

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION AD/CV7045-6

ISSUE IA DATED 1.6.62

AMENDMENT NO. 2

Page 5. GROUP F Inspection.

Amend Inspection Level to read III

June, 1964

Admiralty Surface Weapons Establishment

N.222078

ADMIRALTY SURFACE WEAPONS ESTABLISHMENT

Specification AD/CV7045/CV7046 Issue No. 1A Dated 1.6.62. To be read in conjunction with K1007 Mandatory Sections - 1,2,3,4,5.1,5.2,5.3,9.15. Other sections and Appendices as called up by this Specification.	<u>SECURITY</u>	
	<u>Specification</u> Unclassified	<u>Device</u> Unclassified

—————> Indicates a change

TYPE OF DEVICE - Silicon Power Diode PROTOTYPE - 1S111, 1S115.		<u>MARKING</u> CV Number or coloured bands denoting CV Number.. Polarity Marking.	
<u>RATINGS AND CHARACTERISTICS</u> (Not for Inspection Purposes) <u>ALL LIMITING VALUES ARE ABSOLUTE</u>		<u>DIMENSIONS</u> K1007/A1/D9	
		<u>MOUNTING POSITION</u> Any	
		Note	
	Max. Peak Inverse Voltage at -55°C to +150°C	CV7045(V) 200 CV7046(V) 600	A A
→	Max. Average Rectified Forward Current at 25°C (mA)	400	
→	Current derating above 25°C {See Fig. 1 on page 2} (mA/°C)	2.0	
	Max. Reverse Current at 25°C at V _R = 200V d.c. for } CV7045 } V _R = 600V d.c. for } CV7046 }	(μA) 0.2	
→	Max. Reverse Current at 100°C at V _R = 200V d.c. for CV7045 } V _R = 600V d.c. for CV7046 }	(μA) 20	
→	Max. Recurrent Peak Forward current (see Fig. 2 on page 2)		
→	Overload Current (See Fig. 3 on page 3).		
→	Max. Frequency of Operation without derating. (ks/s)	10.0	
	Max. Operating Ambient Temperature Range -55°C to 150°C		
	Capacitance (nom.) at V _R = 12V (pF)	9	
<u>NOTES</u>			
A. This rating applies to all waveforms including very short transients.			
B. The Joint Services Catalogue Numbers are CV7045 5960-99-037-2036 CV7046 5960-99-037-2037			

TEMPERATURE DERATING AT MAX. P.I.V.

FIG. 1.

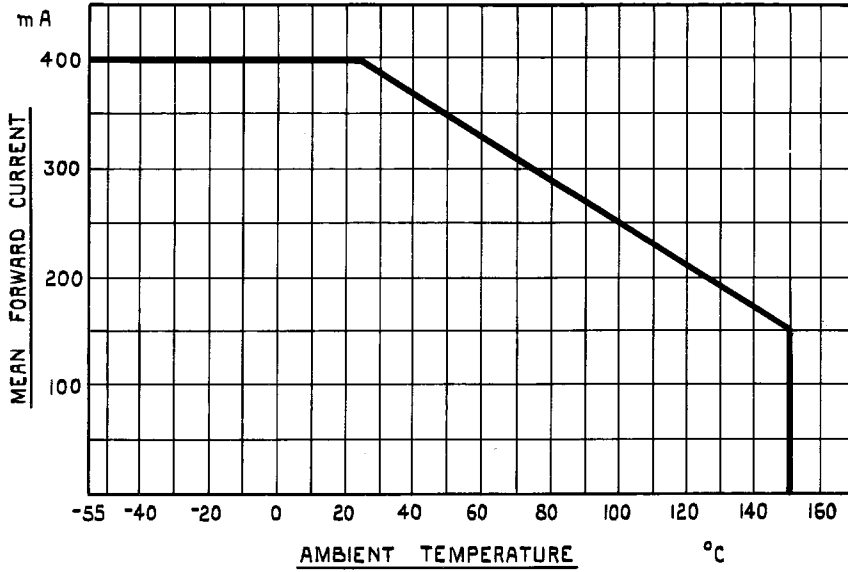
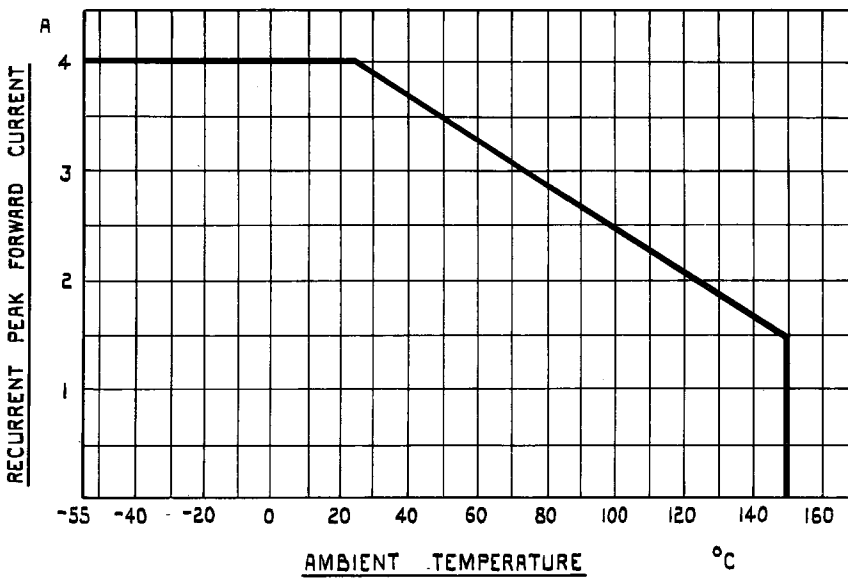


