

Specification: M.O.A./CV.7107 Issue 1, dated 1st June, 1960. To be read in conjunction with K.1007 Sections 1, 2, 3, 4, 5.1, 5.2, 5.3, 6, 9, 15 and other sections and appendices referred to in the Test Specification.		<u>SECURITY</u>	
		<u>Specification</u>	<u>Device</u>
		Unclassified	Unclassified
—————> Indicates change			
<u>Type of Device:</u> Germanium pnp Junction Transistor		<u>MARKING</u>	
<u>Prototype:</u> TK23 C		See K.1007/4. CV.7107 and if possible the Factory Code and Date Code. The Collector lead shall be marked by a white spot on the body adjacent to the lead.	
<u>RATINGS AND CHARACTERISTICS</u> (Not for Inspection Purposes)			
<u>ALL LIMITING VALUES ARE ABSOLUTE</u>		Note	
Maximum Collector Dissipation at ambient temperature of 55°C (mW)	80	A	<u>DIMENSIONS AND CONNECTIONS</u> See K 1007/A1/D2
Maximum Operating Junction Temperature (°C)	75		
Storage temperature range -55°C to +75°C	see Fig.1		
Derating factor			
Maximum negative Peak Collector current (mA)	250		<u>BODY</u> The body shall be insulated from all leads or alternatively shall be covered with an approved insulating sleeve.
Maximum negative Mean Collector current (mA)	125		
Maximum negative Collector-base voltage	40		
Maximum negative Collector-emitter voltage with $R_e \geq 10k\Omega$ $R_b \leq 50k\Omega$	30	B	<u>MOUNTING POSITION</u> Any
Maximum negative reverse Emitter-base voltage	20		
Typical value of voltage feedback ratio with input open-circuit to a.c. (h_{rb}) $V_{CB} = -12V$, $I_C = -1mA$	2×10^{-4}		<u>PACKAGING</u> K 1007/L4
Typical value of input resistance with output short-circuited to a.c. (h_{ib}) $V_{CB} = -12V$, $I_C = -1mA$ (ohms)	28		
Typical value of output conductance with input open-circuit to a.c. (h_{ob}) $V_{CB} = -12V$, $I_C = -1mA$ (μmho)	0.3		
Typical value of high frequency noise factor, source resistance 500 Ω , frequency 100 kc/s. $V_{CE} = -4.5V$, $I_C = -1mA$ (dB)	3		
Typical value of output capacitance at $V_{CB} = -12V$. $I_E = 0$ (pF)	20		
<u>NOTES</u>			
A. Suspended in free air at normal pressure.			
B. R_e is the external resistance in the emitter circuit and R_b is the external resistance in the base circuit.			
C. The Joint Services Catalogue Number is 5960-99-037-2217			

K1007	Test	Test Conditions	AQL %	Insp. Level	Sym.	Limits		Units
						Min.	Max.	
5D4	<u>GROUP A</u> Common emitter small signal current gain	$V_{CE} = -12V$, $I_E = -1mA$ Frequency = 1000 c/s		100%	h_{fe}	30	80	
5D2	Collector-base leakage current	$V_{CB} = -12V$, $I_E = 0$		100%	I_{CBO}		7	μA
5D2	<u>GROUP B</u> Collector stabilised leakage current	$V_{CE} = -30V$ 10k Ω from emitter and 50k Ω from base to positive supply	0.65	II	I_{CEBO}		120	μA
5D3.2	<u>GROUP C</u> Collector-emitter saturation voltage	Combined AQL $I_B = -1mA$ $I_C = -20mA$	6.5		$V_{CE}(SAT)$		0.25	V
5D5	Cut-off frequency	$V_{CB} = -12V$ $I_C = -1mA$ NOTE 1	2.5	1	h_{fb}	750		kc/s
5D2	High temperature collector base leakage current	$V_{CB} = -12V$ $I_E = 0$ $T_{amb} = 60^\circ C$	2.5	1	I_{CBO}		100	μA
5D4	High temperature common-emitter small signal current gain	$V_{CE} = -12V$ $I_C = -1mA$ $T_{amb} = 60^\circ C$	2.5	1	h_{fe}		110	
5D6	<u>GROUP D</u> Noise figure	$V_{CE} = -4.5V$ $I_C = -0.5 mA$ $f = 1000 c/s.$ $R_S = 600 \Omega$	6.5	1A	N		16	dB
10.4	Photosensitivity	$V_{CB} = -12V.$ $I_E = 0$	6.5	1A	ΔI_{CBO}		1.5	μA
5D8.1.2	Input Resistance with output open- circuited to a.c.	$V_{CB} = -12V$ $I_C = -1mA$	6.5	1A	h_{ib}		35	Ω
5D8.1.3	Output Conductance with input open- circuited to a.c.	$V_{CB} = -12V$ $I_C = -1mA$	6.5	1A	h_{ob}		0.7	μmho
5D6	High frequency Noise Figure	$V_{CE} = -4.5V$ $I_C = -0.5 mA$ $f = 100 kc/s.$ $R_S = 600 \Omega$	6.5	1A	N_{hf}		8	dB
5D7	Output Capacitance	$V_{CB} = -12V.$ $I_E = 0$	6.5	1A	C_{ob}		25	pF

