

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION CV7152

ISSUE No.1 DATED 25.11.60

AMENDMENT No.1

Page 3 Group A, Collector Cut-off Current

In column headed Test Conditions,
amend $V_{eb} = 0.5V$ to read $V_{eb} = -0.5V$.

Ministry of Aviation/RAE

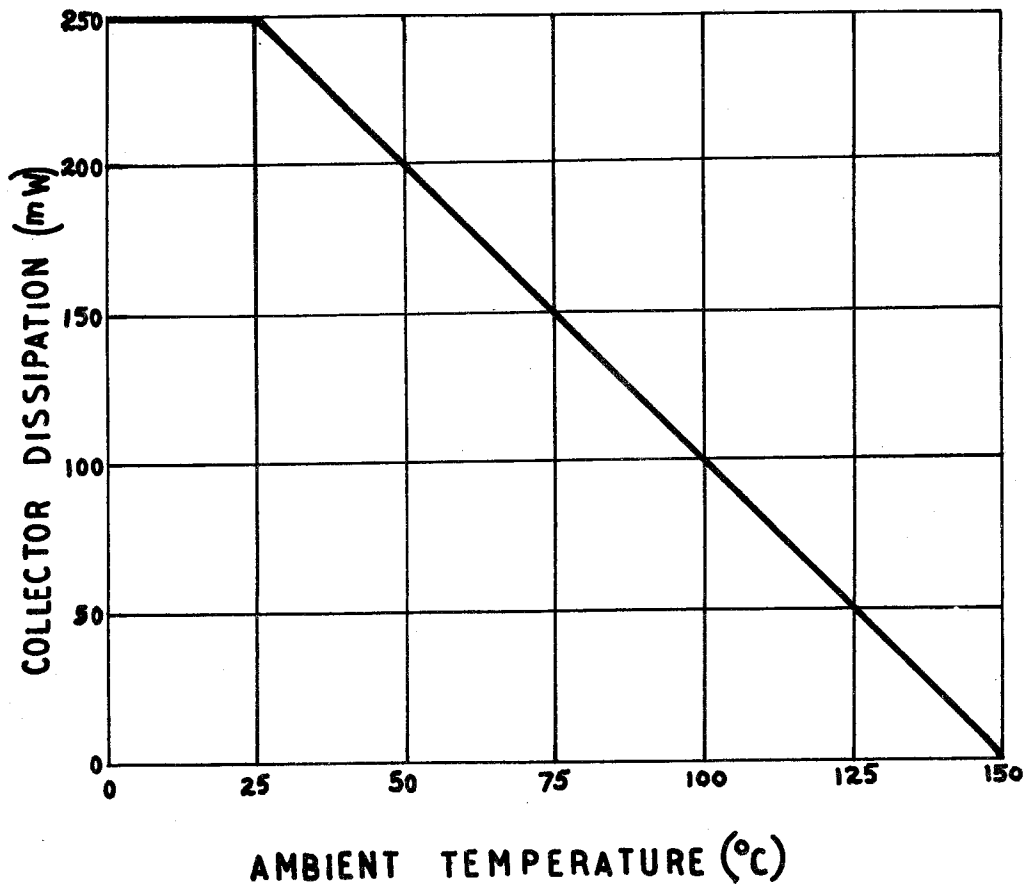
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SPECIFICATION M.O.A./CV71 ISSUE NO.1 DATED 25.11.60 To be read in conjunction with K.1007. Sections 1,2,3,4,5.1,5.2,5.3,9,15 and other sections and appendices referred to in the test specification.	<u>SECURITY</u>	
	<u>SPECIFICATION</u> Unclassified	<u>VALVE</u> Unclassified

