

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION CV.7341/2/3

ISSUE 1 DATED 1ST FEBRUARY 1963

AMENDMENT NO. 1

PAGE 6

Table 2. Group B. Inspection. Sub-Group 4
Specific Conditions:- ADD 2 Cycles.

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Table 3. Group C Inspection. Sub-Group 2 Shock.
Specific Conditions:-
ADD:- 5 Blows in each of Three Mutually
Perpendicular Directions.

September, 1963.
(39998)

MINISTRY OF AVIATION, R.A.E.

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION CV7341-2-3

ISSUE 1, 1st FEBRUARY, 1963

AMENDMENT No. 2

PAGE 6

TABLE 2 GROUP B INSPECTION

SUB-GROUP 2:- DELETE THERMAL SHOCK TEST

SEPTEMBER, 1963.
(13564)

MINISTRY OF AVIATION, R.A.E.

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION CV 7341-2-3

ISSUE No.1

AMENDMENT NO.3

PAGE 7 SUB-GROUP 7

High and Low Temperature Life (Non-operating)

UNDER NATO/K1007 REF. 6.2.

ADD: 6.6.1.2.2.

SUB-GROUP

Operating Life

UNDER NATO/K 1007 REF. 6.3.

ADD: 6.6.1.2.2.

MILITARY SPECIFICATION
CV7341-2-3.
 SEMICONDUCTOR DEVICE, TRANSISTOR

Description:- This specification covers the detail requirements for a Silicon P.N.P. Junction Transistor and is in accordance with Specification K.1007 Issue 3 except as otherwise stated.

Mechanical Dimensions and Outline:- K1007, Section B.10.3.1, 10.3.2.2, 10.4.1.4 and 10.4.2.2

Connections:- 1. Emitter 2. Base 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}	I _B (av)	I _{BM}	I _E (av)	I _{EM} (pk)	P	T _{amb}	T. stg.	Shock	Vibra- tion
Unit	V	V	V	mA	mA	mA	mA	mA	mA	mW	°C	°C	g	g
Min	-	-	-	-	-	-	-	-	-	-	-	-55	-	-
Max	32	32	20	50	100	15	50	65	150	250	150	150	500	20
Note	1	1	1	-	-	-	-	-	-	2	-	-	-	-

- Notes 1. d.c. or peak
 2. See derating curve, Page 9 Fig. 1
 3. Prototype BCY30 Series, 2S300 Series

CV 7341-2-3

Primary Electrical Characteristics

Characteristic	I _{CBO} (1)	I _{CBO} (2)	I _{CEX}	h _{fe}			f _T			F	V _{CE} (Sat)	V _{BE}		
	CV. 7341	CV. 7342	CV. 7343	CV. 7341	CV. 7342	CV. 7343								
Unit	μA	μA	μA	-	-	-	Mc/s	Mc/s	Mc/s	dB	mV	mV		
Min	-	-	-	20	40	80	0.4	0.8	1.6	-	-	-		
Max	0.1	10	20	40	80	160	3.0	5.0	7.0	16	250	600		
CONDITIONS	T _{amb} °C	25	100	25	25			25			25	25	25	
	V _{CB} V	-6	-6	-	-6			-6			Z _{Source} = 500 Ω	-	-6	
	V _{CE} V	-	-	-32	-			-				-2	-	-
	V _{EB} V	-	-	-0.5	-			-				-	-	-
	I _c mA	-	-	-	-			-				-0.5	-10	-
	I _E mA	0	0	-	1			1				-	-	1
I _B mA	-	-	-	-			-			-		-1	-	

Reliability Assurance Requirements:- Under discussion

Requirements

Marking: The device shall be marked first with the C.V. number and then according to K.1007, Issue 3, Section B, 1.3.4.

Quality Assurance Provisions

Destructive Tests. The tests listed in Table 2, Group B Inspection, Sub-Groups 2, 3 and 4 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 device shall be packed according to K1007, Issue 3, Section A, 1.2(c)

Joint Service Catalogue Numbers

CV.7341 = 5960-99-037-2955

CV.7342 = 5960-99-037-2956

CV.7343 = 5960-99-037-2957

This specification has been prepared by, and the Qualification Approval Authority is:-
Ministry of Aviation, Royal Aircraft Establishment, S. Farnborough, Hants.
England.

1st February, 1963

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TABLE 1. GROUP A INSPECTION

Test	TEST CONDITIONS		LTFD	Symbol	Limits		Units
	K1007/NATO Ref.	SPECIFIC CONDITIONS			Min.	Max.	
<u>SUB-GROUP 1</u> Visual and mechanical inspection	5.1		7%				
<u>SUB-GROUP 2</u> Collector cut off current (1)	7.2.5.1	V _{CB} = -6V, I _B = 0	1% (Note 2)	I _{CBO}	-	0.1	μA
Collector cut off current (2)	7.2.5.5	V _{CE} = -32V, V _{EB} = -0.5 V	1% (Note 2)	I _{CEX}	-	20	μA
Common Emitter, Small Signal Current Gain	7.4.2	V _{CE} = -6V, I _C = -1 mA d.o. and 0.25 mA a.c. r.m.s. max. superimposed f = 1 kc/s. CV.734.1 CV.734.2 CV.734.3	1% (Note 2)	h _{fe}	20 40 80	44 88 160	
<u>SUB-GROUP 3</u> Collector Emitter Saturation Voltage	7.3.3	I _C = -10mA, I _B = -1mA	7%	V _{CE} (Sat)	-	250	mV
Base Emitter Voltage	7.3.2	V _{CB} = -6V, I _B = 1 mA	7%	V _{BE}	-	650	mV

TABLE 1. GROUP A INSPECTION (Contd.)

