

MILITARY SPECIFICATION

CV7391

SEMICONDUCTOR DEVICE, TRANSISTOR TYPE

Description:- This specification covers the detail requirements for a PNP Germanium High Frequency Mesa Transistor and is in accordance with K1007 except as otherwise stated.

Mechanical Dimensions and Outline:- K1007, Section B, 10.3.2.2 and 10.4.2.2 except that dimension 1 shall be 7.620 mm (min) and 12.70 mm (max).

Connections:- Collector connected to case.
 Lead 1, Emitter. Lead 2, Base. Lead 3, Collector.

Absolute Maximum Ratings:-

Rating	V_{CB}	V_{CE}	V_{EB}	I_C (PK)	I_o	I_B (PK)	P_{tot} (amb)	P_{tot} (case)
Unit	V	V	V	mA	mA	mA	mW	mW
Min	-	-	-	-	-	-	-	-
Max	-36	-15	-2.5	100	50	50	300	600
Note							A	A

Rating	T_{opn}	T_{stg}	Shock	Vibration
Unit	$^{\circ}C$	$^{\circ}C$	g	g
Min	-55	-55	-	-
Max	+85	+100	15	20
Note			C	

- Note A. See Fig 1, Page 9.
 B. Commercial prototype 2 G 110.
 C. Duration 0.5 mSec.

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Primary Electrical Characteristics:-

Characteristics		I_{CBO}	h_{FE}	P_{out}
Unit		μA	-	mW
Min		-	25	100
Max		10	75	-
CONDITIONS	T_{amb} $^{\circ}C$	25	25	25
	V_{CB} V	-36	-	-
	V_{CE} V	-	-3	-
	I_B mA	0	-	-
	I_C mA	-	50	-
	V_{CC} V	-	-	-18
	f Mc/s	-	-	100
Note				1

Note 1. See Fig 2, Page 10, available P_{in} -25mW, Operating Power Gain 8.5 dB.

Requirements

Marking K1007, Section B, 1.3.4.

Quality Assurance Provisions

Destructive Tests The tests listed in Table 2, Group B Inspection, Sub-Groups 2, 3 and 4 and Table 3, Group C Inspection, Sub-Group 2 are considered destructive.

Group C Inspection This inspection shall be conducted on the initial lot, and thereafter every ninety days or every fifth lot, whichever occurs first.

Preparation for Delivery

Packaging The device shall be packed in accordance with K1007, Issue 3, Section A.1.2.(c).

Joint Service Catalogue Number

5960-99-037-3396.

This specification has been prepared by, and the Qualification Approval Authority is:-

Ministry of Aviation, Signals Research and Development Establishment,
Christchurch, Hampshire, England.

1st May 1963

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Table 1 GROUP A INSPECTION

Examination or Test	K1007/ NATO Ref	Test Conditions	AQL %	Insp. Level	Symbol	Limits		Units
						Min	Max	
<u>SUB GROUP 1</u> Visual and Mechanical Inspection.	5.1	Excluding Physical Dimensions	0.65	I				
	7.2.5.1	$V_{CB} = -36V$ $I_E = 0$ Available $P_{in} = 25mW$ $f = 100 Mc/s$ See Fig 2 Page 10	0.65	II	I_{CBO}	-	10	μA
Output Power					P_{out}	100	-	mW
Static Forward Current Transfer Ratio	7.3.4	$V_{CE} = -3V$ $I_C = 50mA$			h_{FE}	25	75	
	7.2.5.1	$V_{CB} = -10V$ $I_E = 0$ $T_{amb} = +55^\circ C$	2.5	I	I_{CBO}	-	100	μA
<u>SUB GROUP 3</u> Collector-Base Cut-Off Current (2)								

Table 1 GROUP A INSPECTION (Cont'd.)

Examination or Test	K1007/ NATO Ref	Test Conditions		AQL %	Insp. Level	Symbol	Limits		Units
		Specific Conditions					Min	Max	
<u>SUB GROUP 3 (Cont'd.)</u> Output Capacitance		$V_{CB} = -10V$ $I_E = 0$ $f = 1 \text{ Mc/s}$				C_{ob}	-	6	pF
<u>SUB GROUP 4</u> Omitted.									

