

MILITARY SPECIFICATION
CV 7459
 SEMICONDUCTOR DEVICE, TRANSISTOR

Description:- This specification covers the detail requirements for a Silicon PNP Junction Transistor and is in accordance with Specification K1007 Issue 3 except as otherwise stated.

Mechanical Dimensions and Outline:- K1007, Section B 10.3.1, 10.3.2.2, 10.4.1 and 10.4.2.2.

Connections:- Lead 1. Emitter, Lead 2. Base, Lead 3. Collector
 The body shall be insulated from all leads.

Absolute Maximum Ratings:-

Rating	V _{CB}	V _{CE}	V _{EB}	I _C (av)	I _{CM}	P	T _{amb}	T _{sts}	Shock	Vibration
Unit	V	V	V	mA	mA	mW	°C	°C	g	g
Min	-	-	-	-	-	-	-	-55	-	-
Max	60	60	20	250	500	300	200	200	1500	20
Note	1	1	1			2			3	

- Notes
1. d.c. or peak
 2. See derating curve, Page 9 Fig. 1.
 3. Duration 0.5 mS.
 4. Equivalent of CV7188.

CV7459

Primary Electrical Characteristics



Characteristic	I_{CBO} (1)	I_{CBO} (1)	h_{FE}	V_{CE} (sat)	V_{BE} (sat)	f_T	h_{FE}	F	
Unit	μA	μA		V	V	Kc/s	-	dB	
Min	-	-	25	-	-	400	12	-	
Max	0.1	5	100	0.55	0.95	-	75	16	
CONDITIONS	T_{amb} °C	25	100	25	25	25	25	25	
	V_{CB} V	-10	-100	0	0		0		
	V_{CE} V					-6		-2	
	V_{EB} V								
	I_C mA			20	125		1	150	0.5
	I_B mA				17				
	I_E mA					16			
	f Kc/s								1.0
	R_g								500 Ω

Reliability Assurance Requirements:-

Under discussion

Requirements:

Marking: The device shall be marked as K1007. Section B 1.3.4. excluding 1.3.4.1(b) minimum requirements 1.3.4.1(a) and (c).

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 devices shall be packed according to K1007, Section A 1.2 (c).

NATO Stock Number: CV7459 = 5960-99-037-3586

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

Ministry of Aviation, Royal Radar Establishment, Malvern, Worcestershire,
England.

27th January, 1965

TABLE 1 GROUP A INSPECTION

Examination or Test	TEST CONDITIONS		AQL %	Insp. Level	Symb.	LIMITS		Units
	K1007/NATO Ref.	Specific Conditions				Min	Max	
<u>SUB GROUP 1</u> Visual and Mechanical Inspection	5.1		0.65	1				
<u>SUB GROUP 2</u> Collector-emitter breakdown voltage	7.2.2.1.1	$I_E = 10 \mu A, I_B = 0$	0.65	11	V_{CEO}	60	-	V
Static forward current transfer ratio	7.3.4.	$V_{CB} = 0V, I_E = 20 mA$			h_{FE}	25	100	-
Collector-base cut-off current	7.2.5.1	$V_{CB} = -10V$			I_{CBO}	-	100	nA
<u>SUB GROUP 3</u> Collector-emitter saturation voltage	7.3.3	$I_C = 125mA, I_B = 17mA$	2.5	1	$V_{CE}(sat)$		550	mV
Base-emitter saturation voltage	7.3.1.	$V_{CB} = 0, I_E = 20mA$			$V_{BE}(sat)$		950	mV
Static forward current transfer ratio	7.3.4.	$V_{CB} = 0V, I_E = 150mA$			h_{FE}	12	75	-
Emitter-base breakdown voltage	7.2.3.	$I_C = 10 \mu A$			V_{EBO}	20	-	V

TABLE 1 GROUP A INSPECTION (Cont'd)

Examination or Test	TEST CONDITIONS		AQL %	Insp. Level	Symb.	LIMITS		Units
	K1007/NATO Ref.	Specific Conditions				Min	Max	
<u>SUB GROUP 4</u> Transition frequency	7.5.2.2	$V_{CE} = -6V, I_C = 1mA,$ $f = 300 Kc/s$	4	1A	f_T	400	-	Kc/s
Noise figure	7.6.3	$V_{CE} = -2V, I_C = 0.5mA$ $f = 1Kc/s, R_g = 500 ohms$			F	-	16	dB
Collector-base cut-off current	7.2.5.1	$V_{CB} = 10V, I_E = 0$ $T_{amb} = 100^\circ C$			I_{CBO}	-	5	μA
Static forward current transfer ratio	7.3.4	$V_{CB} = 0V, I_E = 20mA$ $T_{amb} = -55^\circ C$			h_{FE}	18	-	-

TABLE 2 GROUP B INSPECTION

See Page 3 Quality Assurance Provisions

Examination or Test	TEST CONDITIONS		Insp. Level	Symb.	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	I _C				
<u>SUB GROUP 2</u> Temperature cycling	5.5	-55°C to +100°C	IA				
<u>SUB GROUP 3</u> Moisture resistance	5.3		IA				
<u>SUB GROUP 4</u> Vibration Fatigue	5.15.1		IA				
<u>SUB GROUP 5</u> Lead Fatigue	5.10.2	3 Cycles	IA				
<u>SUB GROUP 6</u> Omitted							
<u>SUB GROUP 7</u> High temperature life (non operating)	6.2.1 6.6.1.2.1	T _{sts} = 150°C	I Note 1				
<u>SUB GROUP 8</u> Operation life	6.3.1 6.6.1.2.1	V _{CB} = 20V minimum T _{amb} any temperature between +25°C and 100°C at the dissipation given by the derating curve, Fig. 1, Page 9.	IA				

TABLE 2 GROUP B INSPECTION (Cont'd)

Examination or Test	TEST CONDITIONS		AQL %	Insp. Level	Symb.	LIMITS		Units
	K1007/NATO Ref.	Specific Conditions				Min	Max	
<u>Post test end points for</u> <u>Sub Groups 2, 3, 7 and 8</u> Collector-base out-off Current Static forward current transfer ratio	7.2.5.1	$V_{CB} = 10V$			I_{CBO}		0.2	μA
	7.3.4	$V_{CB} = 0V, I_E = 20mA$			h_{FE}		22	110

TABLE 3 GROUP C INSPECTION
See Page 3 Quality Assurance Provisions

Examination or Test	TEST CONDITIONS		AQL %	Insp. Level	Symb.	LIMITS		Units
	K1007/NATO Ref.	Specific Conditions				Min	Max	
<u>SUB GROUP 1</u> Omitted								
<u>SUB GROUP 2</u> Shock	5.17	Non operating Five blows, each orientation: Y ₁ , Y ₂ , X and Z	6.5	IA				
<u>Post test end points for Sub Group 2</u> Collector-base out-off current	7.2.5.1	V _{CB} = -10V			I _{CB}	0.2	μA	
Static forward current transfer ratio	7.3.4	V _{CB} = 0V, I _E = 20mA			h _{FE}	22	110	

NOTES

1. The maximum sample size will be 125

FIG. 1

