Phase Control Thyristor Stud
Types N0290SX120 to N0290SX160

The data sheet on the subsequent pages of this document is a scanned copy of existing data for this product.
(Rating Report 86TR10 Issue 1)

This data reflects the old part number for this product which is: N170PH02-15.
This part number must **NOT** be used for ordering purposes – please use the ordering particulars detailed below.

The limitations of this data are as follows:
Only SC outline drawing (W18) in datasheet
No reverse recovery information available
Device no longer available for grades 02 to 10 (200V to 1000V V_{RRM}/V_{DRM})

The following links will direct you to the appropriate outline drawings
Outline W18 – ¾" Ceramic stud
Outline W25 – ¾" Ceramic stud removed

Where any information on the product matrix page differs from that in the following data, the product matrix must be considered correct

An electronic data sheet for this product is presently in preparation.

For further information on this product, please contact your local ASM or distributor.

Alternatively, please contact Westcode as detailed below.

Ordering Particulars

N0290	SX	♦♦	**0**
Fixed Type Code	SC – ¾" Ceramic stud SD – ¾" Ceramic stud removed	Voltage code $V_{RRM}/100$ 12-16	Fixed Code
Typical Order Code: N0290SD140, ¾" Ceramic stud removed, 1400V V_{RRM}/V_{DRM}			

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QUALITY EVALUATION LABORATORY

Rating Report: 86TR10
Origin:

Date : 3rd July, 1986
Pages : 12

Thyristor Type N170PH02-H15

Written: M.W. Dunlop Checked: M.W.J. Approved: B.K.C.H.

The thyristor consists of a diffused silicon slice of 24 mm diameter mounted under spring pressure in a stud base, top hat housing with flexible lead. This Report supersedes Rating Report No. 79TR26 (Issue 2)

Ratings

Voltage Grades	: H02-H15
V_{DSM}	: 200-1500V
V_{RSM}	: 300-1600V
V_{DRM}, V_{RRM}	: 200-1500V

$I_T(AV)$: Single phase : 50 Hz, 180° sinewave

T_{CASE} = 85°C	: 196A
I_T(rms) max.	: 355A
I_T d.c. max.	: 355A
I_{TSM} : t = 10ms half sinewave; T_J(initial) = 125°C: V_{RM} = 0.6V_{RRM}(MAX)	: 4200A
I_{TSM} : t = 10ms half sinewave; T_J(initial) = 125°C: $V_{RM} \leq$ 10V:	4620A
I^2t : t = 10 ms; T_J(initial) = 125°C : V_{RM} = 0.6V_{RRM}(MAX)	: 88.2 x $10^3 A^2S$
I^2t :: t = 10 ms; T_J(initial) = 125°C : $V_{RM} \leq$ 10V	: 106.7 x $10^3 A^2S$
I^2t : t = 3 ms; T_J(initial) = 125°C : $V_{RM} \leq$ 10V	: 79.4 x $10^3 A^2S$
di/dt : (Repetitive) T_J = 125°C Gate: 20V 20Ω Rise time 1μS	: 500A/uS
I_{FGM} : Anode positive with respect to cathode	: 20A
V_{FGM} : " " " " " "	: 18V
V_{RGM} :	: 5V
$P_G(AV)$:	: 2W
P_{GM} :	: 100W
V_{GD} :	: 0.25V
T_C operating range	: -40 to 125°C
T_{stg} Non-operating	: -40 to 150°C

Characteristics

(maximum values unless stated otherwise)

I_{GT} : T_J = 25°C)		: 150mA
I_H : T_J = 25°C)	V_A = 6V ; I_A = 1A	: 600mA
V_{GT} : T_J = 25°C)		: 3V
V_O : T_J = 125°C		: 1.08V
r_T : T_J = 125°C		: 1.3mohms
V_{TM} : I_{TM} = 616A	T_{VJ} = 125°C	: 1.88V
R_{th} (J/C)		: 0.12°C/W
dV/dt : Linear ramp to 0.8V_{DRM}(max). T_J = 125°C: Gate O/C;		repetitive : 200V/uS*
I_{DRM} : T_J = 125°C	V_{DM} = V_{DRM}(max)	: 20mA
I_{RRM} : T_J = 125°C	V_{RM} = V_{RRM}(max)	: 20mA
Q_{RR} : I_{TM} =	dI/dt A/uS, 50% chord value	
V_{RM} :	T_{VJ} = 125°C	:
tq : I_{TM}	dI/dt A/uS; T_J = 125°C V_{RM} = 50V	:
	dV/dt = 200V/uS to 0.8V_{DRM}	:
When specified, 20V/uS to 0.8V_{DRM} Typical		:
Outline drawing		: 101A225
R_{th} (C-H.S.)		: 0.04°C/W
Mounting torque		: 2.5 - 2.77Kg.m
Outline (JEDEC NO.)		:

*Repetitive dv/dt

Higher dv/dt selections are available up to 1000V/uS on request.

