

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION MOS/CV.7042
ISSUE 2 DATED 3rd JUNE 1959

AMENDMENT NO.1

Insert new Page 2 attached.

T.V.C. for R.R.E.

September, 1959
N.71259/D

MINISTRY OF SUPPLY/R.R.E

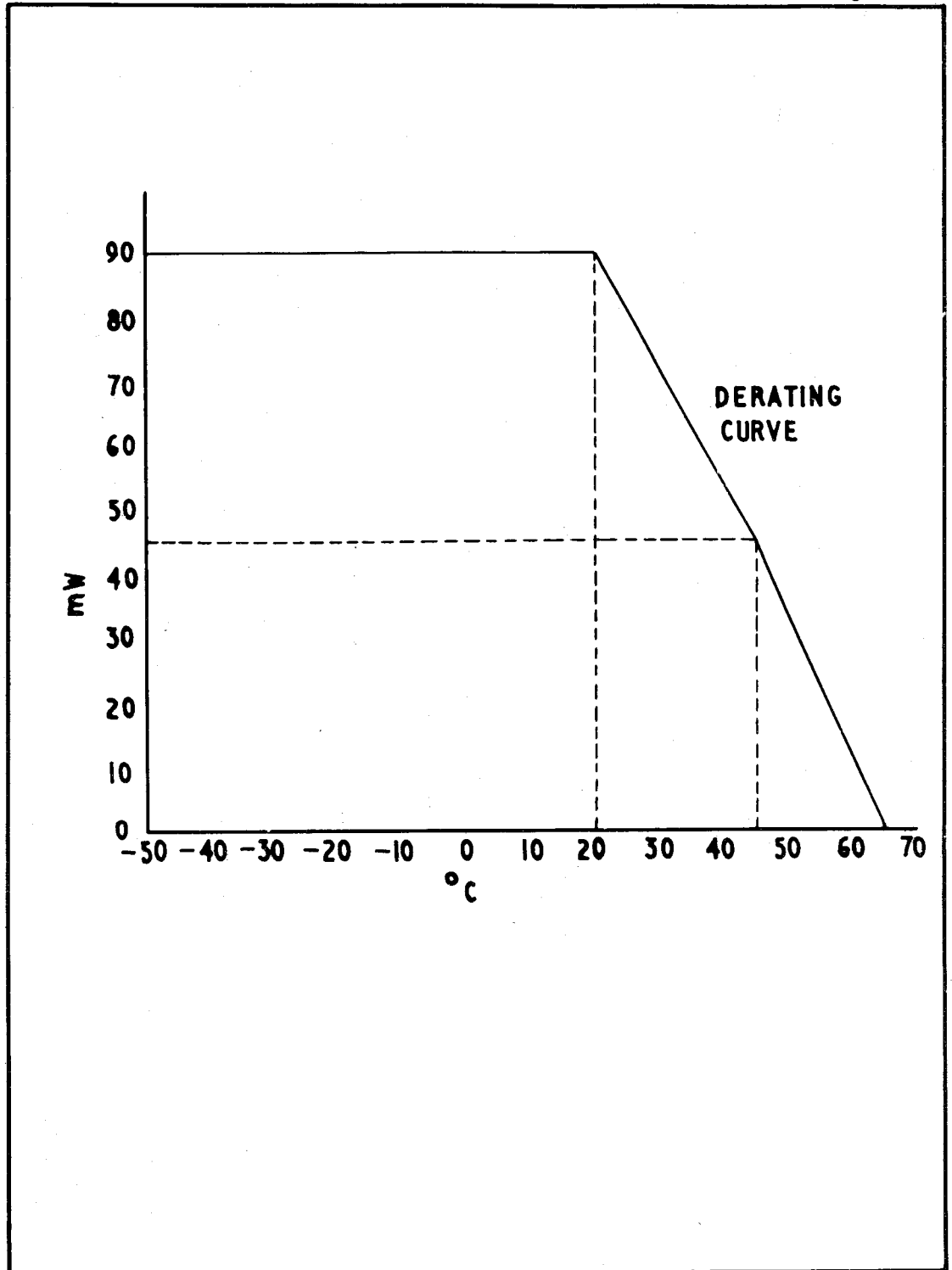
VALVE ELECTRONIC
SEMICONDUCTOR DEVICE

CV7042

Specification MCS/CV7042 Issue 2 dated 3rd June, 1959 To be read in conjunction with K1007	<u>SECURITY</u>	
	<u>Specification</u> Unclassified	<u>Device</u> Unclassified

