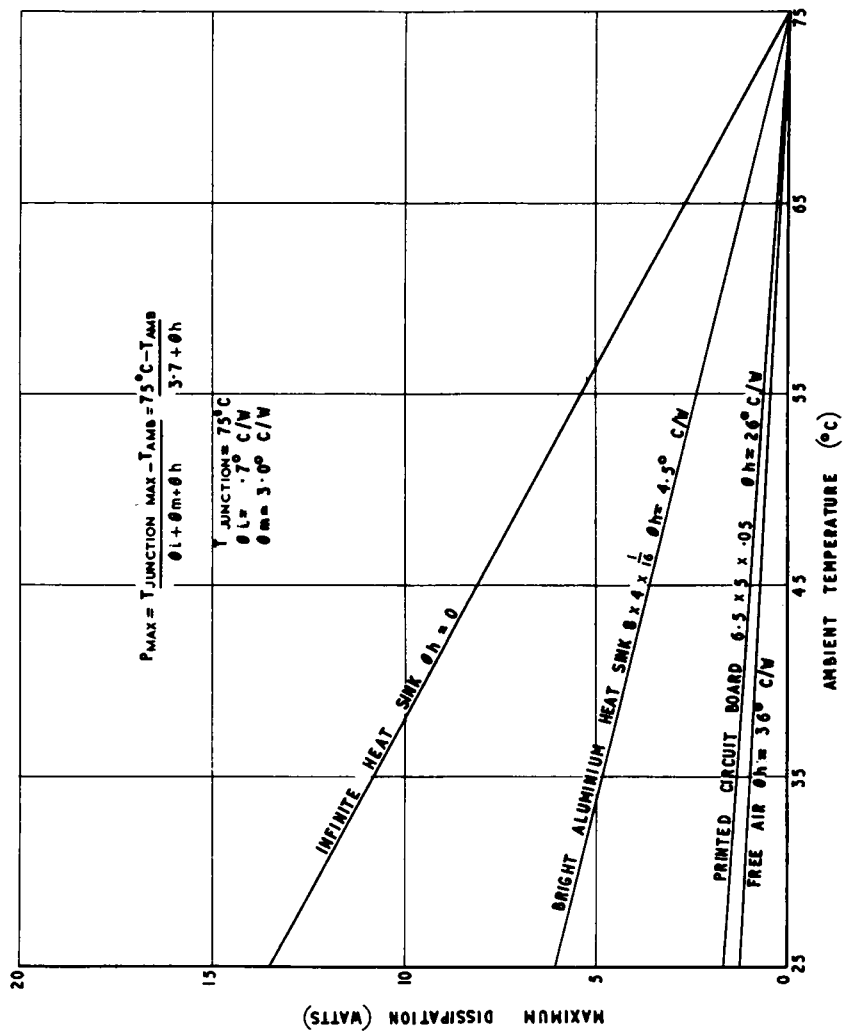
A. $P_{max} = \frac{Tj_{max} - T_{amb}}{\theta m + \theta i + \theta h}$ where θh = the thermal resistance of the heat sink.

B. Average over any 20 ms period

C. JOINT SERVICE CATALOGUE NUMBER = 5960-99-037-2100

Z.20490.

MAXIMUM DISSIPATION PLOTTED AGAINST AMBIENT TEMPERATURE.