CONTENTS

Changes to 79TR26 (Issue 2)

p1: V_{DWM}, V_{RWM} deleted

I_{FGM} increased to 20A

T_{HS} operating range MIN decreased to -40°C

p2: I_L (=200mA) changed to I_H at 6V, 1A = 600mA

Note 1 deleted; replaced by dV/dt note.

p7: I_T - V_T, Z_{th-t} now on separate pages

New p9: V_G - I_G : I_{FGM} increased to 20A

New p10: I_{GT} - V_{GT} : axes interchanged

Voltage Ratings

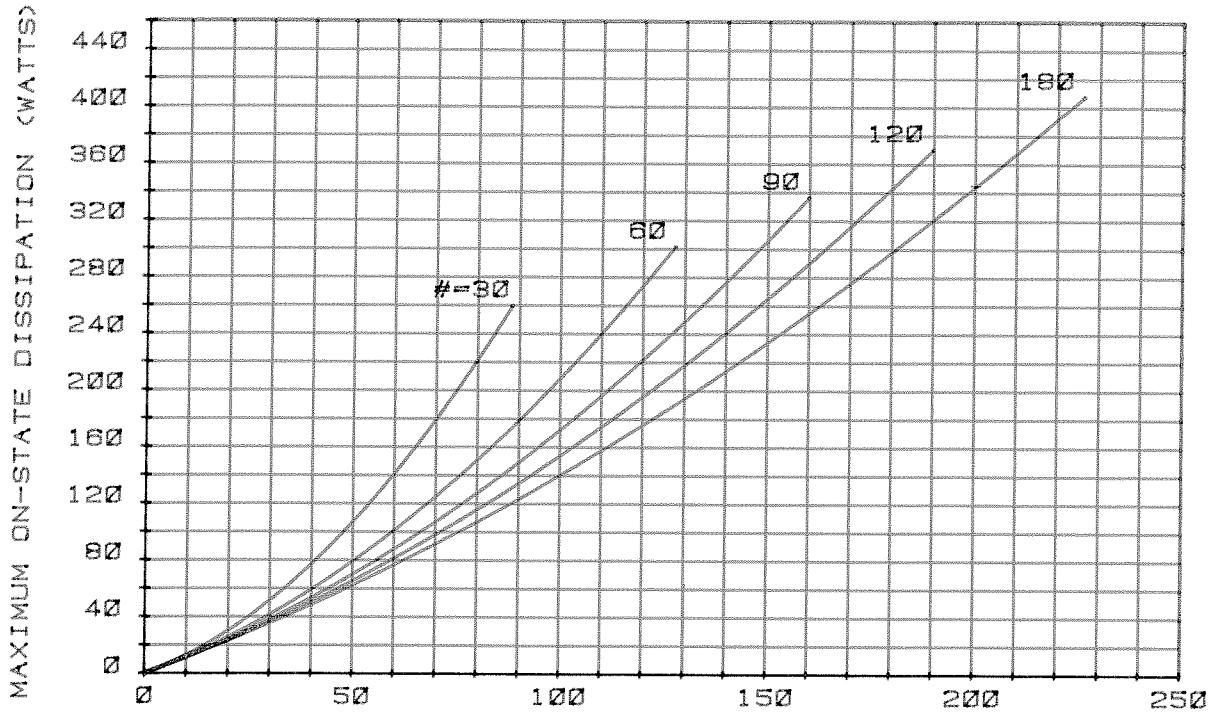
Voltage Grade 'H'	V_{DSM} V_{DRM} V_{RRM} V	V_{RSM} V	V_D V_R DC
02	200	300	140
03	300	400	210
04	400	500	260
06	600	700	420
08	800	900	560
10	1000	1100	700
12	1200	1300	810
14	1400	1500	930
15	1500	1600	980

