

ELECTRONIC VALVE SPECIFICATIONS
SPECIFICATION CV 7432
ISSUE NO. 1 DATED 26TH JUNE 1963
AMENDMENT NO. 1

Page 1 Absolute Maximum Ratings:-

Column 6 - Rise time of reverse waveform - Delete 3.0 kV/ μ sec.

NOTE B - Delete existing note.

Replace by "The maximum rise time of a reverse voltage waveform which can be applied to the diode is defined by the empirical formula:

$$\frac{dv(\max)}{dt} = \frac{5000}{I_{FM}}$$

where I_{FM} is measured in milliamps and is the forward current in the diode immediately preceding the applied reverse voltage, and $\frac{dv}{dt}$ is measured in volts per μ sec."

Page 5 Sub Group 7

High Temperature Life Delete 150°C
 Insert 100°C

Page 6 Pcst Test End Points for Sub Groups 2 and 7

Delete Current (3) and Photosensitivity Test.

Replace By:

Examination or Test	Test Conditions		Symbol	Limits		Units
	K107/NATO Ref.	Specific Conditions		Min	Max	
Reverse Current (1) and Photo- sensitivity	8A.2.2 5.4	As in Group A, Sub Group 2	I_R	-	0.03 Note 1	μ A

Note 1 This is the total I_R , including any effect due to photosensitivity

MILITARY SPECIFICATION

CV 7432

SEMICONDUCTOR DEVICE, SILICON HIGH VOLTAGE DIODE

Description:- This specification covers the detail requirements for a Silicon High Voltage Diode and is in accordance with K1007, except as otherwise stated.

Mechanical Dimensions and Outlines:- K1007 Section D Appendix 1. Drawing D9.

Connections:- Red band denotes cathode.

Absolute Maximum Ratings:-

Rating	I_F	P.R.V.	Mean Power	Recurrent Peak I_F	Rise Time of reverse waveform	T_{op}	T_{stg}	Shock	Vibration
Units	mA	k.Volts	mW	mA	kV/ μ Sec.	$^{\circ}$ C	$^{\circ}$ C	g	g
Min.	-	-	-	-	-	-55	-55	-	-
Max	100	2.0	300	350	3.0	+150	+150	1500	20
Note	A		A		B			C	

Note A. See derating curve on page 9.

B. The ability of the device to withstand high frequency signals or reverse voltage 'spikes' is dependant upon the resistance in series with it. 3.0 kV/ μ Sec is quoted as a safe maximum assuming a series resistor of 30 k.ohms. If this resistance value is reduced, the rating is reduced pro rata.

The maximum frequency of operation for a sinusoidal waveform at 100mA mean rectified current is approximately 10 kc/s.

C. Duration 0.5 mSec.

D. See surge rating curve on page 11.

E. Commercial equivalent VX1539, ZHS101.

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Primary Electrical Characteristics:-

Characteristics		I_R	I_R	V_F
Unit		μA	μA	V
Min		-	-	-
Max		.03	5.0	4.5
CONDITIONS	T_{amb} °C	25	100	25
	V_F V	2000	2000	
	I_F mA			100

Requirements:-

Marking K1007, 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, and in 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 Section A, 1.2(c).

Joint Service Catalogue Number:-

5960-99-037-3490

This specification has been prepared by, and the Qualification Approval Authority is:-

Ministry of Aviation, Signals Research and Development Establishment,
Christchurch, Hampshire, England.