TESTS
To be performed in addition to those applicable in K1007

K1007 ref.	TEST	TEST CONDITIONS	AQL %	Insp. Level	Symbol	Limits Min.	Limits Max.	UNITS
	GROUP A							
5.D.2	Collector Base Leakage Current (1)	V_{cb} = -24V I_e = 0		100%	I_{cbo}	-	250	/uA
5.D.4.1	Large Signal Common emitter current gain (1)	I_c = 300 mA V_{ce} = -2V		100%	h_{FE}	75	300	
	Peak Collector Cut-off current	V_{ce} = -40V pk V_{be} = + 0.5v		100%	I_c	-	2	mApk
	GROUP B	Combined AQL	2.5					
	Rise Time	Note 1	0.65	II	t_r	-	0.5	/uS
	Fall Time	Note 2	0.65	II	t_f	-	1.0	/uS
5.D.3.1	Base emitter voltage (1)	I_c = 300 mA V_{cb} = -2V	0.65	II	V_{be}	0.2	0.5	V
	GROUP C	Combined AQL	6.5					
5.D.3.2	Collector emitter Saturation voltage	I_c = -1.0A I_b = -30 mA	2.5	I	V_{ce}	0.15	0.85	V
5.D.2.2	Emitter base Leakage current	V_{eb} = -12V I_c = 0	2.5	I		-	100	/uA
5.D.4.1	Large signal common emitter current gain (2)	I_c = 1.0A V_{eb} = -2V	2.5	I	h_{FE}	70	300	
5.D.3.1	Base emitter voltage (2)	V_{cb} = -2V I_c = 1.0A	2.5	I	V_{be}	0.3	1.0	V
5.D.4.1	Large signal common emitter current gain (3)	V_{cb} = -2V I_c = 100 mA	2.5	I	h_{FE}	100	500	
5D.5.1	Base emitter voltage (3)	V_{cb} = -2V I_c = 100 mA	2.5	I	V_{be}	100	400	mV
	GROUP D							
5.D.2	Collector Base Leakage current (2)	V_{cb} = -24V I_e = 0 T_A = 75°C±2°C	6.5	IC	I_{cbo}	-	10	mA
	GROUP E							
10.2	Temperature cycling	No voltages Three cycles -55°C to + 75°C		IC				
10.3	Climatic cycling	No voltages						
	Post Temperature and climatic cycling tests	Combined AQL	10					

CV7054

TESTS (continued)

K1007 ref.	TEST	TEST CONDITIONS	AQL %	Insp. Level	Symbol	Limits Min.	Limits Max.	UNITS
	GROUP E (Cont'd)							
8	Inoperatives	No voltages	6.5					
5.D.2	Collector Base leakage current	As in Group A	6.5		I_{cbo}	-	300	/uA
5.D.4.1	Large signal common emitter current gain	As in Group A	6.5		h_{FE}	70	300	
	Pk collector cut off current	As in Group A	6.5		I_c	-	2.2	mAPk
11.3	Fatigue Shock	No voltages No Voltages Hammer Angle = 60°		IC TA				
	Post Fatigue and Shock Tests	Combined AQL	10					
8	Inoperatives	No voltages	6.5					
5.D.4.1	Common emitter large signal current gain	As in Group A	6.5		h_{FE}	75	300	
11.5	Soldering	No voltages	6.5	IC				
	GROUP F							
13	Life	P_c = 3.1 watts T_{amb} = 65°C ± 2 C V_{ce} = -12v min T_j = 75°C		IC				
13.3	Life Test end points 1000 hours	Combined AQL	10					
8	Inoperatives	No voltages	6.5					
5.D.2	Collector Base leakage current	As in Group A	6.5		I_{cbo}	-	350	/uA
5.D.4.1	Common emitter large signal current gain	As in Group A	6.5		h_{FE}	70	300	
	Pk Collector cut off current		6.5		I_c	-	3.0	mAPk

TESTS (Cont'd)

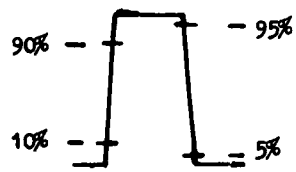
K1007 Ref.	TEST	TEST CONDITIONS	AQL %	Insp. Level	Symbol	Limits Min.	Limits Max	UNITS
13.7.1	Change in average $\frac{1}{h_{FE}}$ between 24 and 1000 hours	As in Group A	6.5		$\Delta\frac{1}{h_{FE}}$		.0015	
13.3	Life Test and Points 240 hrs. (Reduced duration)							
8.	Inoperatives	No voltages						
5.D.2	Collector base leakage current	As in Group A			I_{cbo}		350	/uA
5.D.4.1	Common emitter large signal current	As in Group A			h_{FE}	70	300	
	Pk Collector cut-off current	As in Group A			I_c		3.0.	mAPk
	Change in average $\frac{1}{h_{FE}}$ between 24 and 240 hrs.	As in Group A			$\Delta\frac{1}{h_{FE}}$ (AV.)		.0009	
13.4	Storage life(1)	No voltages t = 150 hours T = -55°C		I				
13.5	Storage life(2)	No voltages t = 150 hours T = + 75°C		I				
	Post storage life test end points							
	Repeat Group A tests	Combined AQL for Storage Life (1) Combined AQL for Storage Life (2)	2.5 4.0					
	GROUP G Re-test after 28 days holding period			100%				
8	Inoperatives	No voltages	0.5					
5.D.4.1	Common emitter large signal current gain	As in Group A	2.0		h_{FE}	75	300	