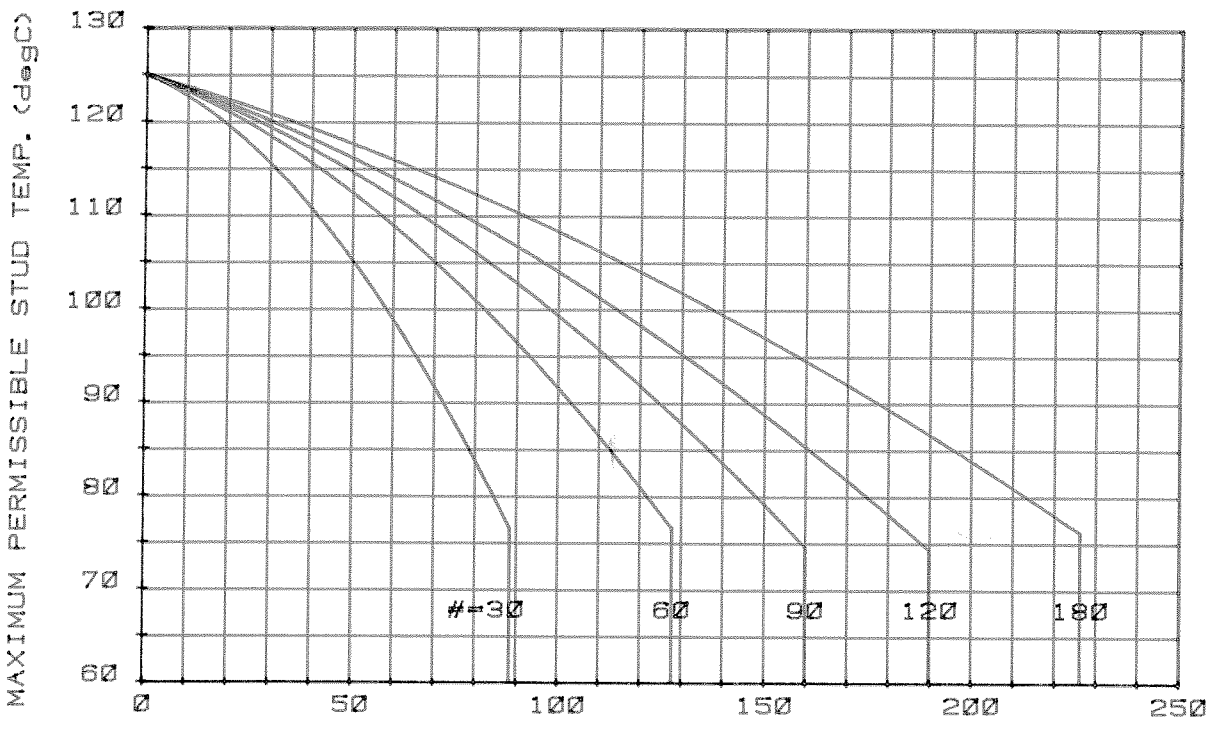
Extension of Voltage Grades

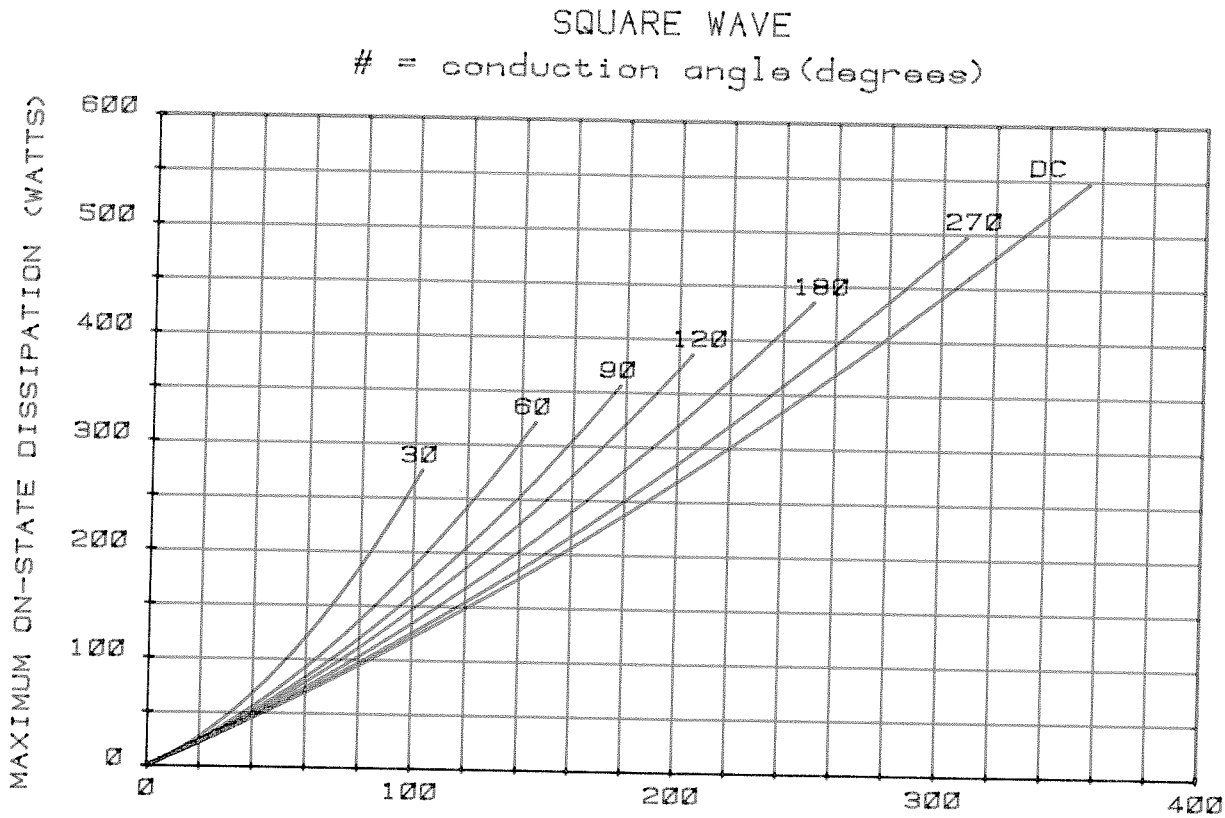
This report is applicable to other and higher voltage grades when supply has been agreed by Sales/Production.

