

MILITARY SPECIFICATION
CV7582-84
SEMICONDUCTOR DEVICE, THYRISTOR

DESCRIPTION: This specification covers the detail requirements for a reverse blocking triode thyristor, and is in accordance with specification K1007, Issue 3, except as otherwise stated.

MECHANICAL DIMENSIONS AND OUTLINE: See Fig. 5

CONNECTIONS: Stud, Anode. No 1 Terminal, Cathode. No 2 Terminal, Gate.

ABSOLUTE MAXIMUM RATINGS:

Device	Ratings	V _R	V _{FD}	I _{FTM}	I _{FT(AV)}	V _{GKM}	P _{GM}	P _{G(AV)}	T _{STG}	SHOCK	Vib.
	Unit	V	V	A	A	V	W	W	°C	g	g
CV7582	Min								-65		
	Max	100	100	18	3	10	5	0.5	+150	1500	20
CV7583	Min								- 65		
	Max	200	200	18	3	10	5	0.5	+150	1500	20
CV7584	Min								- 65		
	Max	400	400	18	3	10	5	0.5	+150	1500	20
	NOTE		A	B	B & D		C	C			

- Notes:-
- A. In off condition.
 - B. Up to 80°C case.
 - C. At T_{stud} = 125°C.
 - D. See derating curve fig. 1.
 - E. Commercial Equivalents 1S601, 2, 4.
 - F. For explanation or symbols see Page 3.

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 (190452)

CV 7582-84

PRIMARY ELECTRICAL CHARACTERISTICS

CHARACTERISTICS		V_F	I_R	I_F	I_G	I_H	V_{GF}	
UNIT		V	mA	mA	mA	mA	V	
MIN		-	-	-	0.25	-	-	
MAX		1.5	1.0	1.0	20	25	3	
CONDITIONS	T_{STUD}	$^{\circ}C$	25	125	125	25	25	
	I_F	A	3					
	I_G	mA		0	0	0	25	
	V_R	CV7582	V		100			
		CV7583	V		200			
		CV7584	V		400			
	V_F	CV7582	V			100		
		CV7583	V			200		
		CV7584	V			400		
		NOTES					F	G

NOTES: F. See circuit in fig. 2

G. See circuit in fig. 3

Reliability Assurance Requirements:-

Under Discussion

Requirements:

Marking The device shall be marked first with the CV number and then according to K1007, Section B 1.3.4.

Quality Assurance Provisions:-

Destructive Tests The tests listed in Group B Inspection Sub Groups 2 and 3, and 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)

NATO Stock Numbers:-

CV7582 = 5960-99-037-3858
 CV7583 = 5960-99-037-3859
 CV7584 = 5960-99-037-3860

The following symbols have been used in this specification:-

V_R = Peak Working Reverse Voltage.

V_{FD} = Peak Forward off-state Voltage.

I_{FTM} = Peak Repetitive Forward Current.

$I_{FT(AV)}$ = Average Rectified Forward Current.

V_{GKM} = Peak Gate to Cathode Voltage.

P_{GM} = Peak Gate Power.

$P_{G(AV)}$ = Average Gate Power.

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

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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	8C.3.1	Excluding physical dimensions	0.65	I					
		CV7582 $V_R = 100V$ CV7583 $V_R = 200V$ CV7584 $V_R = 400V$ All $I_G = 0$ $T_{stud} = 125^{\circ}C$							
<u>SUB GROUP 2</u> Reverse Current	8C.5	CV7582 $V_F = 100V$ CV7583 $V_F = 200V$ CV7584 $V_F = 400V$ All $I_G = 0$ $T_{stud} = 125^{\circ}C$ $I_F = 3A$ $T_{stud} = 25^{\circ}C$	0.65	II	I_R		1.0	mA	
Forward Current									
Forward voltage drop								1.5	V

GROUP A INSPECTION (Cont'd)