← Indicates a change

<p>TYPE OF DEVICE - Germanium p-n-p Low current switching transistor</p> <p>CONSTRUCTION - Metal body - glass seal</p> <p>PROTOTYPE - CC41, GP41, TK20A, GET872</p>	<u>MARKING</u> CV Number, manufacturing code and date code.	
<u>RATINGS and CHARACTERISTICS</u> All limiting values are absolute	<u>DIMENSIONS and CONNECTIONS</u> See K1007/A1/D2	
	Note	
Max. Collector-Base Voltage at $I_e = 0$ (V)	-16	C
Max. Collector-Emitter Voltage at $I_e = 0$ (V)	-15	
Max. Reverse Emitter-Base Voltage at $I_e = 0$ (V)	-6	
Max. Peak Collector Current (mA)	-100	A
Max. Mean Collector Current (mA)	-60	
Max. Peak Emitter Current (mA)	100	B
Max. Dissipation at 45° ambient temp. (mW)	45	
Max. Storage Temperature (°C)	+65	
Min. Storage Temperature (°C)	-50	
Max. Continuous Vibration (g)	10	
Max. Shock (g)	500	
<u>CAPACITANCE</u>		
Max. Common base output Capacitance (pF)	22	
<u>NOTES</u>		
A. Averaged over any 20 msec. period		
B. With device freely mounted in free air. De-rating curves will be issued later		
C. With $V_{be} = +1V$		
D. Joint Services Catalogue numbers 5960-99-037-2022		



TESTS

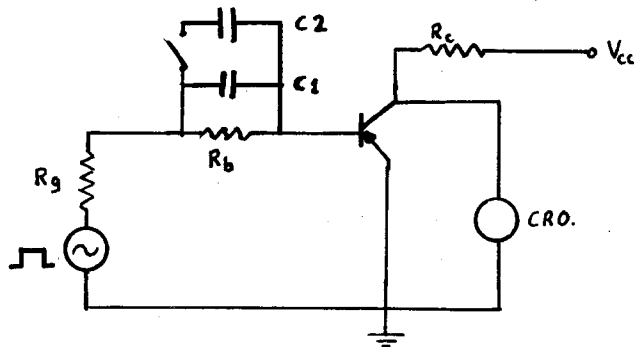
To be performed in addition to those in K1007 Sections 5.2 and 5.3

K1007	TEST	TEST CONDITIONS	AQL %	Insp. Level	Sym- bol	LIMITS		UNITS
						Min.	Max.	
	<u>GROUP A</u>							
	Collector Current	$V_{ob} = -16V$ $V_{be} = 1.0V$		100%	I_{oo}	-	5	μA
5D.3.2	Saturation Voltage (1)	$I_b = -0.5mA$ $I_c = -15mA$		100%	V_{oe}	-	-0.15	V
5D.3.2	Saturation Voltage (2)	$I_b = -2.4mA$ $I_c = -60mA$		100%	V_{oe}	-	-0.2	V
	Switching characteristic	Note 1		100%				
	<u>GROUP B</u>							
5D.3.1.	Base-Emitter Voltage	$I_b = -3.2mA$ $I_c = -60mA$	0.65	II	V_{be}	-	0.5	V
	<u>GROUP C</u>							
	Emitter-Base Leakage Current	$I_c = 0$ $V_{be} = 6V$	2.5	I	I_{ebo}	-	10	μA
	Common base Output Capacitance	$V_{ce} = -6V$ $I_c = 0$	2.5	I	C_{bb}	-	22	pF
5D.7	Intrinsic base res.	Note 5	6.5	IA	$r_{bb'}$	-	150	ohms
	<u>GROUP D</u>	Omitted						
	<u>GROUP E</u>							
10.1	Lead Fragility			IC				
11.5	Soldering			IC				
10.2	Temperature Cycling	Three cycles $-50^{\circ}C$ to $+65^{\circ}C$		IC				
10.3	Climatic Test	Note 2						
	<u>Post Temperature cycling and climatic Tests</u>							
8	Inoperatives Collector Current	$V_{ob} = -16V$ $V_{be} = 1.0V$	6.5 6.5		I_{oo}	-	7.5	μA
5D.3.2	Saturation Voltage (1)	$I_b = -0.6mA$ $I_c = -15mA$	6.5		V_{oe}	-	-0.15	V
11.3	Fatigue			IC				
11.4	Shock	Hammer angle = 60°		TA				
	<u>Post Fatigue and Shock Tests</u>							
8	Inoperatives Collector Current	$V_{ob} = -16V$ $V_{be} = 1.0V$	6.5 6.5		I_{oo}	-	7.5	μA
5D.3.2	Saturation Voltage (1)	$I_b = -0.6mA$ $I_c = -15mA$	6.5		V_{oe}	-	-0.15	V
10.4	Photo sensitivity			TA				