GROUP A INSPECTION

Table 1

Examination or Test	Test Conditions		AQL %	Insp. Level	Symbol	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> Forward Voltage Drop	8A.3.2	$I_F = 100\text{mA}$ $T_{\text{amb}} = 25^\circ\text{C}$	0.65	II	V_F	-	4.5	Volts
Reverse Current (1)	8A.2.2	$V_R = 2.0\text{KV}$ $T_{\text{amb}} = 25^\circ\text{C}$			I_R	-	0.03	μA
<u>SUB GROUP 3</u> Reverse Current (2)	8A.2.2	$V_R = 2.0\text{KV}$ $T_{\text{amb}} = 55^\circ\text{C}$	2.5	I	I_R	-	0.20	μA
Reverse Current (3)	8A.2.2	$V_R = 2.0\text{KV}$ $T_{\text{amb}} = 100^\circ\text{C}$			I_R	-	5.0	μA
<u>SUB GROUP 4</u> Capacitance	8A.5.1	$f = 1\text{ Mc/s}$ $V_R = -10\text{V}$	4.0	IA	C	-	3.3	pF

Table 2
GROUP B INSPECTION
 (See Quality Assurance Provisions Page 3)

Examination or Test	K1007/ NATO Ref.	Test Conditions Specific Conditions	AQL %	Insp. Level	Symbol	Limits		Units
						Min.	Max.	
<u>SUB GROUP 1</u> Physical Dimensions	5.1	According to drawing K1007/Al/D9	6.5	IC				
<u>SUB GROUP 2</u> Solderability	5.1.3		4.0	IA				
Temperature Cycling	5.5	-55°C to +150°C						
Moisture Resistance	5.3							
<u>SUB GROUP 3</u> Vibration Fatigue	5.15.1	Non-Operating	4.0	I				
<u>SUB GROUP 4</u> Lead Fatigue	5.10.2	2 cycles	6.5	IA				
<u>SUB GROUPS 5 and 6</u> Omitted								
<u>SUB GROUP 7</u> High Temperature Life	6.2.1 6.6.1.2.2	T _{stg} = 150°C, t = 1000 hrs	4.0	I				
Low Temperature Life	6.2.2 6.6.1.2.2	T _{stg} = -55°C, t = 1000 hrs	4.0	I				

Table 2 GROUP B INSPECTION (Cont'd)

Examination or Test	Test Conditions		AQL %	Insp. Level	Symbol	Limits		Units
	K1007/ NATO Ref.	Specific Conditions				Min.	Max.	
SUB GROUP 8 Operating Life (1)	6.3	T _{amb} = 55°C. Duration = 1000 hrs	4.0	QA				
	6.5	I ₀ = 1µA.min. P.R.V. = 2.0KV						
	6.3	P.R.V. = 2.0KV						
	6.5	T _{amb} between 25°C and 100°C						
	6.6.1.1	with not less than the corresponding mean rectified current given on the derating curve Fig. 1. Page 9. Duration 1000 hours.						
	6.6.1.2.2							
Post Test End Points for SUB GROUPS 2 and 7 Forward Voltage Drop Reverse Current (3) and Photosensitivity	8A.3.2	As in Group A, Sub Group 2			V _F	4.5	Volts	
	8A.2.2 5.4	As in Group A, Sub Group 3			I _R	6.0	µA	
Post Test End Points for SUB GROUPS 3 and 8 (2) Forward Voltage Drop Reverse Current (3)	8A.3.2	As in Group A, Sub Group 2			V _F	4.5	Volts	
	8A.2.2	As in Group A, Sub Group 3			I _R	6.0	µA	

Table 2
GROUP B INSPECTION (Cont'd)

Examination or Test	K1007/ NATO Ref.	Test Conditions Specific Conditions	AQL %	Insp. Level	Symbol	Limits		Units
						Min.	Max.	
<u>Post Test End Points for SUB GROUP 8 (1)</u>								
Forward Voltage Drop	8A.3.2	As in Group A, Sub Group 2			V_F	-	4.5	Volts
Reverse Current (1)	8A.2.2	As in Group A, Sub Group 2			I_R	-	0.03	μA
Reverse Current (2)	8A.2.2	As in Group A, Sub Group 3			I_R	-	0.20	μA
Reverse Current (3)	8A.2.2	As in Group A, Sub Group 3			I_R	-	5.0	μA

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Table 2 **GROUP C INSPECTION**
 (See Quality Assurance Provisions, Page 3 Group C Inspection)