Examination or Test	K1007/NATO Ref.	Test Conditions	AQL %	Insp. Level	Sym- bol	LIMITS		Units
						Min.	Max.	
<u>SUB GROUP 3</u> Gate triggering signal		See fig. 2 $T_{stud} = 25^{\circ}C$	2.5	I	I_G	0.25	20	mA
Gate forward voltage drop		$I_G = 25\text{ mA}$ $I_A = 0$ $T_{stud} = 25^{\circ}C$					3	V
<u>SUB GROUP 4</u> Holding current		See fig. 3	4.0	I_A	I_H		25	mA
Turn-on time		See fig. 4			t_{on}		2.5	μSec
Turn-off time		See fig. 4			t_{off}		25	μSec

GROUP B INSPECTION

Examination or Test	TEST CONDITIONS		Insp. Level	Sym- bol	LIMITS		Units
	K1007/NATO Ref.	Specific Conditions			AQL %	Min.	
<u>SUB GROUP 1</u> Physical dimensions		SO-35A outline	IC				
<u>SUB GROUP 2</u>			IA				
Temperature Cycling	5.5	-65 to +150°C					
Moisture Resistance	5.3						
<u>SUB GROUP 3</u>			IA				
Vibration fatigue	5.15.1	Non operating					
<u>SUB GROUP 4, 5 & 6</u>							
Omitted							
<u>SUB GROUP 7</u>							
High temperature life, non operating	6.2.1 6.6.1.2.2	T _{stg} = 150°C Duration = 1000 hours	4.0	I			
<u>SUB GROUP 8</u>							
Operating life	6.3 6.6.1.2.2	At max. rev. voltage. Conduction angle = 90° minimum, f = 50 c/sec. At max forward voltage. Av. rectified forward current selected from the derating curve, fig 1 for the chosen stud temperature. Duration 1000 hours.	4.0	IA			

GROUP B INSPECTION (Cont'd)

