MILITARY SPECIFICATION

CV 7433-5

SEMICONDUCTOR DEVICE, DIODES

Description: This specification covers the detail requirements for High Stability Silicon diodes and is in accordance with Specification K1007, Issue 3, except as otherwise stated.

Mechanical Dimensions and Outlines: K1007, 10.3.3.4

Polarity: Cathode marked as clause 1.3.4.4.

Absolute Maximum Ratings:-

TYPE	Rating	V_R	P_{av}	I_o	I_f	T_{opr}	T_{stg}	Shock	Vibration
	Unit	V	mW	mA	A	°C	°C	g	g
CV7433	Min					-55	-55		
	Max	100	275	250	1.25	150	150	1500	10
CV7434	Min					-55	-55		
	Max	200	275	250	1.25	150	150	1500	10
CV7435	Min					-55	-55		
	Max	400	275	250	1.25	150	150	1500	10
NOTE			A		B			C	

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Notes: A. See derating curve figure 1

B. Maximum Recurrent Peak forward current at 25°C

C. Duration 0.5mS

D. Commercial equivalents ZS91, 92, 94

Primary Electrical Characteristics:

Characteristics			I_R			I_R			V_F	C
Unit			μA			μA			V	pF
CV7433		Min								
		Max	.5			15			1.1	12
CV7434		Min								
		Max		.5			15		1.1	12
CV7435		Min								
		Max			.5			15	1.1	12
CONDITIONS	V_R	V	100	200	400	100	200	400		10
	T_{amb}	°C	25	25	25	100	100	100	25	25
	I_F	mA							250	

Reliability Assurance Requirements: Under discussion

Requirements:

Marking — The device shall be marked as K1007 Section B.1.3.4. Essential marking, 1.3.4.1(a) and 1.3.4.1(b).

Quality Assurance Provisions:

Destructive Tests — The tests listed in Table 2, Group B Inspection, Sub Groups 2, 3 and 4 and Table 3, Group C Sub Group 2 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 Services Catalogue Numbers:

CV7433	=	5960-99-037-3493
CV7434	=	5960-99-037-3494
CV7435	=	5960-99-037-3495

This specification is prepared by, and the Qualification Approval Authority is:-
Ministry of Aviation, Royal Radar Establishment, Malvern, Worcs., England.

TABLE 1 GROUP A INSPECTION

Examination or Test	TEST CONDITIONS		AQL %	Insp. Level	Symbol	LIMITS		UNITS
	K1007/NATO Ref:	Specific Conditions				Min	Max	
SUB-GROUP 1			.65	II				
Visual and Mechanical Inspection	5.1	Excluding Physical Dimensions						
SUB-GROUP 2								
Reverse Current (1)	8A.2.2	CV7433, V_R = 100V	1.0	II	I_R	-	.5	µA
		CV7434, V_R = 200V			I_R	-	.5	µA
		CV7435, V_R = 400V			I_R	-	.5	µA
Forward Voltage (1) Drop	8A.3.2	I_F = 250mA			V_F		1.1	V
Forward Voltage Drop (2)	8A.3.2	I_F = 20mA 25°C			V_F	.62	.73	V
Capacitance	8A.5.1	V_R = -10V			C		12	pF
SUB-GROUP 3		Temp. ambient 100°C	2.5	I				
Reverse Current (2)	8A.2.2	CV7433 V_R = 100V			I_R		15	µA
		CV7434 V_R = 200V			I_R		15	µA
		CV7435 V_R = 400V			I_R		15	µ A
SUB-GROUP 4 Omitted								

TABLE 2 GROUP B INSPECTION

(See Page 3, Quality Assurance Provisions, Destructive Tests)

Examination or Test	TEST CONDITIONS		AQL %	Insp. Level	Symbol	LIMITS		UNITS
	K1007/NATO Ref:	SPECIFIC CONDITIONS				Min	Max	
SUB-GROUP 1			6.5	IC				
Physical Dimensions	5.1	According to 10.3.3.4						
SUB-GROUP 2			4.0	IA				
Solderability	5.13							
Temperature Cycling	5.5	$-55^{\circ}C$ to $+150^{\circ}C$						
Thermal Shock	5.6.2	$+25^{\circ}C$ to $100^{\circ}C$						
Moisture Resistance	5.3.1.3							
SUB-GROUP 3			4.0	IA				
Vibration Fatigue	5.15							
SUB-GROUP 4			6.5	IA				
Lead Fatigue	5.10.2	2 Cycles						
SUB-GROUP 5								
Omitted								
SUB-GROUP 6								
Omitted								
SUB-GROUP 7			4.0	I				
High Temperature Life	6.2.1	$T_{stg} = 150^{\circ}C$ Duration 1,000 hours						

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TABLE 2 GROUP B INSPECTION

Examination or Test	TEST CONDITIONS K1007/NATO Ref:	TEST CONDITIONS Specific Conditions	AQL %	Insp. Level	Symbol	LIMITS Min	LIMITS Max	UNITS
SUB-GROUP 8			6.5	IC				
Operating Life	6.3.2	Operation at an ambient temperature between 25°C and 150°C. Forward current not less than the value corresponding to the chosen T_{amb} according to the derating curve Fig.1. CV7433 V_R = 100V CV7434 V_R = 200V CV7435 V_R = 400V						
Post Test End Points for Sub-Groups 2, 3, 7 and 8								
Forward Voltage drop (2)		As in Group A, Sub-Group 2, Note 1.			▲V_F		3.0	mV
Reverse Current (2)		CV7433 V_R = 100V			I_R		17	µA
		CV7434 V_R = 200V			I_R		17	µA
		CV7435 V_R = 400V			I_R		17	µA