Examination of Test	Test Conditions		AQL %	Insp. Level	Symbol	Limits		Units
	KL007/ NATO Ref.	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 directions X1, Y1, Y2 and Z1 - see figure 5/2.	6.5	IA				
<u>Post Test End Points</u> Forward Voltage Drop	8A.3.2	As in Group A. Sub Group 2			V_R	-	4.5	Volts
Reverse Current (3)	8A.2.2	As in Group A. Sub Group 3			I_R	-	6.0	μA

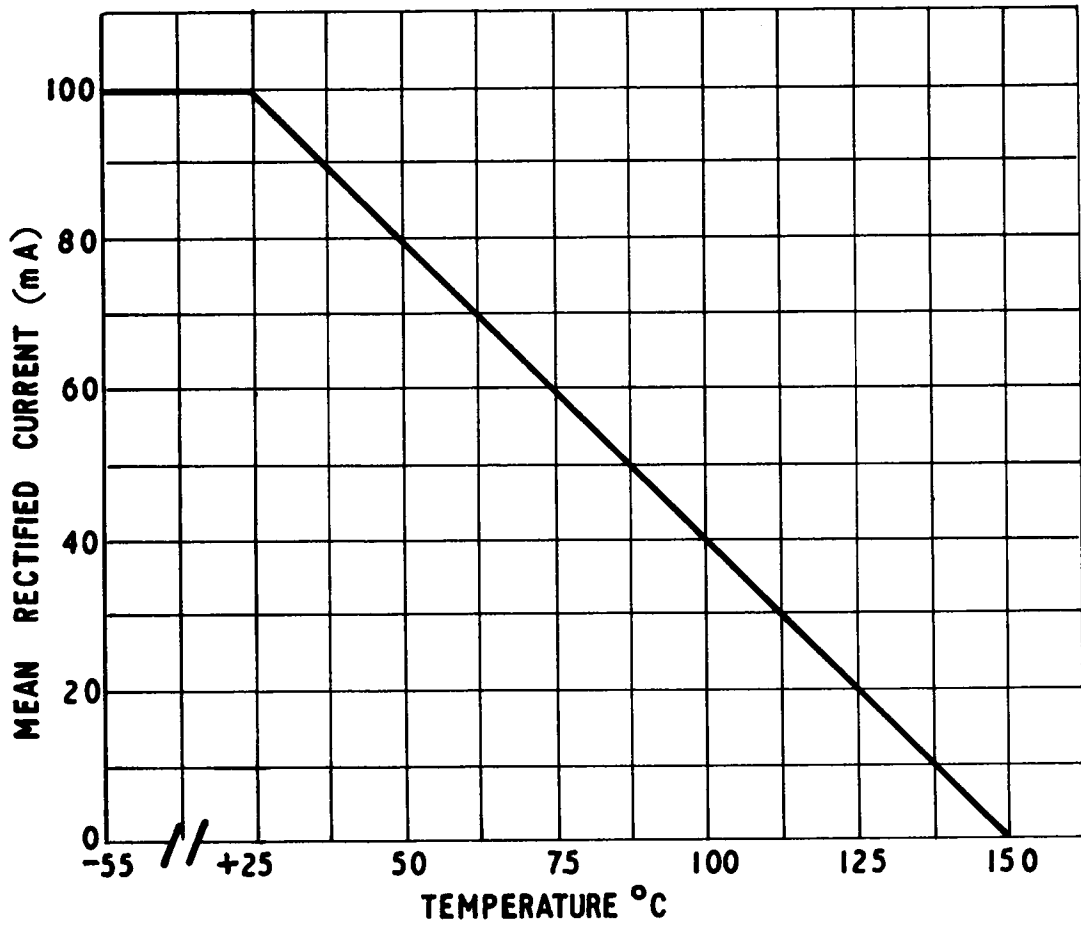


FIG. 1
DERATING CURVE

VARIATION OF REVERSE LEAKAGE CURRENT
WITH TEMPERATURE
WHEN $V_R = 2.2$ K.V.