K1007	TESTS	TEST CONDITIONS	AQL %	Insp. Level	Sym- bol	LIMITS		UNITS
						Min.	Max.	
	<u>GROUP F</u>							
13.3	LIFE	$V_{cb} = 5V \text{ min.}$ $P_c = 45 \text{ mW min}$ $T_{amb} = 45^\circ \pm 2^\circ C$ Note 3						
	Life test end point, 1000 hrs.							
8	Inoperatives		6.5					
	Collector Current	$V_{cb} = -16V$ $V_{be} = a.OV$	6.5		I_{co}	-	7.5	μA
5D.3.2	Saturation Voltage (1)	$I_b = -0.6 \text{ mA}$ $I_c = -15 \text{ mA}$	6.5		V_{ce}	-	-0.15	V
	Stability Life	$V_c = -16V$ $I_e = 0$ $T_{amb} = 55^\circ \pm 2^\circ C$ Notes 3 and 4			IC			
	Post Stability - life tests, at 24 and 240 hrs.							
	Collector Current change	$V_c = -16V$ $I_e = 0$	6.5		I_{oo}	-	50	%
13.4	Storage life (1)	$T_{amb} = -50^\circ C$ $t = 150 \text{ hrs.}$			I			
13.5	Storage life (2)	$T_{amb} = +65^\circ C$ $t = 150 \text{ hrs.}$			I			
	Post Storage life tests							
	Collector Current	$V_{cb} = -16V$ $V_{be} = 1.OV$	1.0		I_{oo}		7.5	μA
5D.3.2	Saturation Voltage (1)	$I_b = -0.6 \text{ mA}$ $I_c = -15 \text{ mA}$	1.0		V_{ce}	-	-0.15	V
	<u>GROUP G</u>							
	Re-test after 28 days holding period				100%			
8	Inoperatives		0.5					
5D.3.2	Saturation Voltage (1)	$I_b = -0.5 \text{ mA}$ $I_c = -15 \text{ mA}$	2.0		V_{ce}	-	-0.15	V

NOTES

1. Switching characteristics. The device shall be tested in a circuit equivalent to that shown below



$$V_{cc} = -15V$$

$$R_o = 1k \pm 10\%$$

$$C_1 = C_2 = 100 \text{ pf} \pm 1\%$$

$$R_b = 10K \pm 10\%$$

$$R_c = 1K \pm 10\%$$

CRO Bandwidth = 3 Mcs min.

Input pulse = 10v peak

Input pulse $t_r = 0.05 \mu\text{Sec}$ max.

$t_f = 0.05 \mu\text{Sec}$ max.

to 90% and 10% of max. amplitude respectively
prf = 10Kcs nominal

The device must switch on with $Q_{ON} = 1,100$ picacoulombs and switch off with $Q_{OFF} = 2,200$ picacoulombs to within 5% of final values within 0.3 μSecs . with no subsequent current rise.

2. The samples used for this test must have undergone the temperature cycling test.
3. No heat sink, devices freely suspended in air.
4. All measurements shall be recorded without the device and circuit being disturbed i.e. not switched off.
5. Measured by feed back method.
Alternatively $r_{bb'}$ may be measured by the input impedance method in which case the maximum limit should be read as 200 ohms.