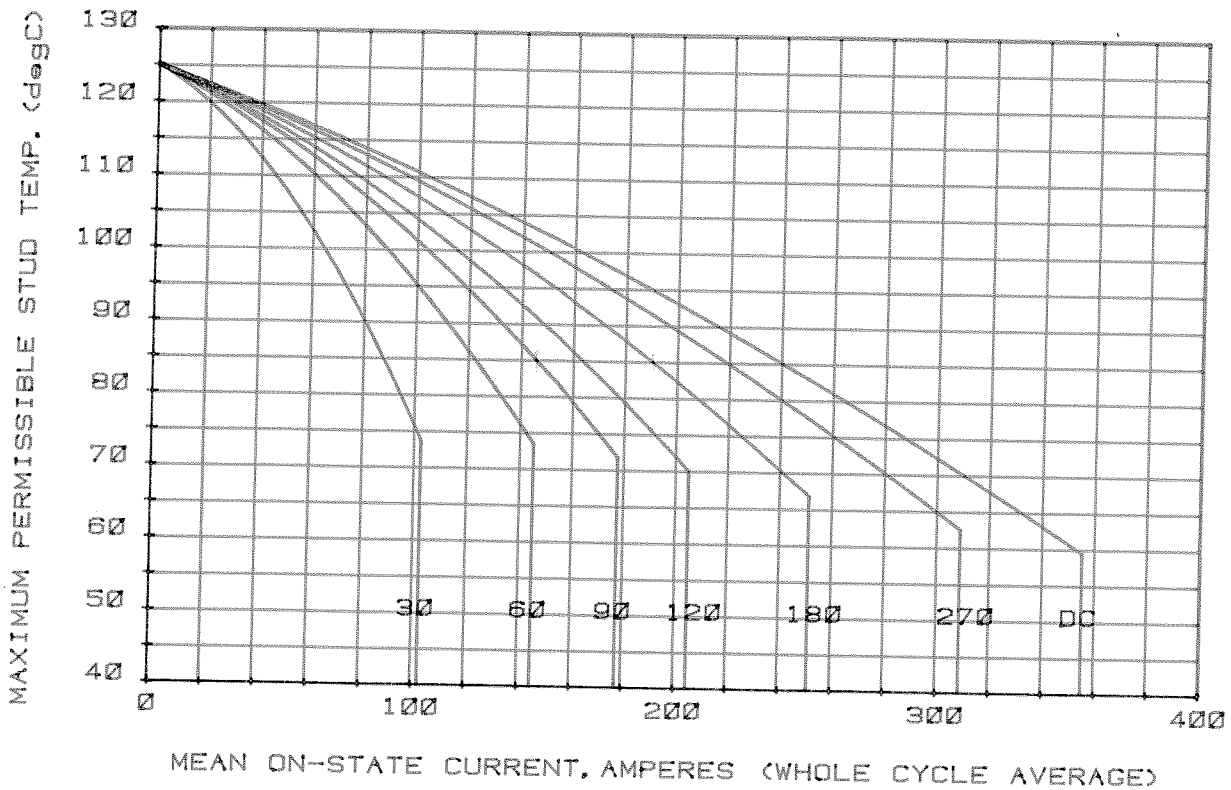
SINE WAVE

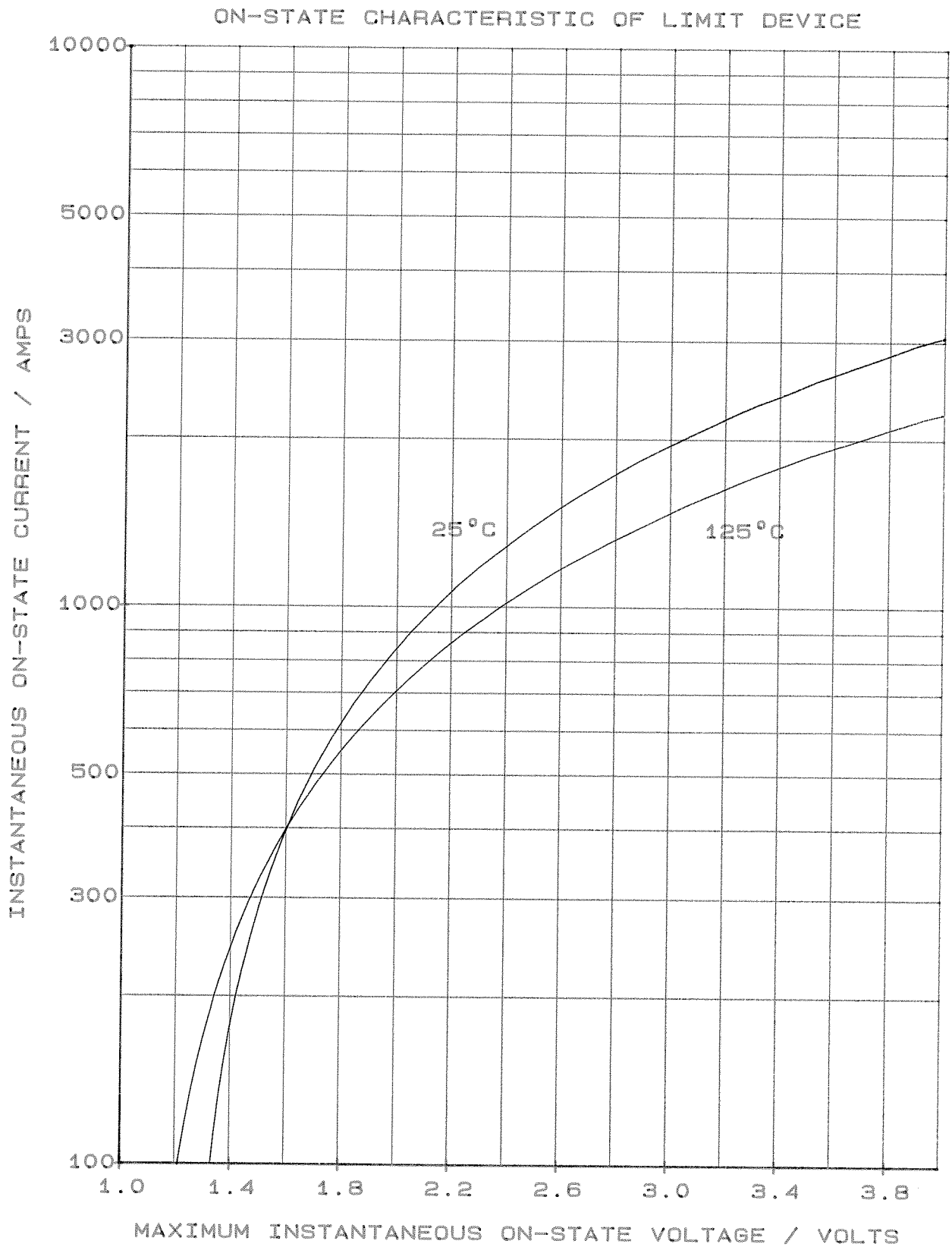
= conduction angle(degrees)