FIG. 2.



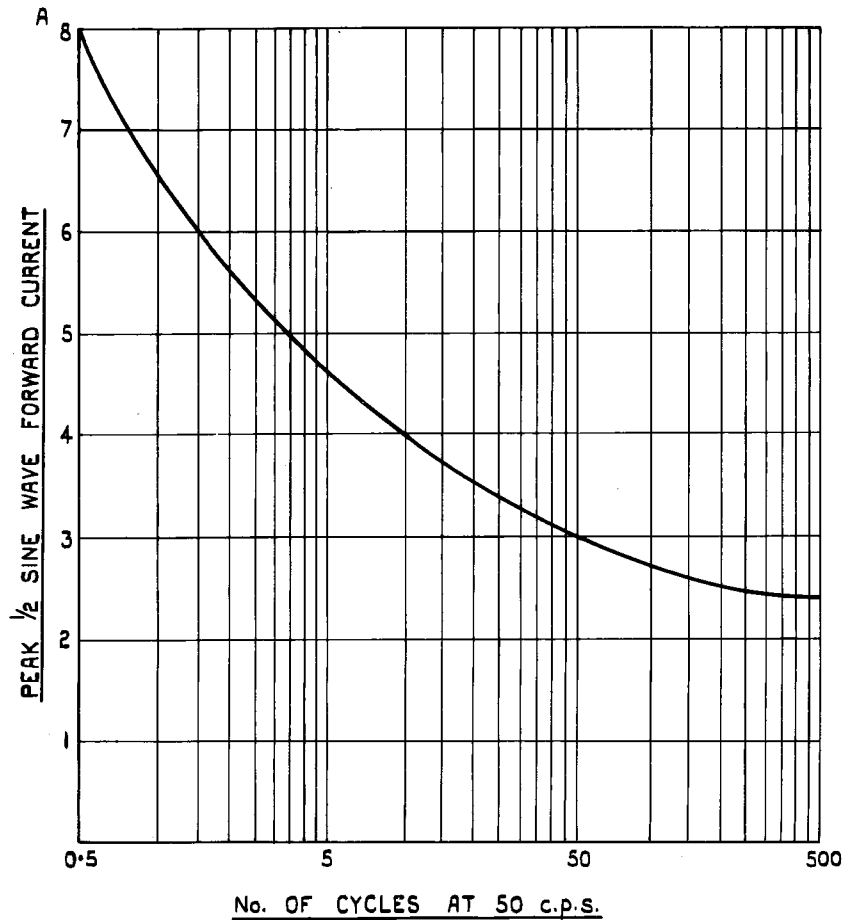
OVERLOAD CURRENT AT MAX. P.I.V. AND 25°C

FIG / 3

Note 2

The overload current curve applies to the diode conducting half sine waves of forward current followed by half sine waves of reverse voltage. The diode may be on full load before the overload current and may continue at full load afterwards. The reverse voltage may be maintained at the P.I.V. during the overload period. The safe overload current is reduced by 5% from the value indicated on Fig. 3 for every 3°C rise in ambient temperature above 25°C. It should be noted that the overload current curve specifies the peak values of half sine waves. The full cycle mean overload current may be obtained by dividing by π