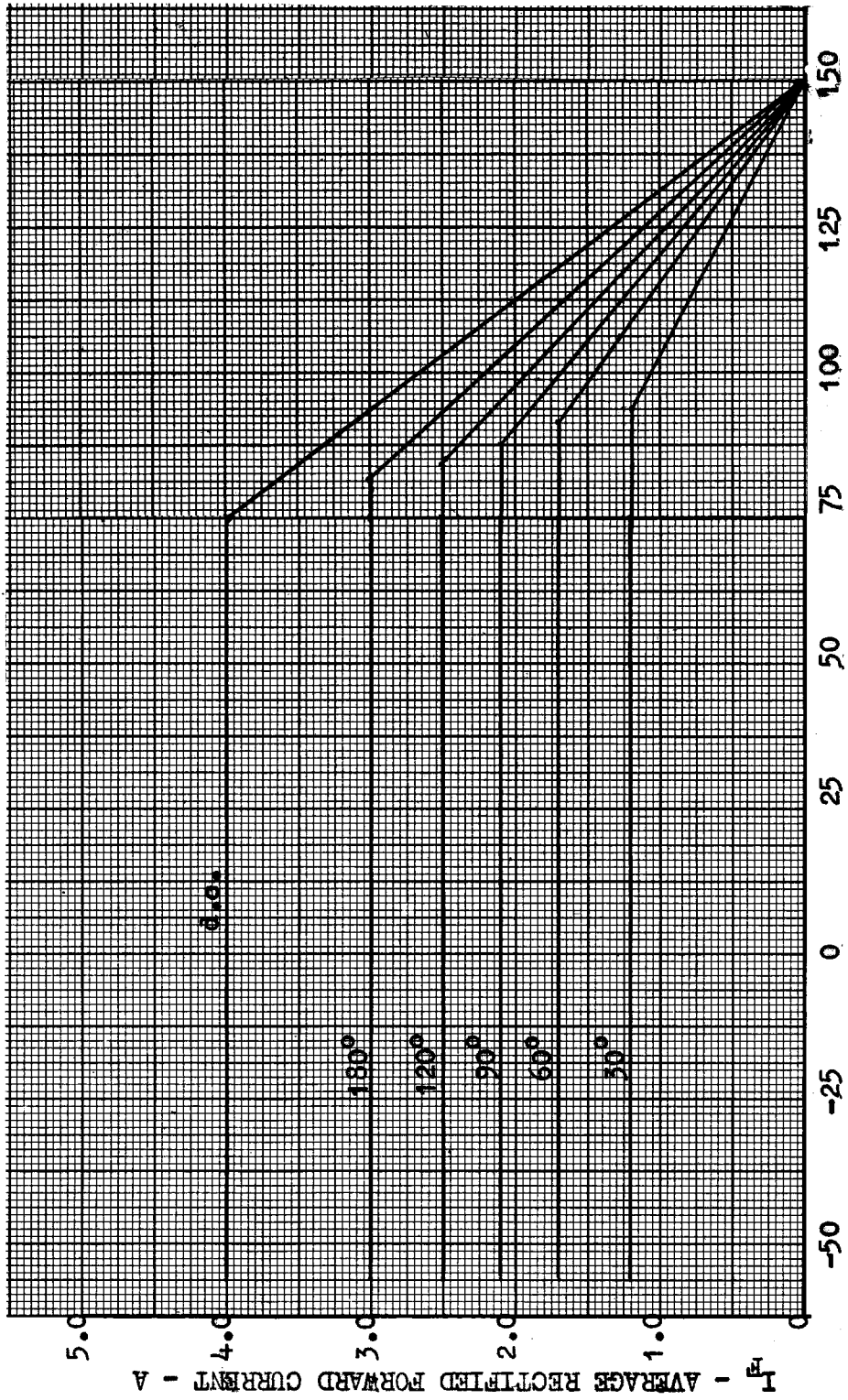
Examination or Test	Test Conditions K1007/NATO Ref.	AQL %	Insp. Level	Sym- bol	Limits		Unit
					Min.	Max.	
<u>Post Test end points, Sub Groups 2, 3, 7 & 8</u>							
Reverse current	As in Group A, Sub Group 2			I _R		2.0	mA
Forward current	As in Group A, Sub Group 2			I _F		2.0	mA
Forward voltage	As in Group A, Sub Group 2			V _F		1.8	V

GROUP C INSPECTION

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	Non operating	6.5	IA					
<u>Post Test End Points for Sub Group 2</u>									
Reverse Current		As in Group A, sub group 2				I _R	2.0	mA	
Forward current		As in Group A, sub group 2				I _F	2.0	mA	
Forward voltage		As in Group A, sub group 2				V _F	1.8	V	

