

Specification MOS/CV.7005 Issue 1, Dated 25.2.59. 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> Unclassified	<u>Device</u> Unclassified

→ Indicates a change *See K1007 14.5"*

<u>TYPE OF DEVICE:-</u> Germanium P.N.P. Junction Transistor		<u>MARKING</u>	
<u>PROTOTYPE:-</u> OC.71		See K.1007/4. CV.7005 and, if possible the Factory and Date Code. The Collector lead shall be indicated 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	
Max. Collector dissipation at Ambient Temperature of 55°C	(mW) (°C)	50 75	
Max. Operating Junction Temperature			
Storage Temperature Range -55°C to +75°C			
Max. Thermal Resistance	(°C/mW)	0.4	A
Max. Negative Mean Collector Current	(mA)	10	C
Max. Mean Emitter Current	(mA)	10	C
Max. Negative Peak Collector-Base Voltage	(V)	30	
Max. Negative Mean Collector-Base Voltage	(V)	20	C
Max. Negative Peak Collector-Emitter Voltage with Z _b < 800Ω	(V)	30	B
Max. Negative Peak Collector-Emitter Voltage with Z _b > 40kΩ	(V)	10	B
Max. Negative Mean Collector-Emitter Voltage with Z _b < 800Ω	(V)	20	B, C
Max. Negative Mean Collector-Emitter Voltage with Z _b > 40kΩ	(V)	7	B, C
Min. cut-off frequency of h _{fb}	(kc/s)	350	
Open circuit output conductance (Typical)	(μmhos)	0.6	D
			<u>CONNECTIONS</u>
			The leads of a transistor with triangular disposition shall be arranged in clockwise sequence, emitter-base-collector when viewed from the lead end. Alternatively they may be in line, in the same sequence.
			<u>DIMENSIONS</u>
			See K.1007/A1/D2
			<u>BODY</u>
			The body shall be insulated from all leads or alternatively shall be covered with an approved insulating sleeve.
			<u>MOUNTING POSITION</u> ANY
			<u>PACKAGING</u> K.1007/14

NOTES

- A. Suspended in free air at normal pressure.
- B. Z_b is the external impedance in the base circuit.
- C. Averaged over any 20 millisecond period.
- D. Measured at V_{cb} = -6V, I_e = 1mA.
- E. The Joint Services Catalogue Number is 5960-99-037-2005.

TESTS

K.1007	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits		Unit
						Min.	Max.	
	<u>GROUP A</u>							
5D.2	Collector - Base Leakage Current	V _{eb} = -4.5V I _e = 0		100%	I _{cbo}	-	10	μA
5D.2.1	Collector Stabilised Leakage Current	V _{ce} = -30V 10kΩ from emitter and 50kΩ from base to positive supply.		100%	I _{cebo}	-	120	μA
5D.4	Common Emitter Current Gain	V _{ce} = -6V I _c = -1mA D.C. and 0.25mA r.m.s. max. superimposed. Freq. = 1kc/s max.		100%	h _{fe}	30	70	
<u>GROUP B Omitted</u>								
	<u>GROUP C</u>	Combined AQL	6.5					
5D.3	Collector-Emitter Voltage	I _b = -0.5mA I _c = -9mA	2.5	I	V _{ce}	-	250	mV
5D.3.1	Base-Emitter Voltage	V _{ce} = -1V I _b = -0.5mA	2.5	I	V _{be}	-	500	mV
5D.5	Cut-off frequency of h _{fb} (Note 1)	V _{ce} = -6V I _c = -1mA	2.5	I	f	350	-	kc/s
5D.2.2	Reverse Emitter-Base Leakage Current	V _{eb} = -4.5V I _c = 0	2.5	I	I _{ebo}	-	10	μA
	<u>GROUP D</u>							
5D.6	Noise Figure	V _{ce} = -2V I _c = -0.5mA Z source = 500Ω Load Impedance = 6kΩ + 4kΩ f = 1kc/s Common Emitter circuit	6.5	IA	N	-	16	db
10.4	Photo Sensitivity	V _{eb} = -4.5V I _e = 0	2.5	I	ΔI _{cbo}	-	5	μA