Test Conditions								
Unless otherwise specified Ambient Temperature within the range +15°C to +30°C.								
K1007	Test	Test Conditions	AQL %	Insp. Level	Sym- bol	Limits		Units
						Min.	Max.	
	<u>GROUP A</u>							
5C.4	Forward Voltage Drop	$I_F = 400 \text{ mA}$		100%	V_F		1.0	V
5C.2	Reverse Current (1)	For CV7045 $V_r = 200\text{V}$ For CV7046 $V_r = 600\text{V}$		100%	I_r		0.2	μA
	<u>GROUP B</u> Omitted.							
	<u>GROUP C</u>							
5C.2	Reverse Current (2)	$T_{\text{amb.}} = +100^\circ\text{C min.}$ For CV7045 $V_r = 200\text{V}$ For CV7046 $V_r = 600\text{V}$	2.5	I	I_r		20 20	μA μA
	<u>GROUP D</u> Omitted.							
	<u>GROUP E</u>							
10.1	Lead Fragility	No voltages Note 1.	6.5	IA				
11.5	Soldering	No voltages	6.5	IC				
10.2	Temperature Cycling	No voltages Three cycles -55°C to $+150^\circ\text{C}$ Note 2.		IC				
10.3	Climatic Cycling	No voltages. Note 2.						
	<u>Post Temperature Cycling and Climatic Cycling Tests</u>	Combined AQL	10					
5C.4	Forward Voltage Drop	As in Group A	6.5		V_F		1.1	V
5C.2	Reverse Current (2)	As in Group C CV7045 CV7046	6.5		I_r		22 22	μA μA
11.3	Fatigue	No voltages		IA				
	<u>Post Fatigue Tests</u>	Combined AQL	10					
5C.4	Forward Voltage Drop	As in Group A	6.5		V_F		1.1	V
5C.2	Reverse Current (2)	As in Group C CV7045 CV7046	6.5		I_r		22 22	μA μA

K1007	Test	Test Conditions	AQL %	Insp. Level	Sym- bol	Limits		Units
						Min.	Max.	
	<u>GROUP E (Cont'd.)</u>							
11.4	Shock	No voltages Hammer angle = 60°		T.A.				
	<u>Post Shock Tests</u>	Combined AQL	10					
5C.4	Forward Voltage Drop	As in Group A	6.5		V _F		1.1	V
5C.2	Reverse Current (2)	As in Group C CV7045 CV7046	6.5		I _R		22 22	μA μA
11.6	Gentrifuge	No voltages 10,000 g		T.A.				
	<u>Post Gentrifuge Tests</u>	Combined AQL	10					
5C.4	Forward Voltage Drop	As in Group A	6.5		V _F		1.1	V
5C.2	Reverse Current (2)	As in Group C CV7045 CV7046	6.5		I _R		22 22	μA μA
	<u>GROUP F</u>							
→ 13	Operating Life (1)	Half-wave circuit with resistive load at max. rated P.I.V. T amb. not greater than + 150°C. f = 50 c/s. Foward current not less than the value corresponding to the chosen T amb. according to the derating curve, Fig. 2 on Page 2. Note 3. t = 72 hrs. min.		IA				
13.3	<u>Post Life Test (1) and points</u>							
5C.4	Forward Voltage Drop	As in Group A	0.65		V _F		1.1	V

K1007	Test	Test Conditions	AQL %	Insp. Level	Sym- bel	Limits		Units
						Min.	Max.	
	<u>GROUP F (Cont'd)</u>							
5C.2	Reverse Current (2)	As in Group C CV7045 CV7046	0.65		I _R	22	22	μA
13	Operating Life (2) Notes 5 and 6	As for Operating Life (1) except t = 1000 hrs.		IA				
	<u>Post Life Test (2)</u> <u>End Points</u>							
5C.4	Forward Voltage Drop	As in Group A	4.0		V _F	1.1		V
5C.2	Reverse Current (2)	As in Group C	4.0		I _R	22		μA
13.4	Storage Life (1)	No voltages t = 150 hrs. T amb. = -55°C		I				
13.5	Storage Life (2)	No voltages t = 150 hrs. T amb. = + 150°C		I				
	<u>Post Storage Life</u> <u>Tests</u>	Combined AQL for each storage life.	4.0					
5C.4	Forward Voltage Drop	As in Group A			V _F	1.1		V
5C.2	Reverse Current (2)	As in Group C CV7045 CV7046			I _R	22	22	μA
	<u>GROUP G</u>							
5.3. 2.11.	Re-test after 28 days holding period							
8	Inoperatives		0.5	100%				
5C.4	Forward Voltage Drop	As in Group A	0.5	100%	V _F	1.0		V
5C.2	Reverse Current (1)	As in Group A	0.5	100%	I _R	0.2		μA