FIG 1

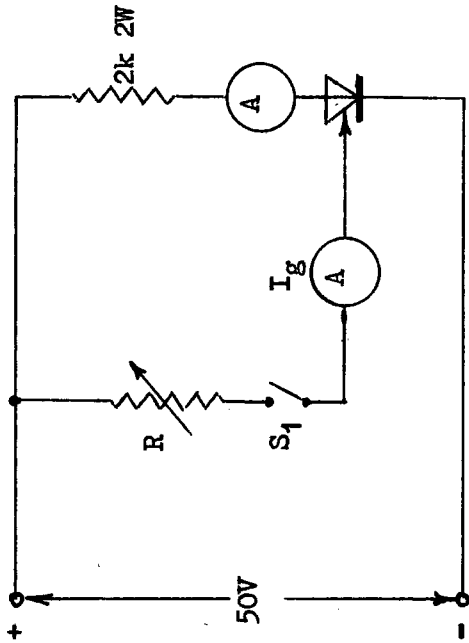
DERATING CURVE



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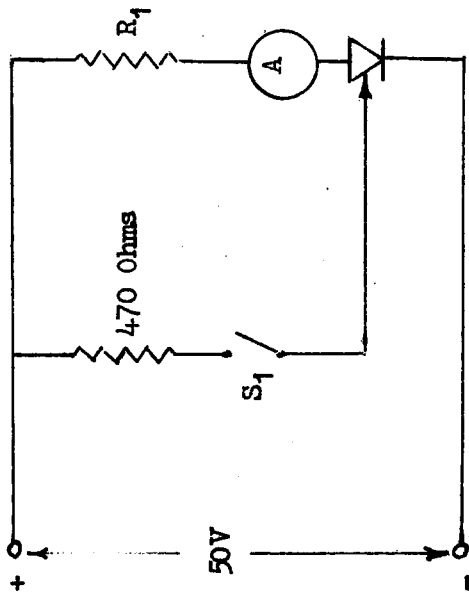
TEST CIRCUIT FOR GATE TRIGGERING SIGNAL