TYPE OF VALVE: Silicon P.N.P. Junction Transistor PROTOTYPE: OC.203 (T.O.5.Package)		<u>MARKING</u>	
		See K.1007/4. CV No. and if possible the factory and date code.	
<u>RATINGS AND CHARACTERISTICS</u> (not for Inspection purposes) All limiting values are absolute.		<u>CONNECTIONS</u>	
		NOTES	Lead 1. Emitter Lead 2. Base Lead 3. Collector
Max.Negative Collector Base Voltage Vcb (d.c. or Peak)	(V) 60		
Max.Negative Collector Emitter Voltage Vce (d.c. or Peak)	(V) 60		
Max.Negative Peak Collector Current	(mA) 100		
Max.Negative Average Collector Current	(mA) 50		
Max.Reverse Emitter Base Voltage Vbe. (d.c. or Peak)	(V) 30		
Min. Cut-off Frequency of hfb	(Mc/s) 0.3		
Max. Collector Dissipation	(mW) 250	A,B	
Max. Operating Temperature	(°C) 150		
Max. Storage Temperature Range	(°C) -55 to +100		
Max. Collector Base Leakage Current			
T.amb = 25°C Vcb = -6V	(µA) 0.1		
T.amb = 100°C Vcb = -6V	(µA) 10		
Min. Current Gain (hfe)			
T.amb = -55°C	- 6		
Max. Reverse Base Leakage Current			
T.amb = 25°C Veb = -6V	(µA) 0.1	C	
T.amb = 100°C Veb = -6V	(µA) 10		
<u>NOTES</u>		<u>DIMENSIONS</u>	
A. Suspended in free air at normal pressure. T.amb = 25°C.		See K1007/A1/D3A	
B. See derating curve on page 2.		<u>BASE</u>	
C. Measured at Veb = -6V. Ic=0.		See K1007/A1/D3B	
D. The Joint Services Catalogue Number is 5960-99-037-2415		<u>BODY</u>	
		The Body shall be insu- lated from all leads	
		<u>MOUNTING POSITION</u>	
		Any	
		<u>PACKAGING</u>	
		See K.1007/14	

DERATING CURVE



K.1007 Ref.	Test	Test Conditions	AQL %	Insp. Level	Symbol	LIMITS		Units
						Min.	Max.	
	<u>GROUP A</u>							
5D.2	Collector-Base Leakage Current	Vcb = 6V Ie = 0	-	100%	Icbo	-	0.1	µA
5D.3.5	Collector-Cut-Off Current	Vcb = -60V Veb = 0.5V	-	100%	Ic00	-	20	µA
-	D.C. Current Gain	Vcb = -6V. Ie = ImA	-	100%	hFE	10	40	-
	<u>GROUP B</u> Omitted							
	<u>GROUP C</u>							
5D.3	Collector-Emitter Saturation Voltage	Combined AQL Ic = -20 mA Ib = -3 mA	6.5					
			2.5	I	Vce	-	0.6	V
5D.3.1	Base-Emitter Voltage	Vcb = 0 Ie = 20 mA	2.5	I	Vbe	-	1.1	V
5D.2.2	Reverse Emitter Leakage Current	Veb = 6V Ic = 0	2.5	I	Iebo	-	0.1	µA
5D.6	Noise Figure	Common Emitter Circuit Vce = -2V Ic = 0.5 mA Z Source = 500 Z Load = 6 K ±4 K f = 1 kc/s	2.5	I	N	-	16	dB
5D.5.2	Cut-Off-Frequency of hfb	Vcb = -6V Ic = -1 mA. Note 1	2.5	I	f	0.3	-	Mc/s
	<u>GROUP D</u>							
10.4	Photo Sensitivity	Vcb = -60V Ie = 0	2.5	I	Icbo	-	0.3	µA
5D.2	Collector-Base Leakage Current	As in Group A T.amb = 100°C	6.5	IC	icbo	-	10	µA
5D.4	Common Emitter Small Signal Current Gain	Vce = -6V Ic Ic = -1 mA d.c. and 0.25 mA a.c. r.m.s. max super- imposed f=1 kc/s	2.5	IC	hfe	10	40	-
5D.4	Common Emitter Small Signal Current Gain	As above T.amb = -55°C	6.5	IC	hfe	6	-	-
	<u>GROUP E</u>							
10.2	Temperature Cycling	Three cycles -55°C to +100°C No voltages. Note 2	-	IC	-	-	-	-
10.3	Climatic Cycling	No voltages. Note 2	-	-	-	-	-	-

