

MILITARY SPECIFICATION  
**CV 7476**  
SEMICONDUCTOR DEVICE, DIODE

Description:- This specification covers the detail requirements for a Silicon Avalanche Rectifier Diode and is in accordance with K1007. Issue 3. except as otherwise stated.

Mechanical Dimensions and Outline:- K1007 Section B 10.3.3.1

Absolute Maximum Ratings:-

Rating	$V_{RWM}$	$V_{RRM}$	$V_{RDM}$	$I_0$	$I_{FS}$	$T_{stg}$	Shock	Vibration
Unit	V	V	V	A	A	°C	g	g
Min	-	-	-	-	-	-65	-	-
Max	1000	1200	1000	0.75	20	+175	1500	20
Notes	A,F	G	H	B	C,J		D	

- Notes:
- A from  $-55^{\circ}\text{C}$  to  $+175^{\circ}\text{C}$
  - B At  $50^{\circ}\text{C}$ . See derating curve. Fig. 1 Page 8
  - C See Surge rating curves
  - D Duration 0.5ms
  - E Commercial Prototype RAS 300
  - F  $V_{RWM}$  = Working Peak Reverse Voltage
  - G  $V_{RRM}$  = Recurrent Peak Reverse Voltage
  - H  $V_{RDM}$  = Max Reverse d.c.
  - J  $I_{FS}$  = Forward Transit (Surge) Current

10th June 1964

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## Primary Electrical Characteristics:

Characteristic		$V_{RA}$	$V_F$	$I_R$	$I_R$
Unit		V	V	$\mu A$	$\mu A$
Min.		1250		-	-
Max.		-	1.0	20	100
CONDITIONS	T °C	25	25	25	100
	$I_F$ A	-	0.75	-	-
	$V_R$ V	-	-	1000	1000
	Note	K,L			

Note K. For Avalanche voltage test see Note 2. Page 7 and Fig. 2. Page 9.

L.  $V_{RA}$  = Avalanche Reverse Voltage

### Reliability Assurance Requirements:-

## Requirements:-

Marking: The device shall be marked as K1007 Section B. 1.3.4 as space permits, 1.3.4.1.(a) and (b) being the minimum requirements any remaining marking shall be on the packing.

## 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 Inspection, 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).

NATO Stock Number: 5960-99-037-3668

This specification has been 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	Sym- bol	LIMITS		Units
	K1007/NATO Ref.	Specific Conditions				Min.	Max.	
<u>SUB GROUP 1</u> Visual and Mechanical Inspection	5.1	Excluding Physical Dimensions	0.65	I				
<u>SUB GROUP 2</u> Avalanche Voltage Reverse Current (1) Forward Voltage	8A.2.2 8A.3.2	Note 2 $V_R = 1000V$ $I_F = 0.75A$	0.65	II	$V_{RA}$ $I_R$ $V_F$	1250 - -	- 20 1.0	V $\mu A$ V
<u>SUB GROUP 3</u> Reverse Current (2)	8A.2.2	$T_{amb} = 100^\circ C$ $V_R = 1000V$	2.5	I	$I_R$	-	100	$\mu A$

TABLE 2 GROUP B INSPECTION  
See Page 3. Quality Assurance Provisions, Destructive Tests

Examination or Test	TEST CONDITIONS		AQL %	Insp. Level	Sym-bol	LIMITS		Units
	K1007/NATO Ref.	Specific Conditions				Min.	Max.	
<u>SUB GROUP 1</u> Physical Dimensions	5.1	According to 10.3.3.1	6.5	IA				
<u>SUB GROUP 2</u> Solderability	5.13		4.0	IA				
Temperature Cycling	5.5	-55°C to +150°C						
Moisture Resistance	5.3							
<u>SUB GROUP 3</u> Vibration Fatigue	5.15		4.0	IA				
<u>SUB GROUP 4</u> Lead Fatigue		Three cycles	6.5	IA				
<u>SUB GROUP 5</u> Omitted	5.10.1							
<u>SUB GROUP 6</u> Omitted								
<u>SUB GROUP 7</u> High Temperature Life	6.2.1 6.6.1.2.2	T <sub>stg</sub> = 175°C Duration = 1000 hrs.	4.0	I Note 1				

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TABLE 2 GROUP B INSPECTION (Cont'd)

Examination or Test	TEST CONDITIONS		AQL %	Insp. Level	Sym- bol	LIMITS		Units
	K1007/NATO Ref.	Specific Conditions				Min.	Max.	
<u>SUB GROUP 8</u>			4.0	IA				
Operating Life	6.3 6.6.1.2.2	Duration 1000 hours f = 50 c/s. P.I.V. = 1000V T <sub>amb</sub> = any temperature between 50°C and 150°C  I <sub>F</sub> not less than the value corresponding to the chosen ambient temperature according to the derating curve.						
<u>Post Test End Points for Sub Groups 2, 3, 7 and 8</u>								
Forward Voltage	8A.3.2	I <sub>F</sub> = 0.75A			V <sub>F</sub>	-	1.1	V
Reverse Current (2)	8A.2.2	V <sub>R</sub> = 1000V			I <sub>R</sub>	-	200	µA