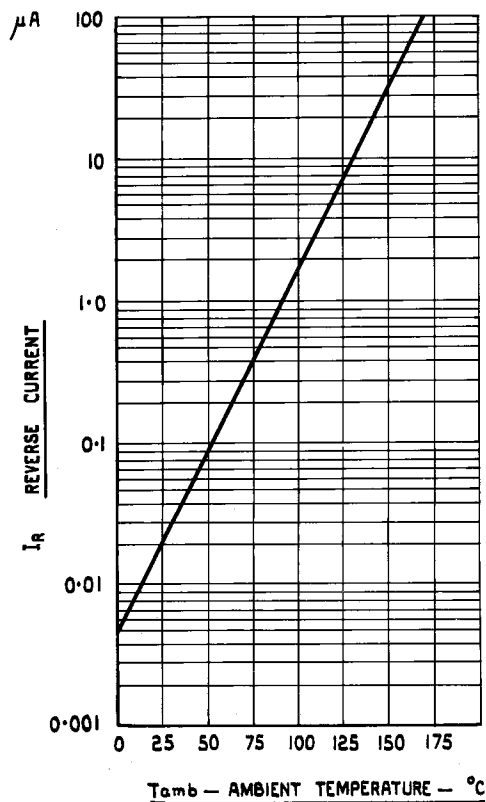
NOTES

1. Rectifiers used for this test must have undergone at least 28 cycles of climatic cycling in accordance with K1007/10.3.1 or K1007/10.3.2., or 6 cycles of climatic cycling in accordance with K1007/10.3.3.
2. A sample of rectifiers shall first be subjected to temperature cycling followed by climatic cycling, and shall then pass the post temperature cycling and climatic cycling tests.
3. The connections to the rectifier shall be made at least 20 mm from the body.

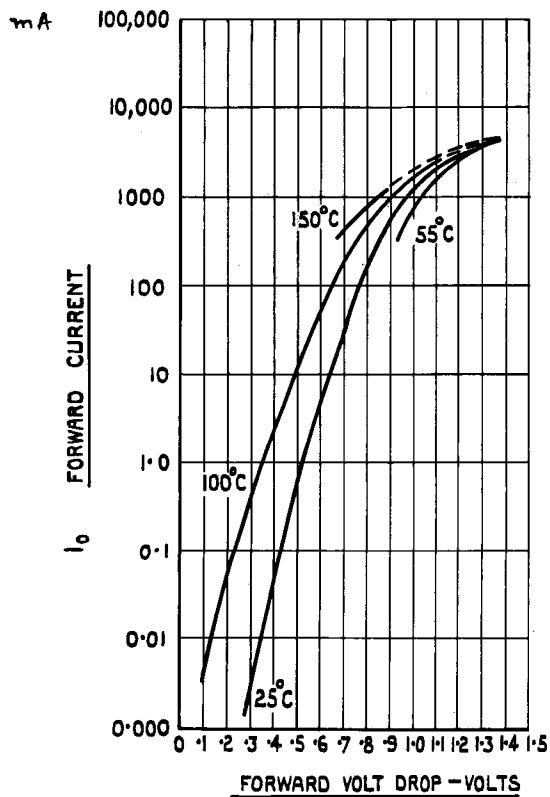
K1007, Section B

5. ✓ Clause 4.5.3.3. will not apply. However, the Inspectorate will inform the Qualification Approval Authority if and when the requirements of Operation Life (2) have not been met.
6. This test shall be conducted on the initial lot and thereafter every ninety days or every fifth lot, whichever occurs first.

TYPICAL VARIATION OF REVERSE
CURRENT AT MAX. P.I.V. WITH TEMPERATURE



TYPICAL VARIATION OF FORWARD
VOLTAGE DROP WITH FORWARD CURRENT



TYPICAL VARIATION OF
CAPACITANCE WITH VOLTAGE
AT 25°C