TABLE 3 GROUP C INSPECTION

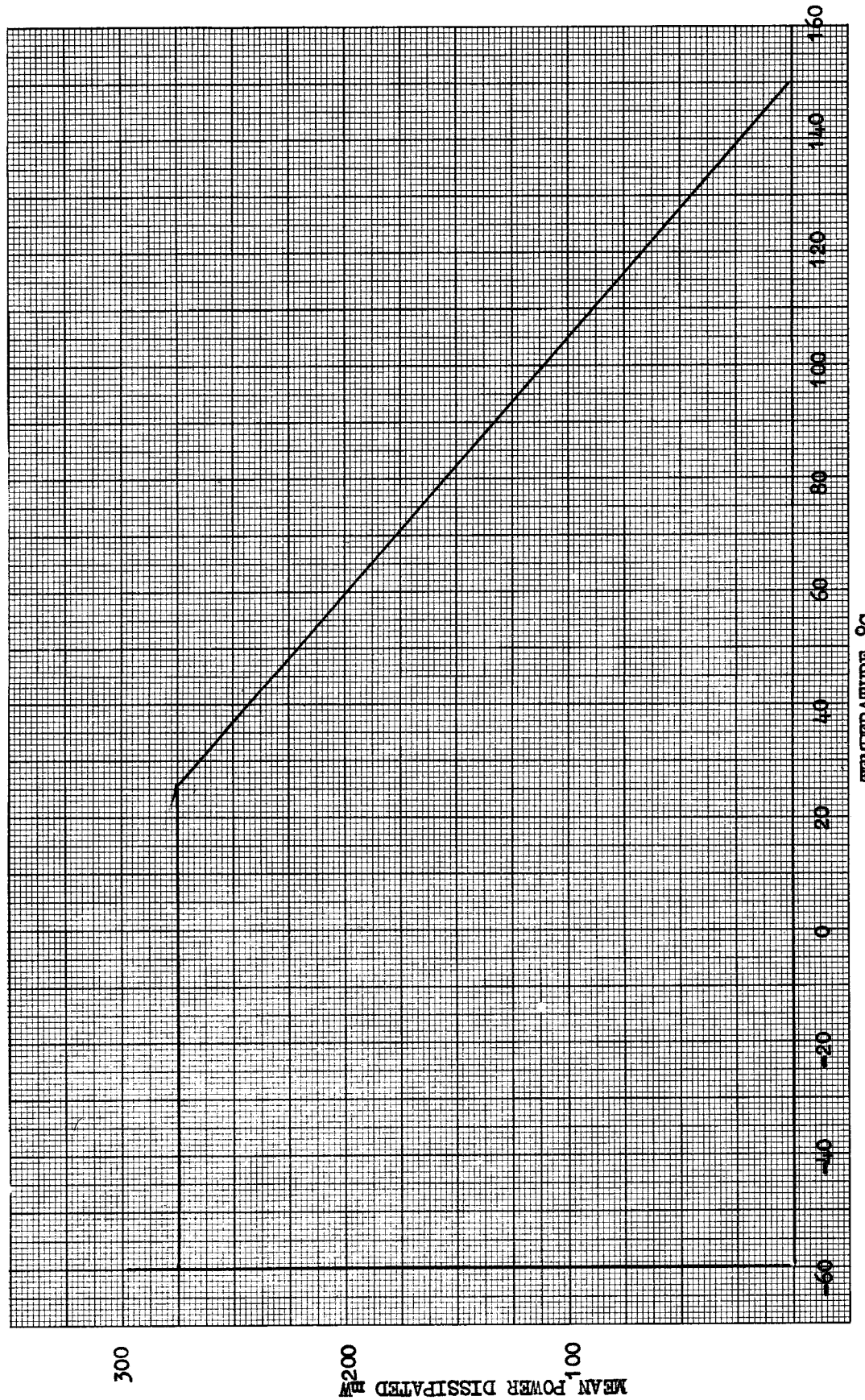
(See Page 3. Quality Assurance Provisions Group C Inspection)

Examination or Test	TEST CONDITIONS		AQL %	Insp. Level	Symbol	LIMITS		UNITS
	K1007/NATO Ref:	Specific Conditions				Min	Max	
SUB-GROUP 1								
Omitted								
SUB-GROUP 2			6.5	IC				
Shock	5.17.1	Non-operating. 5 blows in each of three mutually perpendicular directions.						
Post Test End Points as for Group B Sub-Groups 2,3,4,7 and 8								

NOTES

1. This measurement of forward voltage drop at 20mA is to be made accurately at a fixed temperature in the range 25-35°C and the measurement accuracy must be better than 0.5mV. The measurement is to be repeated after exposure to the tests in Sub-Groups 2, 3, 7 and 8 and the maximum change in forward voltage after exposure to any of these tests shall be less than 4.0mV.

FIG 1


160
140
120
100
80
60
40
20
0
-20
-40
-60
TEMPERATURE °C
300
200
100
MEAN POWER DISSIPATED mW