TABLE 3 GROUP C INSPECTION

See Page 3. Quality Assurance Provisions

Examination or Test	K1007/NATO Ref.	TEST CONDITIONS		AQL %	Insp. Level	Sym- bol	LIMITS		Units
		Specific Conditions					Min.	Max.	
<u>SUB GROUP 1</u>									
Omitted									
<u>SUB GROUP 2</u>									
Shock	5.17.1		Non-operating. 5 blows in each of three mutually perpendicular directions.	6.5	IA				
<u>Post Test End Points</u> As for Group B, Sub Groups 2, 3 7 and 8									

NOTES

1. The maximum sample size will be 125
2. Avalanche Voltage Test. At 25°C a one pulse transient voltage derived from a similar circuit to the one shown in Fig. 2 Page 9 shall be applied to the diode in the reverse direction. The values of the circuit components shall be such that a 1250 Avalanche rectifier passes 600mA peak in the reverse direction. The current pulse is sinusoidal with a base width of 100 µSeconds.

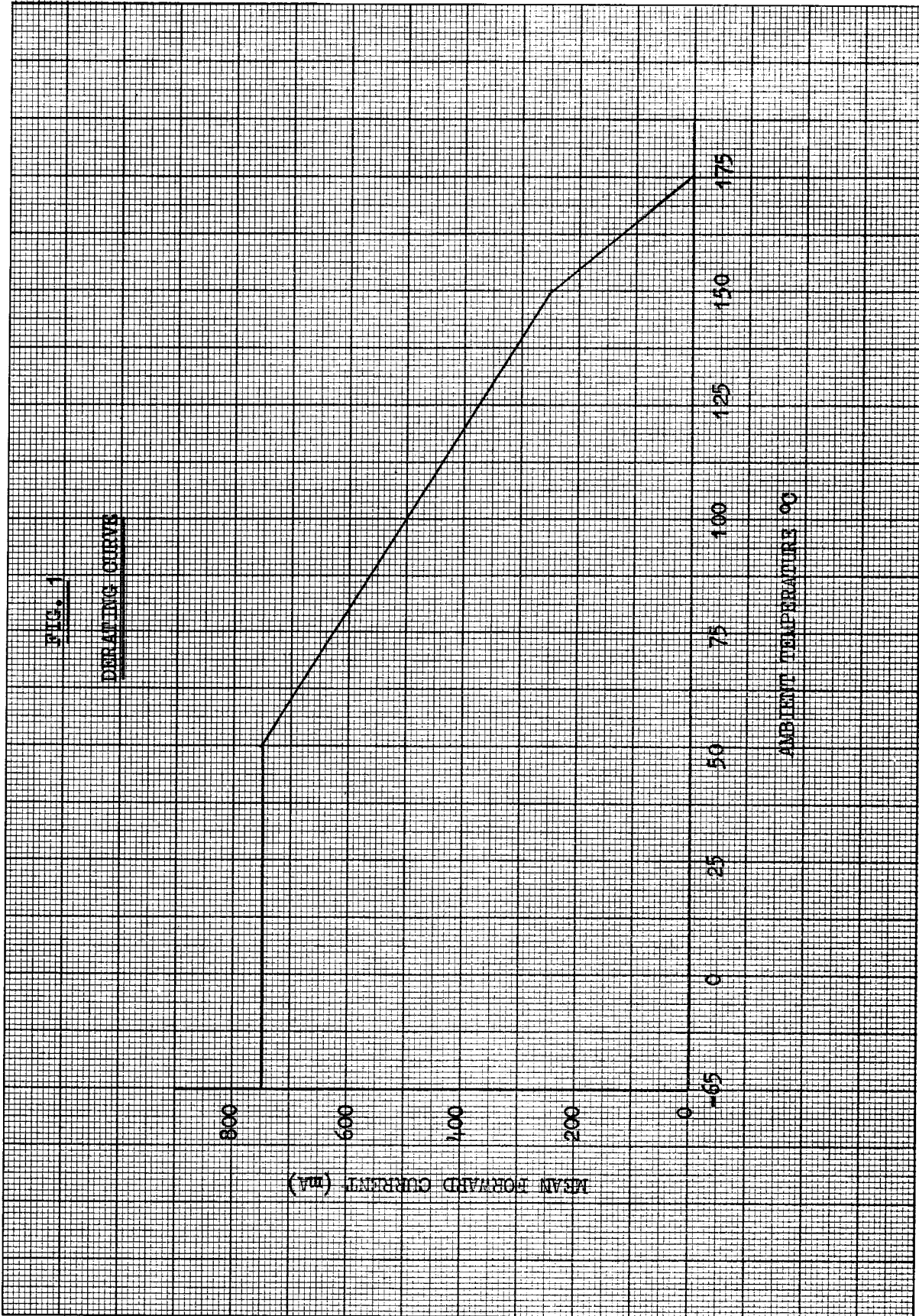




FIG. 2

AVALANCHE VOLTAGE TEST CIRCUIT