K.1007 Ref.	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits		Units
						Min.	Max.	
	<u>Post Temperature Cycling and Climatic Cycling Tests</u>	Combined AQL	10.0					
8	Inoperatives	No voltages	6.5	-	-	-	-	-
5D.2	Collector-Base Leakage Current	As in Group A.	6.5	-	Icbo	-	0.15	μA
5D.3.5	Collector Cut-off Current	As in Group A	6.5	-	Ic00	-	30	μA
	D.C. Current Gain	As in Group A	6.5	-	hFE	8	44	-
10.4	Photo-Sensitivity	As in Group D	6.5	-	Icbo	-	0.3	μA
11.3	Fatigue	No voltages	-	IC	-	-	-	-
	<u>Post Fatigue Tests</u>	Combined AQL	10.0					
8	Inoperatives	No voltages	6.5	-	-	-	-	-
	D.C. Current Gain	As in Group A	6.5	-	hFE	10	40	-
11.4	Shock	No voltages	-	TA	-	-	-	-
	<u>Post Shock Tests</u>	Combined AQL	10.0					
8	Inoperatives	No voltages	6.5	-	-	-	-	-
	D.C. Current Gain	As in Group A	6.5	-	hFE	10	40	-
10.1	Lead Fragility	No voltages. Note 3	6.5	IC	-	-	-	-
11.5	Solderability	No voltages	6.5	IC	-	-	-	-
	<u>GROUP F</u>							
13	Life	Vcb = -60V Pc = 150 mW T.amb 75°C Note 4	-	IA	-	-	-	-
13.3	<u>Life Test, End Point 1,000 hours</u>	Combined AQL	4.0					
5D.2	Collector-Base Leakage Current	As in Group A	2.5	-	Icbo	-	0.15	μA
5D.3.5	Collector Cut-off Current	As in Group A	2.5	-	Ic00	-	30	μA

K.1007 Ref.	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits		Units
						Min.	Max.	
13.7.1	D.C. Current Gain	As in Group A	2.5	-	hFE	8	44	-
	Change in average hFE between 0 and 1,000 hours.	As in Group A	-	-	hFEav	-	15%	-
8	Inoperatives	No voltages	2.5	-	-	-	-	-
	<u>Life Test End Point</u> 240 hours							
5D.2	Collector Base Leakage Current	As in Group A	-	-	Icbo	-	0.15	µA
5D.3.5	Collector-Out-off Current	As in Group A	-	-	Ic00	-	30	µA
13.7.1	D.C. Current Gain	As in Group A	-	-	hFE	8	44	-
	Change in average hFE between 0 and 240 hours	As in Group A	-	-	hFEav	-	15%	-
8	Inoperatives	No voltages	-	-	-	-	-	-
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 = +100°C	-	I	-	-	-	-
	<u>Post Storage Life Tests</u>							
	Repeat Group A Tests	Combined AQL for Storage Life (1)	2.5	-	-	-	-	-
		Combined AQL for Storage Life (2)	4.0	-	-	-	-	-
5D.2	Collector-Base Leakage Current	As in Group A	-	-	Icbo	-	0.15	µA
5D.3.5	Collector-Out-off Current	As in Group A	-	-	Icbo	-	30	µA
5D.4	D.C. Current Gain	As in Group A	-	-	hFE	8	44	-
	<u>GROUP G</u>							
5.3.2.11	Retest after 28 days holding period		-	100%	-	-	-	-
8	Inoperatives	No voltages	0.5	-	-	-	-	-
5D.4	D.C. Current Gain	As in Group A	2.0	-	hFE	10	40	-

NOTES

1. The hfb (alpha) cut-off frequency is the frequency at which hfb drops to .707 of its value at 1/10th of its specified frequency or lower.
2. The sample shall initially be subjected to conditioning in accordance with K.1007. 10.1 and shall then be subjected to temperature cycling and climatic cycling in sequence and shall then pass the post temperature and climatic cycling tests.
3. Transistors used for this test must have undergone climatic cycling in accordance with either K.1007, 10.3.1(28 cycles) or 10.3.3 (6 cycles).
4. Alternatively the Life test may be performed at any ambient temperature between 45°C and 125°C given by the rating curve on page 2.