FIG 2

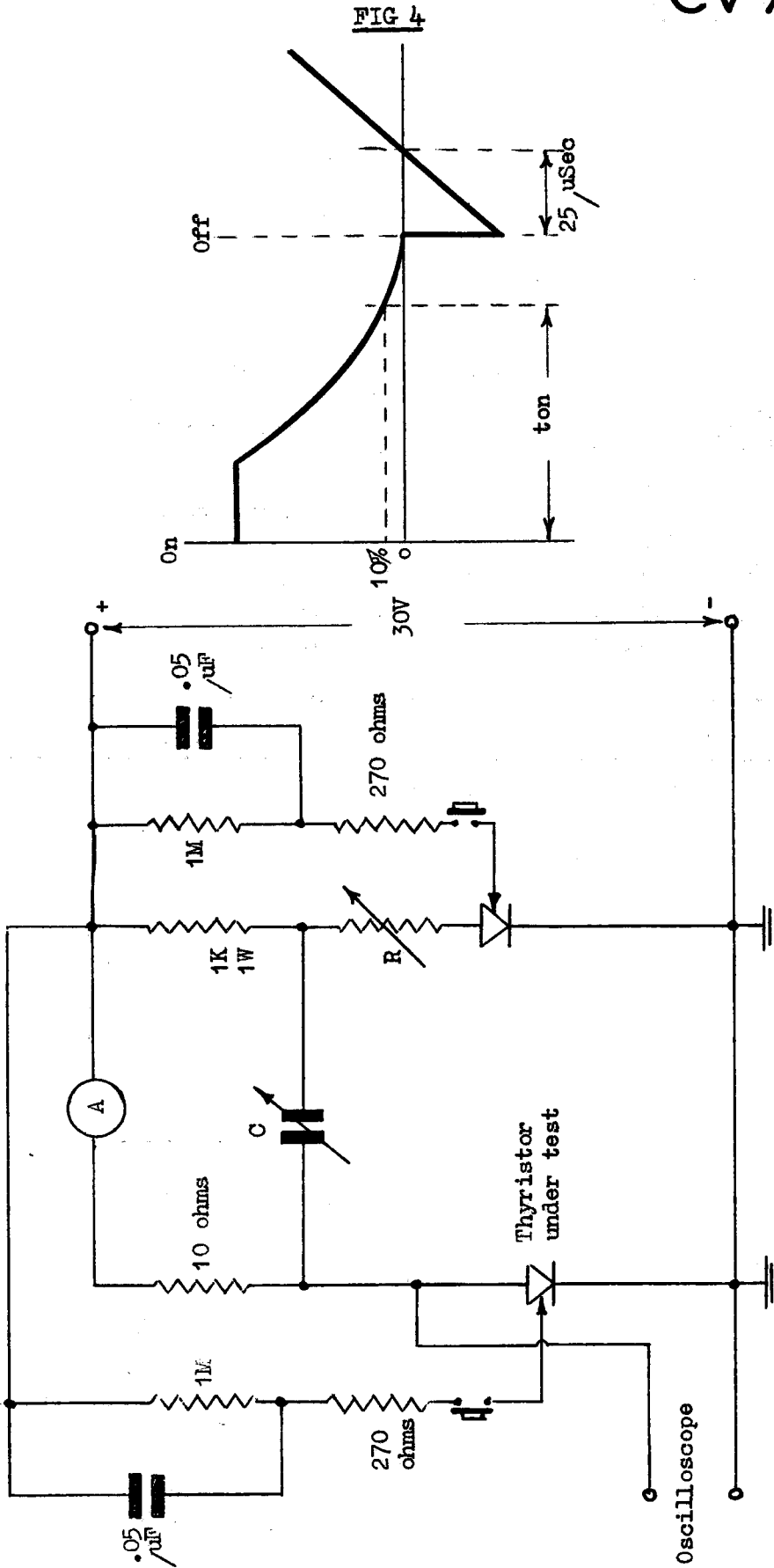


Close S₁ Reduce R until the rectifier switches into conduction. The gate trigger is the value of I_g just prior to conduction.

FIG 3

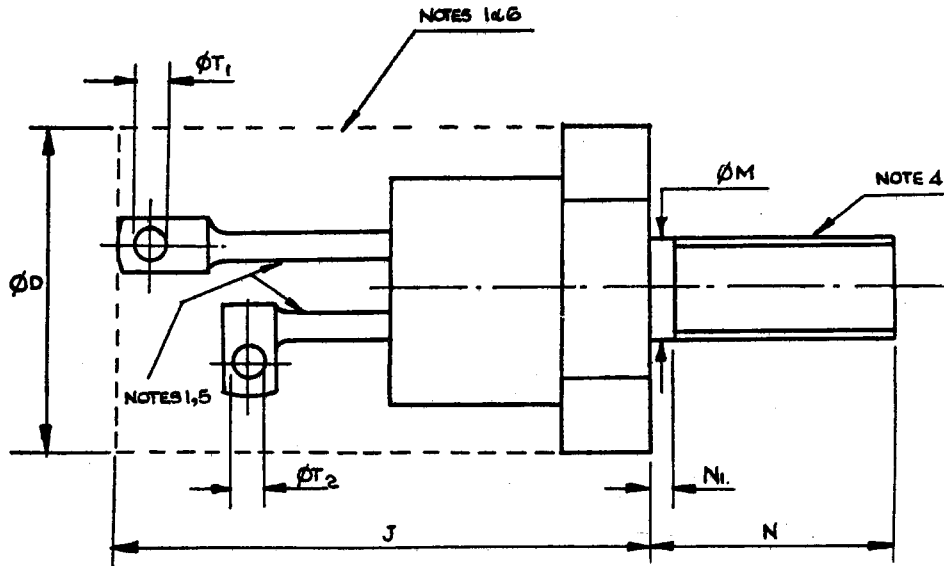


Reduce R₁ until the momentary closure of S₁ just leaves the rectifier in the conducting state. This value of anode current is the holding current.



The values of C and R must be chosen so that the Rectifier is reverse biased for a period of 25usecs. Under these conditions the Rectifier must turn off.

FIG 5



THE MILLIMETRE DIMENSIONS ARE DERIVED FROM THE ORIGINAL INCH DIMENSIONS

REF.	DIMENSIONS							NOTES
	MILLIMETRES			DEGREES	INCHES			
	Min.	Nom.	Max.	Nom.	Min.	Nom.	Max.	
ϕD			12.82				.505	1
J			24.13				.950	
ϕM	3.69		4.82		.145		.190	2
N	10.72		11.50		.422		.453	
N_1			1.98				.078	3
ϕT_1	1.53				.060			
ϕT_2	1.15				.045			

NOTES

1. The device, with the exception of the thread, lies within the cylinder of ϕD and length J.
2. ϕM refers to length N_1 .
3. Dimension N_1 to end of full thread.
4. Thread 10-32 UNF-2A.
5. Terminals are fixed lugs, contour and orientation undefined.
6. This zone includes a 7/16" hexagon [10.75 mm.] .423" min. across flats. [11.12 mm.] .438" max.