Table 2 GROUP B INSPECTION

Examination or Test	Test Conditions		AQL %	Insp. Level	Symbol	Limits		Units
	K1007/ NATO Ref	Specific Conditions				Min	Max	
<u>SUB GROUP 1</u> Physical Dimensions	5.1	According to drawings 10.3.2.2 and 10.4.2.2 except that dimension 1 shall be 7.620 mm (min) and 12.70 mm (max)	6.5	IC				
<u>SUB GROUP 2</u> Solderability	5.13		4.0	IA				
Temperature Cycling	5.5	-55°C to +75°C						
Moisture Resistance	5.3.1							
<u>SUB GROUP 3</u> Vibration Fatigue	5.15.1		4.0	I Note 1				
<u>SUB GROUP 4</u> Lead Fatigue	5.10.2	2 cycles	6.5	IA				
<u>SUB GROUP 5</u> Omitted								

Table 2 GROUP B INSPECTION (Cont'd.)

Examination or Test	Test Conditions		AQL %	Insp. Level	Symbol	Limits		Units
	K1007/ NATO Ref	Specific Conditions				Min	Max	
<u>SUB GROUP 6</u>								
Omitted								
<u>SUB GROUP 7</u>			4.0	I Note 1				
High Temperature Life	6.2.1 6.6.1.2.2	T _{stg} = +100°C, t = 1000 hrs						
<u>SUB GROUP 8</u>			4.0	IA				
Operating Life	6.3 6.5 6.6.1.1 6.6.1.2.2	V _{CB} = -24V (min) T _{amb} between 25°C and 55°C with the corresponding P _{tot} given on the derating curve Fig 1 Page 9 Duration = 1000 hours.						
<u>Post Test End Points for SUB GROUPS 2, 3, 7 and 8</u>								
Collector-Base Cut-Off Current (1)	7.2.5.1	As in Group A, Sub Group 2			I _{CBO}		15	µA
Static Forward Current Transfer Ratio.	7.3.4	As in Group A, Sub Group 2			h _{FE}		20	90

Table 3 GROUP C INSPECTION

Examination or Test	Test Conditions		AQL %	Insp. Level	Symbol	Limits		Units
	K1007/ NATO Ref	Specific Conditions				Min	Max	
<u>SUB GROUP 1</u>								
Omitted								
<u>SUB GROUP 2</u>			6.5	IA				
Shock	5.17.1	Non-operating 5 blows in each of four directions, three of which shall be perpendicular. Two shall be opposite, namely towards the base and away from the base.						
<u>Post Test End Points</u>								
Collector-Base Cut-Off Current	7.2.5.1	As in Group A Sub-Group 2			I _{CBO}	-	15	µA
Static Forward Current Transfer Ratio	7.3.4	As in Group A Sub-Group 2				20	90	