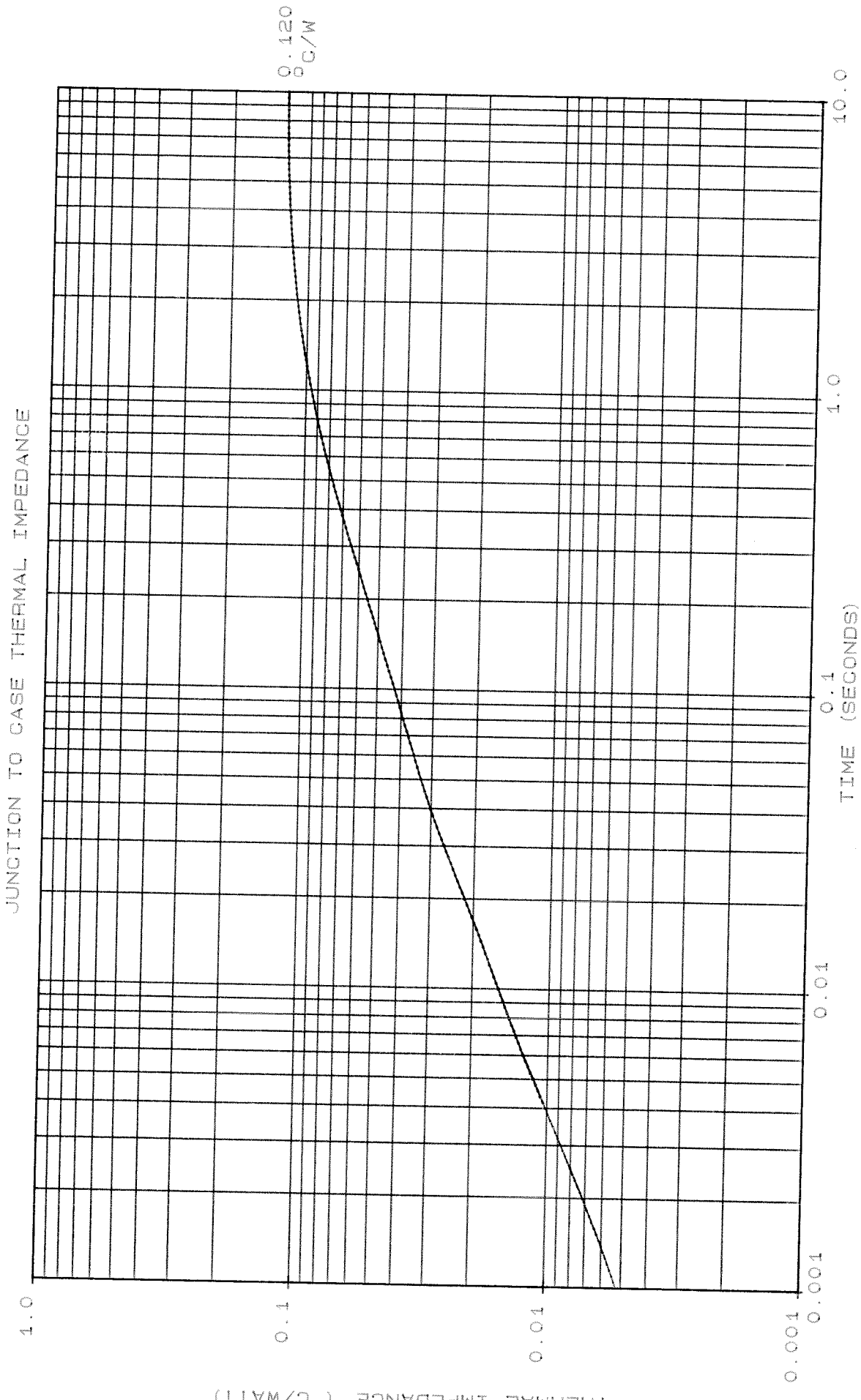


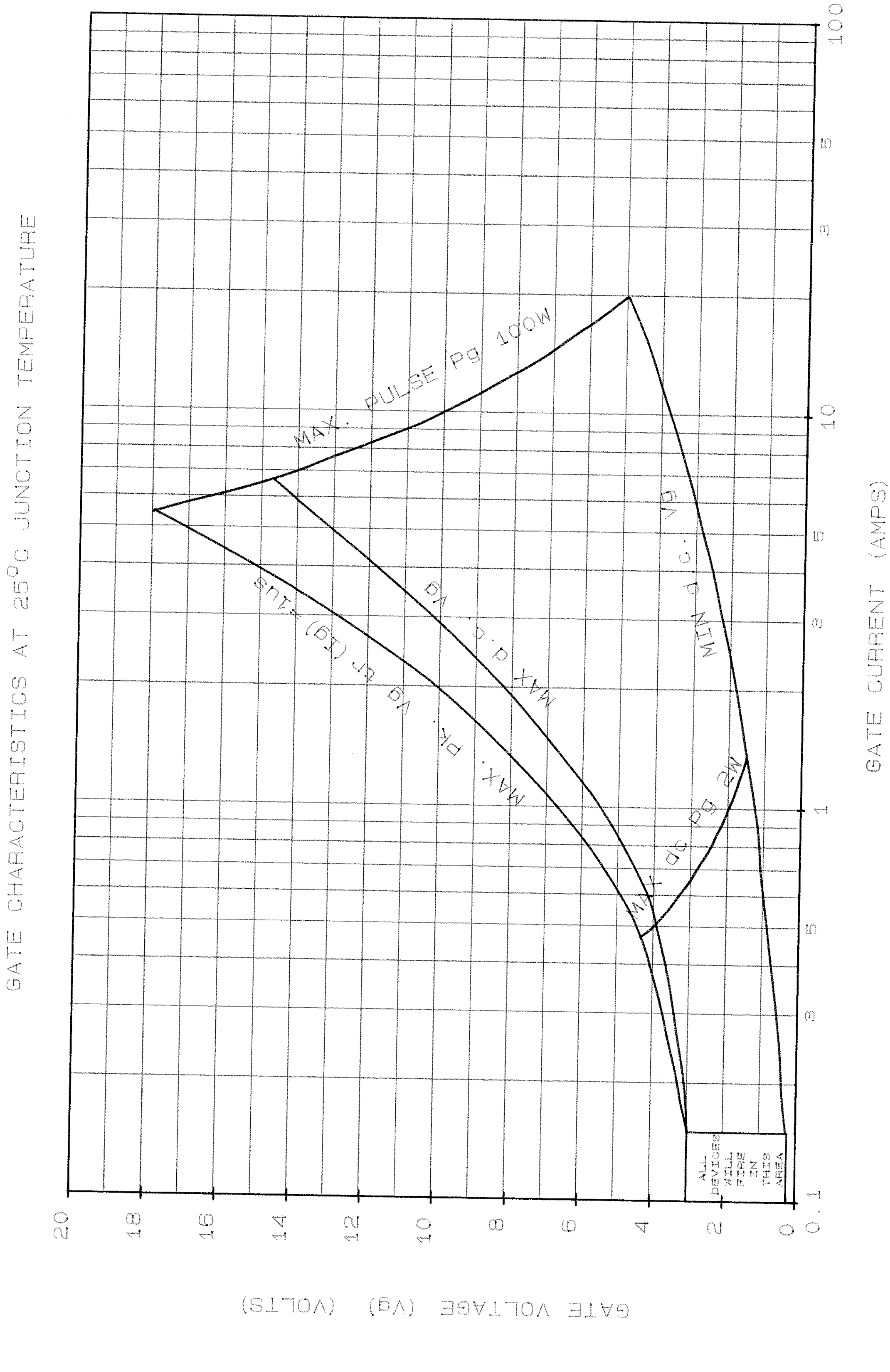



SQUARE WAVE
= conduction angle(degrees)
MAXIMUM ON-STATE DISSIPATION (WATTS)
600
500
400
300
200
100
0
0
100
200
300
400
DC
270
180
120