K1007	Test	Test Conditions	AQL %	Insp. Level	Sym.	Limits		Units
						Min.	Max.	
	<u>GROUP E</u>							
10.2	Temperature Cycling	Three cycles -55°C to +75°C. No voltages. (Note 2)		1C				
10.3	Climatic Cycling	No Voltages. (Note 2)						
	<u>Post Temperature and Climatic Cycling Tests</u>							
8	Inoperatives	Combined AQL	10					
5D2	Collector-base leakage current.	No Voltages	6.5					
5D4	Common-emitter current gain.	As in Group A	6.5		I _{CBO}		7	μA
5D2	Collector stabilised leakage current.	As in Group A	6.5		h _{fe}	25	90	
	Photosensitivity	As in Group B	6.5		I _{CEBO}		150	μA
		As in Group D	6.5		ΔI _{CBO}		1.5	μA
11.3	Fatigue	No Voltages		1C				
	<u>Post Fatigue Tests</u>							
	Inoperatives	Combined AQL	10					
5D4	Common emitter current gain.	No Voltages	6.5					
		As in Group A	6.5		h _{fe}	30	80	
11.4	Shock	No Voltages Hammer Angle = 60°		TA				
	<u>Post Shock Tests</u>							
	Inoperatives	Combined AQL	10					
5D4	Common emitter current gain.	No Voltages.	6.5					
		As in Group A	6.5		h _{fe}	30	80	
10.4	Lead Fragility	No Voltages (Note 3)	6.5	1C				
11.5	Soldering	No Voltages	6.5	1C				
13	<u>GROUP F</u> <u>LIFE</u>	V _{CB} = -12V. P _C = 200mW T _{amb} = 25°C		1A				
	<u>Life Test End Point 1000 hours</u>							
	Collector-base leakage current.	Combined AQL	10					
		As in Group A	6.5		I _{CBO}		7	μA
	Collector Stabilised Leakage Current	As in Group B	6.5		I _{CEBO}		150	μA
	Common emitter current gain.	As in Group A	6.5		h _{fe}	25	100	
13.7.1	Change in average 1/h _{fe} between 24 and 1,000 hours.	As in Group A			Δ (1/h _{fe}) _{AV}		0.004	
8	Inoperatives	No Voltages	6.5					

