

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION CV7008

ISSUE NO. 1 DATED 1.4.1959

AMENDMENT NO. 1

Page 1 under Marking

Delete "The collector lead ..... to the lead"

Insert "The collector lead shall be marked.  
See K.1007/4.5"

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SPECIFICATION M.O.S./CV.7008  ISSUE NO.1 DATED 1.4.59  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>	<u>VALVE</u>
	Unclassified	Unclassified

TYPE OF VALVE: Low Noise Germanium P.N.P. Junction Transistor.  PROTOTYPE: G.E.T.6.		<u>MARKING</u>	
		See K.1007/4.	
<u>RATINGS AND CHARACTERISTICS</u> (Not for inspection purposes) <u>All limiting values are absolute.</u>		CV. number, 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.	
		Lead Identification. 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.	
		See K.1007/A1/Drq.No.2.	
		<u>BODY</u>	
		The body shall be insulated from all leads or alternatively shall be covered with an approved insulating sleeve.	
		Any.	
		<u>PACKAGING</u>	
		K.1007/14	
<u>NOTES</u>			
A. Suspended in free air at normal pressure. A dissipation not exceeding 10 mW as specified in Group F (page 3) is essential for low noise performance.			
B. Measured in a common emitter circuit with $V_{ce} = -2V$ , and $I_C = -0.5mA$ . Source Impedance = 500. Frequency = 1 kc/s. Temperature = 25°C. Load Impedance = 2.5 k to 10 k. The noise factor decreases with decreasing emitter current.			
C. At $V_{cb} = -6V$ , $I_C = -1mA$ .			
D. When used under linear amplifier and similar conditions.			
E. The Joint-Service Catalogue Number is 5960-99-037-2008.			

E.1007 Ref.	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits		Units
						Min.	Max.	
<b>GROUP A</b>								
5D.2	Collector-base leakage current	$V_{cb} = -4.5V$ $I_e = 0$	-	100%	$I_{cbo}$	-	10	$\mu A$
5D.2.1	Collector-Stabilized leakage current.	$V_{ce} = -15V$ 10 k $\Omega$ from emitter and 50 k $\Omega$ from base to positive supply.	-	100%	$I_{cebo}$	-	120	$\mu A$
5D.4	Common Emitter Small Signal Current Gain.	$V_{ce} = -2V$ , $I_e = -1mA$ dc and 0.25mA ac r.m.s. max. superimposed. $f = 1$ kc/s max.	-	100%	hfe	40	100	-
5D.6	Noise Figure	Common Emitter circuit $V_{ce} = -2V$ , $I_e = -0.5mA$ Source Impedance = 50 $\Omega$ Load Impedance 6 k $\Omega \pm \frac{1}{2}$ k $\Omega$ $f = 1$ kc/s.	-	100%	N	-	6	db
<b>GROUP B</b> Omitted.								
<b>GROUP C</b>								
Combined AQL.			6.5					
5D.3	Collector-Emitter Voltage	$I_b = -3mA$ $I_c = -60mA$	2.5	I	$V_{ce}$	-	0.3	V
5D.3.1	Base-Emitter Voltage	$I_b = -3mA$ $V_{ce} = -1V$	2.5	I	$V_{be}$	-	0.7	V
5D.5.2	Cut-off Frequency Note 3.	$V_{cb} = -6V$ $I_c = 1mA$	4.0	I	hfb	700	-	kc/s
5D.8	Open Circuit Output Conductance	$V_{cb} = -6V$ , $f = 1$ kc/s max. $I_c = -1mA$	2.5	I	hob	-	3	$\mu mhos$
<b>GROUP D</b>								
10.4	Photo Sensitivity (Change in collector base leakage current due to illumination)	$V_{cb} = -4.5V$ $I_e = 0$	2.5	I	$\Delta I_{cbo}$	-	5	$\mu A$
<b>GROUP E</b>								
10.2	Temperature Cycling	Three cycles $-40^{\circ}C$ to $+60^{\circ}C$ . No voltages. Note 1.	-	IC	-	-	-	-
10.3	Climatic Cycling	No voltages. Note 1.	-	-	-	-	-	-
<b>Post Temperature Cycling and Climatic Cycling Tests</b>			10.0					
8	Inoperatives	No voltages.	6.5	-	-	-	-	-
5D.2	Collector-base Leakage Current.	As in Group A.	6.5	-	$I_{cbo}$	-	12	$\mu A$
5D.2.1	Collector-Stabilized Leakage Current.	As in Group A.	6.5	-	$I_{cebo}$	-	150	$\mu A$