90
60
30

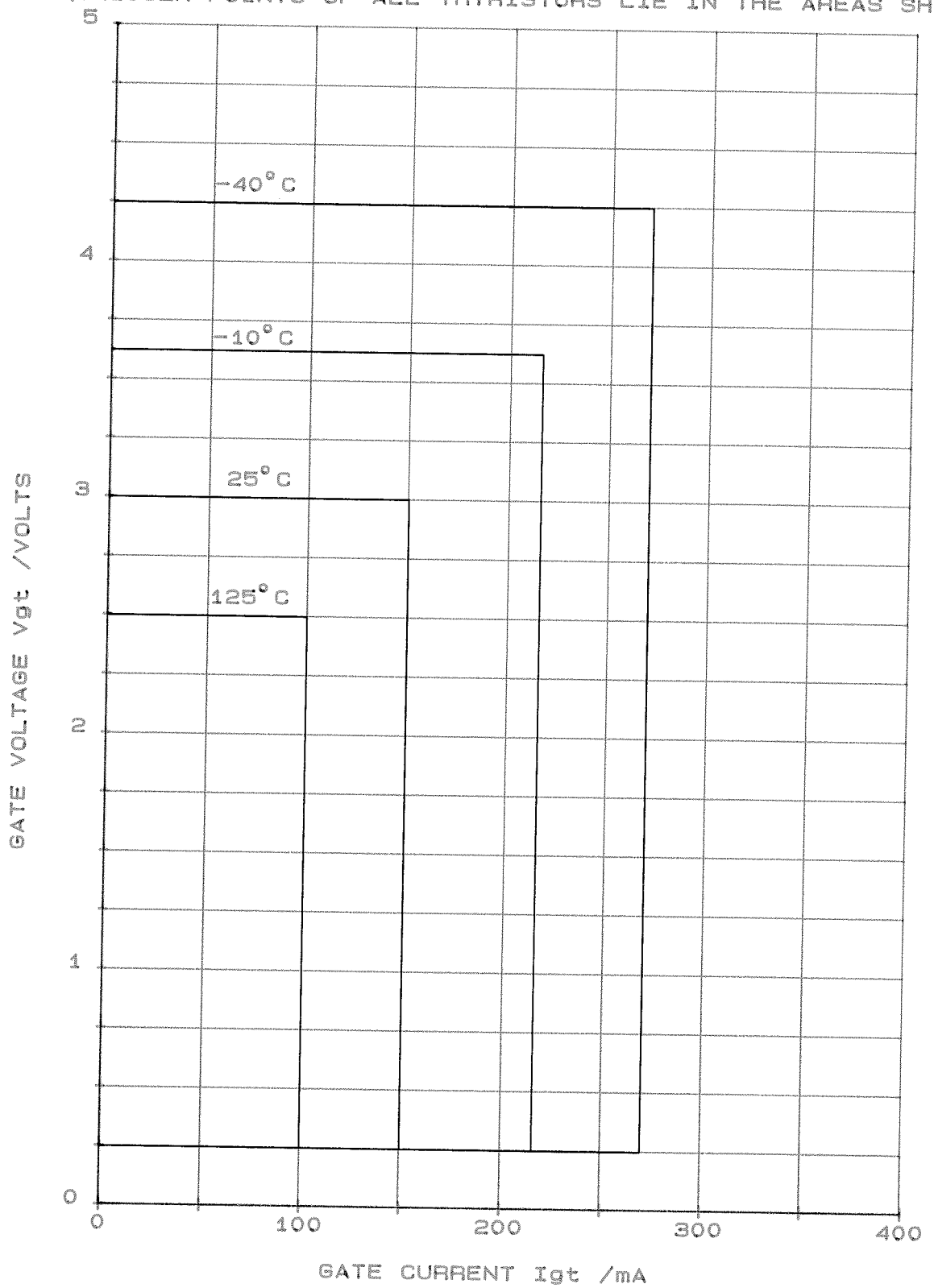

MAXIMUM PERMISSIBLE STUD TEMP. (degC)
130
120
110
100
90
80
70
60
50
40
0
100
200
300
400
30
60
90
120
180
270
DC
MEAN ON-STATE CURRENT, AMPERES (WHOLE CYCLE AVERAGE)