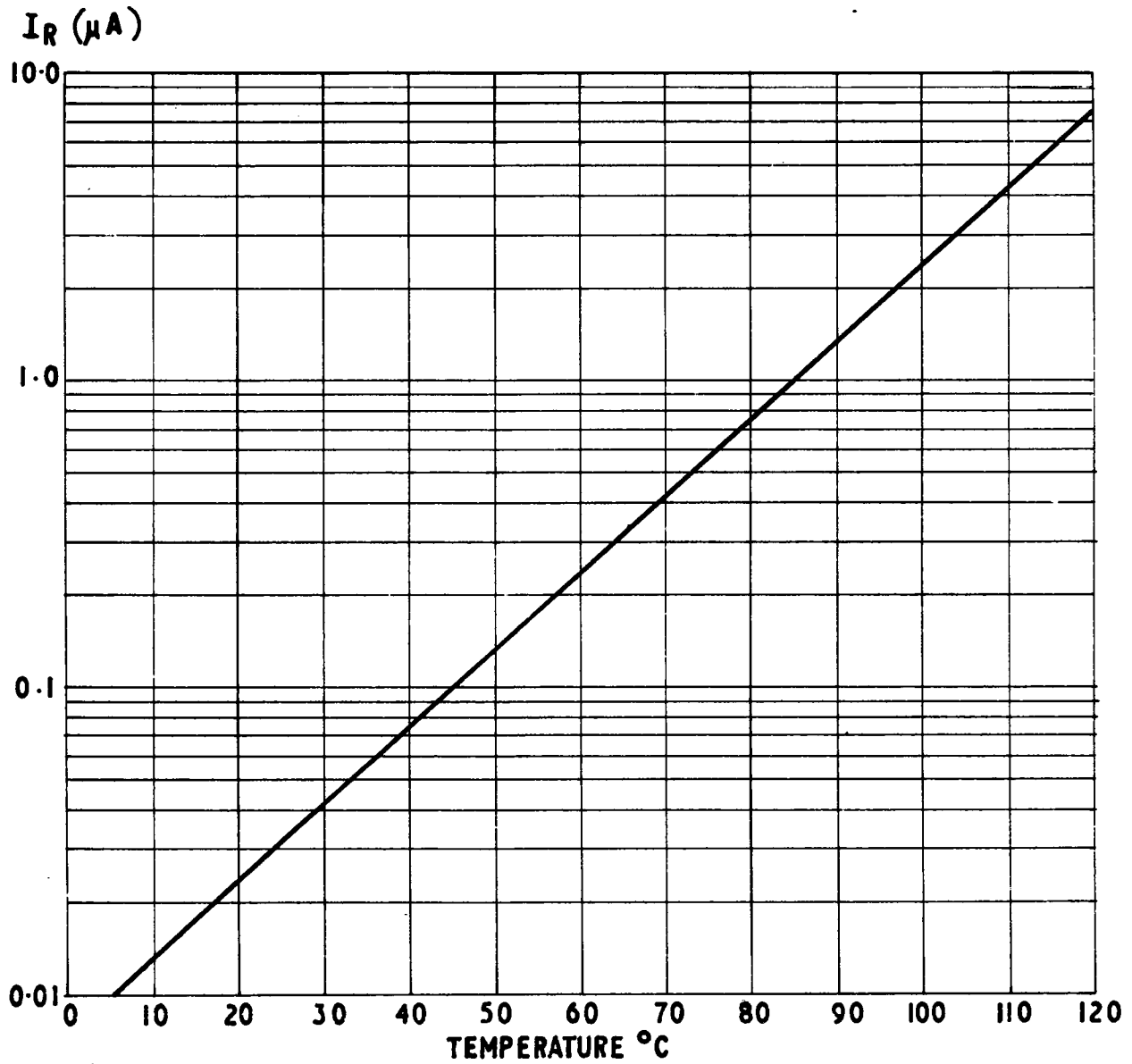


FIG 3
 SURGE CURRENT RATING BASED ON A RECTANGULAR
 PULSE IN A FORWARD DIRECTION.
 FULL P.R.V. IN THE REVERSE DIRECTION