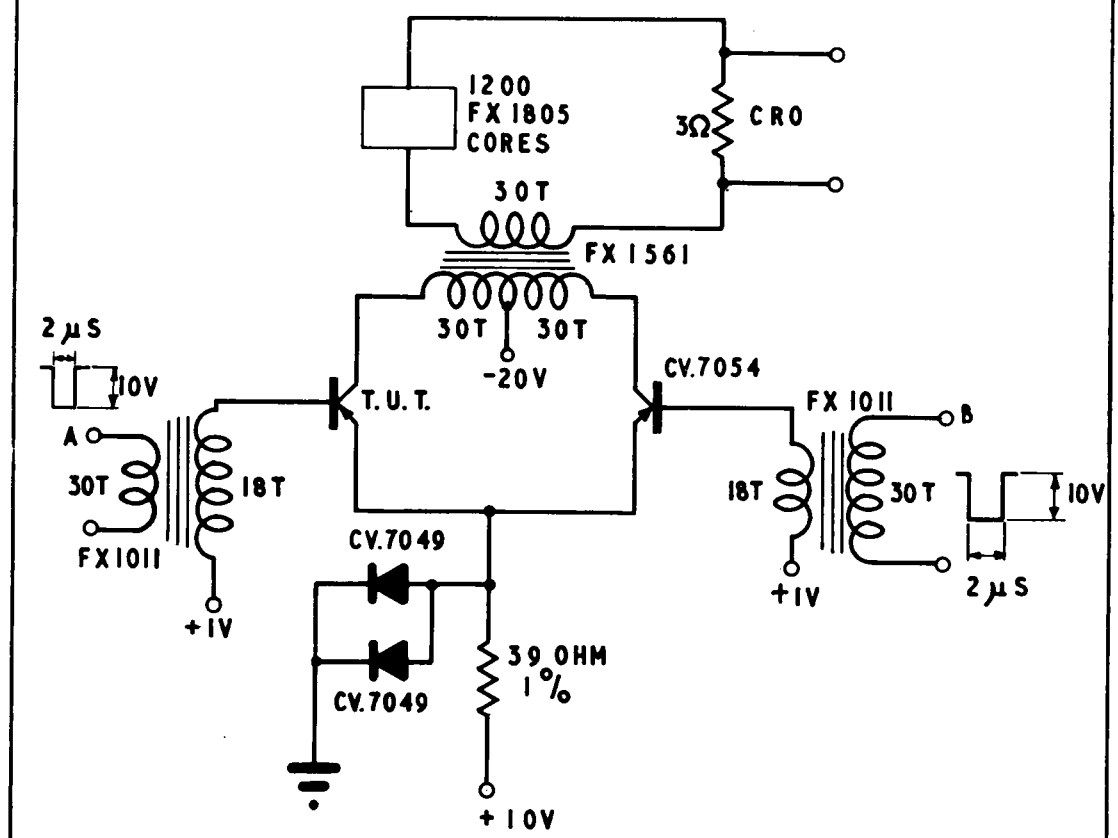
NOTES

1. Rise time, measured in the circuit on page 7, is the time for the output current pulse to rise from 10% to 90% of its final value (i.e. to 315 mA)

   At no time shall the overswing exceed a maximum of 368 mA.

2. This test shall be made in the circuit given on page 7.
   Fall time is the time for the output current pulse to fall from 95% to 5% of its final value (i.e. 17.5 mA)




1200
FX 1805
CORES
3Ω
CRO
30T
FX 1561
30T
30T
-20V
2 μS
10V
T.U.T.
CV.7054
A
30T
18T
FX1011
+1V
FX 1011
B
18T
30T
10V
+1V
2 μS
CV.7049
CV.7049
39 OHM
1%
+10V