K.1007 Ref.	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits		Units
						Min.	Max.	
5D.4	Common Emitter Small Signal Current Gain.	As in Group A.	6.5	-	hfe	30	150	-
5D.6	Noise Figure	As in Group A.	6.5	-	N	-	7	db
10.4	Photo-sensitivity	As in Group D.	6.5	-	$\Delta I_{cbo}$	-	5	$\mu A$
11.3	Fatigue	No voltages.	-	IC	-	-	-	-
	<u>Post Fatigue Tests</u>	Combined AQL	10.0					
8	Inoperatives	No voltages.	6.5	-	-	-	-	-
5D.4	Common Emitter Small Signal Current Gain.	As in Group A.	6.5	-	hfe	30	150	-
11.4	Shock	No voltages. Hammer angle = 60°	-	T.A.	-	-	-	-
	<u>Post Shock Tests</u>	Combined AQL	10.0					
8	Inoperatives	No voltages.	6.5	-	-	-	-	-
5D.4	Common Emitter Small Signal Current Gain.	As in Group A.	6.5	-	hfe	30	150	-
10.1	Lead Fragility.	No voltages. Note 2.	6.5	IC	-	-	-	-
11.5	Solderability	No voltages.	6.5	IC	-	-	-	-
	<u>GROUP F</u>							
13	Life Test	V <sub>cb</sub> = -2V. P <sub>c</sub> = 10mW. T <sub>amb</sub> = 55° ± 2°C.	-	IA	-	-	-	-
13.3	<u>Life Test End Point 1,000 hours</u>	Combined AQL	10					
5D.2	Collector-base Leakage Current.	As in Group A.	6.5	-	I <sub>cbo</sub>	-	15	$\mu A$
5D.2.1	Collector Stabilized Leakage Current.	As in Group A.	6.5	-	I <sub>csbo</sub>	-	180	$\mu A$
5D.4	Common Emitter Small Signal Current Gain.	As in Group A.	6.5	-	hfe	30	150	-
13.7.1	Change in average <sup>1</sup> /hfe between 2 <sub>h</sub> and 1,000 hours.	As in Group A.	-	-	$\Delta(1/hfe)$ av.	-	.004	-
5D.6	Noise Figure	As in Group A.	6.5	-	N	-	8	db
8	Inoperatives	No voltages.	6.5	-	-	-	-	-
13.3.3	<u>Life Test End Point 240 hours</u>							
5D.2	Collector-base Leakage Current.	As in Group A.	-	-	I <sub>cbo</sub>	-	15	$\mu A$
5D.2.1	Collector-Stabilized Leakage Current.	As in Group A.	-	-	I <sub>csbo</sub>	-	180	$\mu A$

K.1007 Ref.	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits		Units
						Min.	Max.	
5D.4	Common Emitter Current Gain.	As in Group A.	-	-	hfe	30	150	-
13.7.1	Change in average $1/hfe$ between 24 and 240 hours.	As in Group A.	-	-	$\Delta(1/hfe)$ av.	-	.0025	-
5D.6	Noise Figure	As in Group A.	-	-	N	-	8	db
8	Inoperatives.	No voltages.	6.5	-	-	-	-	-
13.4	Storage Life (1)	t = 150 hours. T = -40°C.	-	I	-	-	-	-
13.5	Storage Life (2)	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					
	<u>GROUP C</u>							
5.3. 2.11	Re-test after 28 days holding period.		-	100%	-	-	-	-
8	Inoperatives	No voltages.	0.5	-	-	-	-	-
5D.4	Common Emitter Small Signal Current Gain.	As in Group A.	2.0	-	hfe	40	100	-

NOTES

- 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.
- 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).
- The hfb (alpha) cut-off frequency is the frequency at which hfb drops to .707 of its value at 1/10th of its specified hfb cut-off frequency or lower.