NOTES

1. The sample size shall not exceed 125

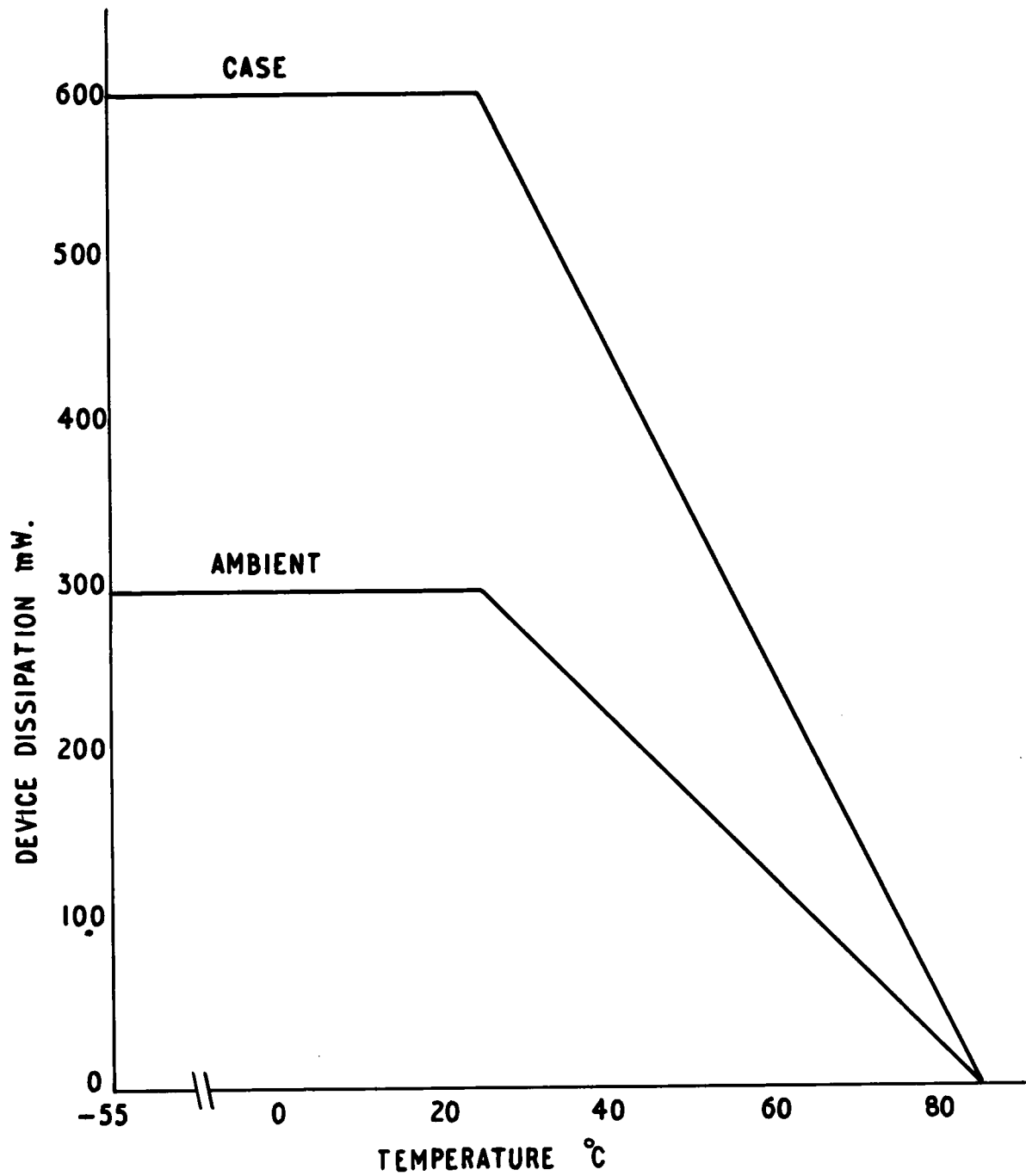


FIG. I.
DERATING CURVE.

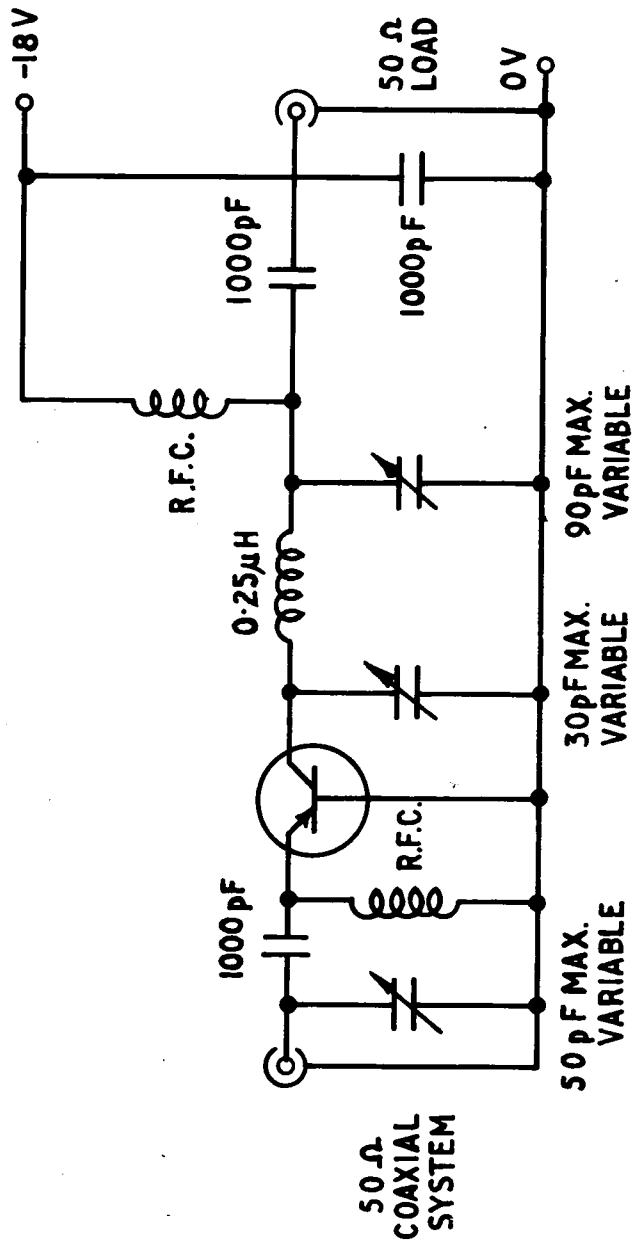


FIG. 2.
TEST CIRCUIT FOR POWER OUTPUT.