ON-STATE CHARACTERISTIC OF LIMIT DEVICE
10000
5000
3000
1000
500
300
100
INSTANTANEOUS ON-STATE CURRENT / AMPS
25°C
125°C
1.0
1.4
1.8
2.2
2.6
3.0
3.4
3.8
MAXIMUM INSTANTANEOUS ON-STATE VOLTAGE / VOLTS

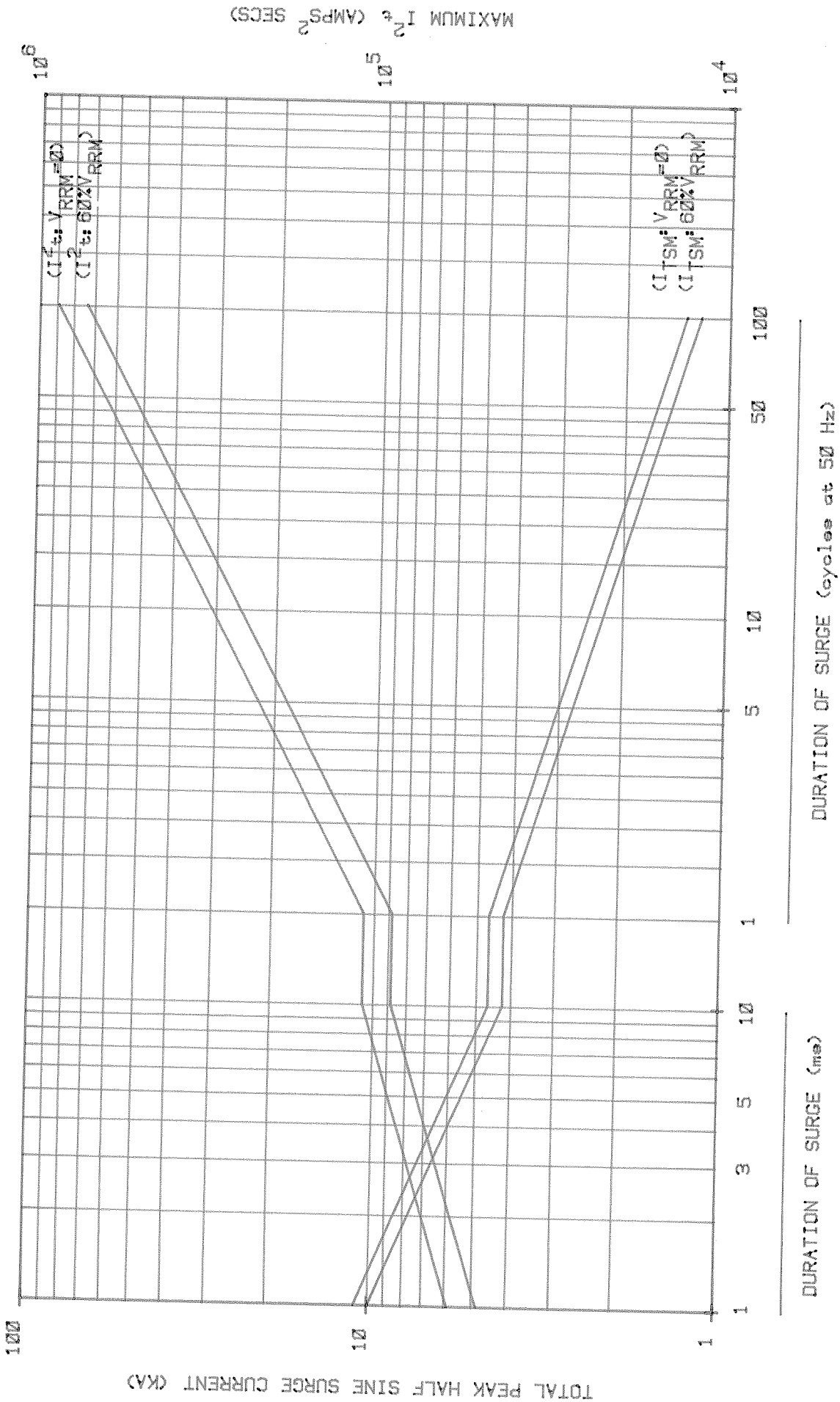

JUNCTION TO CASE THERMAL IMPEDANCE
0.120 °C/W
THERMAL IMPEDANCE (°C/WATT)
1.0
0.1
0.01
0.001
0.001
0.01
0.1
1.0
10.0
TIME (SECONDS)


GATE CHARACTERISTICS AT 25°C JUNCTION TEMPERATURE
MAX. PULSE Pg 100W
MAX. d.c. Vg
MIN d.c. Vg
MAX. pk. Vg tr (Ig) -1us
MAX. dc Pg 2W
ALL DEVICES WILL FIRE IN THIS AREA
GATE CURRENT (AMPS)
0.1
.3
.5
1
3
5
10
30
50
100
GATE VOLTAGE (Vg) (VOLTS)
0
2
4
6
8
10
12
14
16
18
20

GATE TRIGGERING CHARACTERISTICS
(TRIGGER POINTS OF ALL THYRISTORS LIE IN THE AREAS SHOWN)



MAXIMUM NON REPETITIVE SURGE CURRENT AT INITIAL JUNCTION TEMPERATURE 125°C
(GATE MAY TEMPORARILY LOSE CONTROL OF CONDUCTION ANGLE)



SCALE	1/1
DRN	
CHKD	
APPD	
	A
S	NI

INTERNATIONAL OUTLINE No.