K.1007	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits		Unit
						Min.	Max.	
	<u>GROUP E</u>							
10.1	Lead Fragility	No voltages Note 3.	6.5	IC				
11.5	Soldering	No voltages	6.5	IC				
10.2	Temperature Cycling	No voltages 3 cycles -40°C to +75°C. Note 2.		IC				
10.3	Climatic Cycling	No voltages Note 2.						
	<u>Post Temperature Cycling & Climatic Cycling Tests</u>	Combined AQL	10					
8	Inoperatives	No voltages	6.5					
5D.2	Collector-base Leakage Current	As in Group A	6.5		Icbo	-	12	µA
5D.2.1	Collector Stabilised Leakage Current	As in Group A	6.5		Icebo	-	150	µA
5D.4	Common Emitter Current Gain	As in Group A	6.5		hfe	25	80	
10.4	Photo Sensitivity	As in Group D	6.5		ΔIcbo	-	5	µA
11.3	Fatigue	No voltages		IC				
11.4	Shock	No voltages Hammer Angle=60°		TA				
	<u>Post Fatigue & Shock Tests</u>	Combined AQL	10					
8	Inoperatives	No voltages	6.5					
5D.4	Common Emitter Current Gain	As in Group A	6.5		hfe	25	80	
	<u>GROUP F</u>							
13	<u>Life</u>	Vcb = -6V Pc = 50mW Tamb. = 55 ± 2°C		IA				
13.3	<u>Life Test End Point 1,000 hrs.</u>	Combined AQL	10					
5D.2	Collector-Base Leakage Current	As in Group A	6.5		Icbo	-	15	µA

TESTS (Cont'd)

K.1007	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits		Unit
						Min.	Max.	
	<u>GROUP F</u> (Cont'd)							
5D.2.1	Collector Stabilised Leakage Current	As in Group A	6.5		Icbo	-	180	μA
5D.4	Common Emitter Current Gain	As in Group A	6.5		hfe	22	105	
	Change in average 1/hfe between 24 and 1000 hrs. Note 4	As in Group A	-		$\Delta(1/hfe)_{av}$	-	0.0054	
8	Inoperatives	No voltages	6.5					
13.3.3	<u>Life Test End Point</u> 240 hours (reduced duration)							
5D.2	Collector-Base Leakage Current	As in Group A	-		Icbo	-	15	μA
5D.2.1	Collector Stabilised Leakage Current	As in Group A	-		Icbo	-	180	μA
5D.4	Common Emitter Current Gain	As in Group A	-		hfe	22	105	
	Change in average 1/hfe between 24 and 240 hours. Note 4	As in Group A	-		$\Delta(1/hfe)_{av}$	-	0.0033	
8	Inoperatives	No voltages						
13.4	<u>Storage Life (1)</u>	No voltages t = 150 hours T = -40°C		I				
13.5	<u>Storage Life (2)</u>	No voltages t = 150 hours T = +75°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					

K.1007	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits		Unit
						Min.	Max.	
	<u>GROUP G</u>							
	Re-test after 28 days holding period			100%				
8	Inoperatives	No voltages	0.5					
5D.4	Common Emitter Current Gain	As in Group A	2.0		hfe	30	70	

NOTES

1. The hfb (alpha) cut-off frequency is the frequency at which hfb drops to 0.707 of its value at 1/10th of its specified hfb cut-off frequency or lower.
2. The sample shall initially be subjected to conditioning in accordance with K.1007, 10.1 and shall then pass the Post Temperature and Climatic Cycling tests.
3. The 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. The average to be taken only on those units that are within the specified life test end points Icbo, Icebo, and hfe.