Test	TEST CONDITIONS		LTPD	Symbol	Limits		Units
	K1007/NATO Ref.	SPECIFIC CONDITIONS			Min.	Max.	
<u>SUB-GROUP 3</u> (Contd.)							
Emitter-base cut-off Current	7.2.6	VEB = -20V, IC = 0	7%	I_{EBO}	-	20	μA
Noise Figure	7.6.3.1	Common Emitter Circuit VCE = -2V, IC = -0.5mA Z Source = 500 Ω Z Load = 6 K Ω + 4 K Ω f = 1 Kc/s.	7%	F	-	16	dB
Transition Frequency		VCB = -6V, IB = 1mA, f = 300 kc/s	7%	fT			
		CV.7341			0.4	3.0	Mc/s
		CV.7342			0.8	5.0	Mc/s
		CV.7343			1.6	7.0	Mc/s
<u>SUB-GROUP 4</u>							
Collector cut-off current (3)	7.2.5.1	As in Sub-group 2 Tamb. = 100°C	20%	I_{CBO}		10	μA
Common Emitter, Small Signal Current Gain	7.4.2	As in Sub-group 2 Tamb. = -55°C	20%	hfe			
		CV.7341			14	-	-
		CV.7342			28	-	-
		CV.7343			58	-	-

TABLE 2. GROUP B INSPECTION
(See Quality Assurance Provision, Page 3)

Test	TEST CONDITIONS		LTPD	Symbol	Limits		Units
	NATO/K1007 Ref.	SPECIFIC CONDITIONS			Min.	Max.	
<u>SUB-GROUP 1</u> Physical Dimensions	5.1		20%				
<u>SUB-GROUP 2</u> Solderability	5.13		20%				
Temperature Cycling	5.5	-55°C to + 100°C					
Thermal Shock	5.6.2	+100°C to 0°C					
Moisture Resistance	5.3.1.2						
<u>SUB-GROUP 3</u> Vibration Fatigue	5.15.1	Non-operating	20%				
<u>SUB-GROUP 4</u> Lead Fatigue	5.10.2		20%				
<u>SUB-GROUP 5</u> Omitted							
<u>SUB-GROUP 6</u> Omitted							

TABLE 2. GROUP B INSPECTION (Contd.)

Test	TEST CONDITIONS		LTPD	Symbol	Limits		Units
	NATO/K1007 Ref.	SPECIFIC CONDITIONS			Min.	Max.	
<u>SUB-GROUP 7</u>							
High and Low Temperature Life (Non-operating)	6.2						
High Temperature	6.2.1	T. Storage = $\pm 100^{\circ}\text{C}$ min. Duration 1000 hrs.	20%				
Low Temperature	6.2.2	T. Storage = -55°C min Duration 1000 hrs.	20%				
<u>SUB-GROUP 8</u>							
Operation Life	6.3	$V_{CB} = -30V$ $P_c = 150 \text{ mW}$ $T_{amb} = 75^{\circ}\text{C}$. (Note 1) Duration 1000 hrs.	20%				
Post Test End Points for <u>Sub-groups 2, 3, 4, 7 and 8</u>							
Collector out-off current (2)	7.2.5.5	As in Group A, Sub-group 2		I_{CEX}	-	30	μA
Common Emitter, Small Signal Current Gain	7.4.2	As in Group A, Sub-group 2 GV.7341 GV.7342 GV.7343		hfe	16	48	
					32	96	
					64	200	

TABLE 3. GROUP C INSPECTION (See GROUP C Inspection. Quality Assurance Provisions Page 3)

Test	TEST CONDITIONS		LTPD	Symbol	Limits		Units
	NATO/K1007 Rcf.	SPECIFIC CONDITIONS			Min.	Max.	
<u>SUB-GROUP 1</u>							
Omitted							
<u>SUB-GROUP 2</u>							
Shock	5.17.1	Non-operating	20%				
Vibration variable frequency	5.16.1	Non-operating	Q.A.				
<u>Post Test End Points for Sub-groups 1 and 2</u>							
Collector cut-off current (2)	7.2.5.5	As in Group A, Sub-group 2		I _{CEX}	30		µA
Common Emitter, Small Signal Current Gain	7.4.2	As in Group A, Sub-group 2		h _{fe}			
		CV.7341			16	48	
		CV.7342			32	96	
		CV.7343			64	200	

- Notes 1. Alternatively the Life Test may be performed at any temperature between 45°C and 125°C given by the rating curve in Fig. 1 Page 9
2. Alternatively these tests may be performed at an Inspection Level of 100%

FIG. 1

DERATING CURVE