K1007	Test	Test Conditions	AQL %	Insp. Level	Sym.	Limits		Units
						Min.	Max.	
13.3.3	<u>Life Test End Point 240 hours</u> Collector-base Leakage current	As in Group A				I_{CBO}	7	μA
	Collector Stabilised Leakage Current	As in Group B				I_{CEBO}	150	μA
	Common emitter current gain	As in Group A				h_{fe}	25 100	
13.7.1	Change in average $1/h_{fe}$ between 24 and 240 hours	As in Group A				$\Delta \left(\frac{1}{h_{fe}} \right)_{AV}$	0.0025	
8	Inoperatives	No Voltages						
13.4	<u>Storage Life (1)</u>	t = 150 hours T = -55°C		1				
13.5	<u>Storage Life (2)</u>	t = 150 hours T = +75°C		1				
	<u>Post Storage Life Tests</u> Repeat Group A and B tests.	Combined AQL for Storage Life (1) Combined AQL for Storage Life (2)	2.5 4.0					
5.3.2.11	<u>GROUP G</u> Re-test after 28 days holding period.							
8	Inoperatives	No Voltages	0.5	100%				
	Common emitter current gain	As in Group A	2.0			h_{fe}	30 80	

Note 1. The hfb (Alpha) cut-off frequency is the frequency at which hfb drops to 0.707 of its value at $1/10^{TH}$ of its specified hfb cut-off frequency or lower.

Note 2. The sample of transistors shall be subjected to conditioning in accordance with K1007, Section 10.1 and shall then be subjected to temperature cycling and climatic cycling in sequence and shall then pass the post temperature and post climatic cycling tests.

Note 3. Transistors used for this test must have undergone at least 28 cycles of the climatic test in accordance with K1007, Section 10.3.1 or 10.3.2 or 6 cycles in accordance with Section 10.3.3.

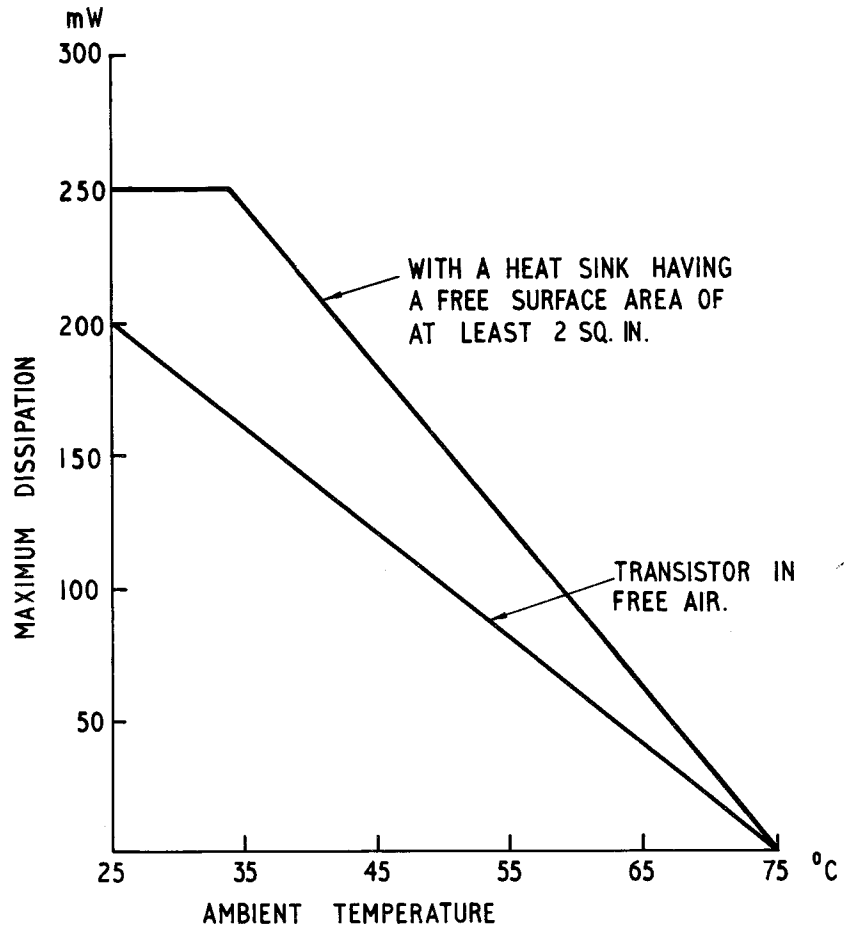


FIG. 1. DERATING CURVE.