WEIGHT. 280 GRAMS APPX.

FINISH. BRIGHT NICKEL PLATE.

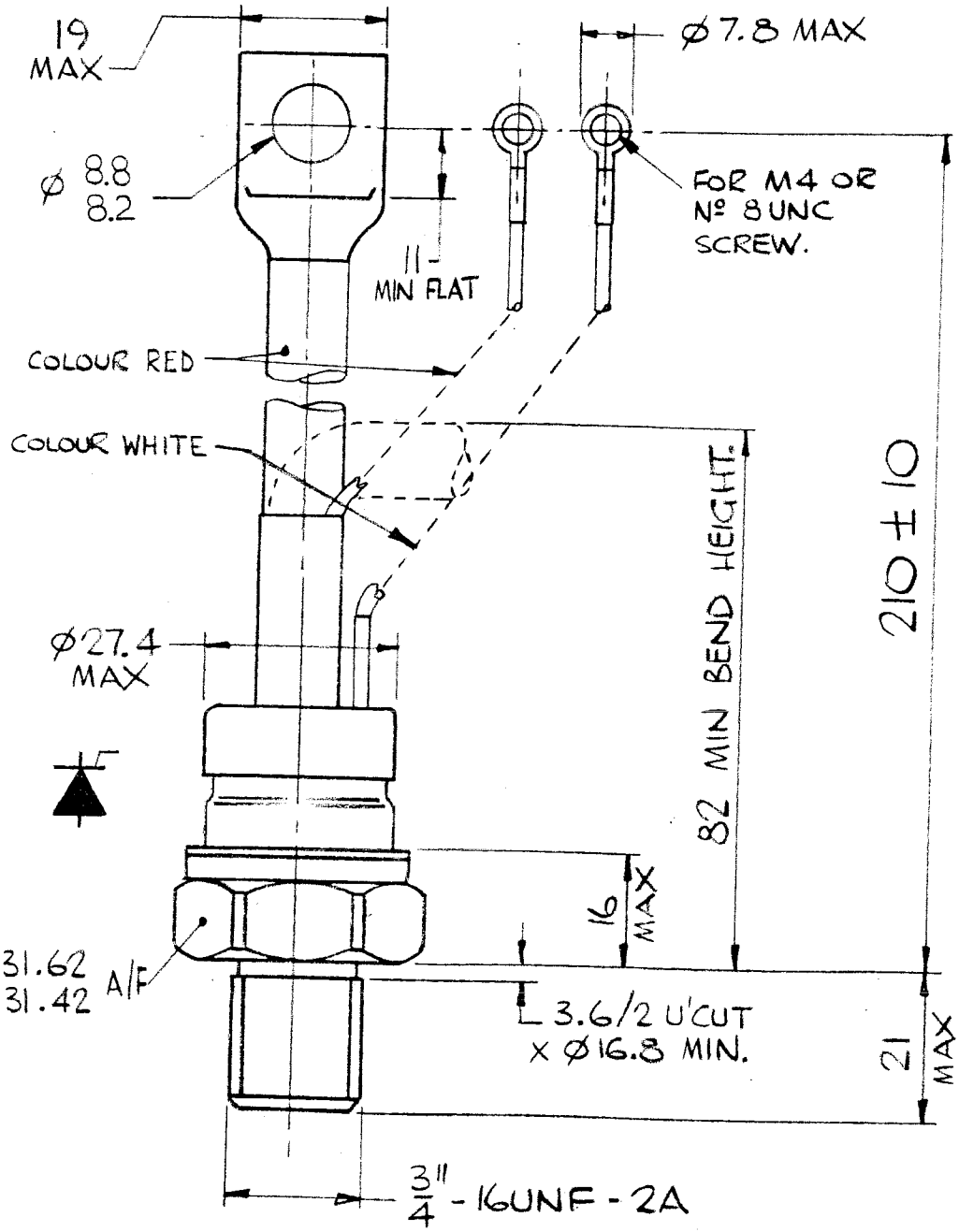
DEVICE MARKING INCLUDES MONOGRAM, TYPE No., SPEC. No. AND POLARITY SYMBOL.

DEVICE MOUNTING: MOUNTING TORQUE 27 - 24.5 Nm (2.77 - 2.5 kgf-m). THREAD MUST NOT BE LUBRICATED.

NOTES.

	TYPE NUMBER
N170P	P200P
N195P	P202P
N275P	P204P
	P205P
	P214P
	P215P
	P270P

G.A. DRG. No. 103A162



WESTINGHOUSE BRAKE AND SIGNAL CO. LTD.
CHIPPENHAM, WILTSHIRE, SN15 1JD, ENGLAND.

WESTCODE ® SEMICONDUCTORS

THIRD ANGLE PROJECTION

DIMNS. IN MILLIMETRES

DRG. No. 101A225

ISS	REVISIONS
1	19.9.78
2	17.11.78 M670 TYPE Nº ADDED
3	Ø8.8/8.2 HOLE WAS 10.7/10.2
4	17.12.79 M847 19 WAS 21.4
5	27.11.84 M1218 FIN WAS ET.
6	10.10.88. RED & WHITE WERE VIOLET & ORANGE

5355E OZALID (U.K.) LTD

A4