

# Fast Recovery Diode Stud

## Types M0130S/RX200 to M0130S/RX250

The data sheet on the subsequent pages of this document is a scanned copy of existing data for this product.  
(Rating Report 90NR1 Issue 2)

This data reflects the old part number for this product which is: SM16-25MCN/R094. 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 S/RL outline drawing (W20) in datasheet  
No reverse recovery information or notes on ratings available  
Device no longer available for grades 16 & 18 (1600V & 1800V  $V_{RRM}$ )

The following links will direct you to the appropriate outline drawings  
[Outline W20](#) – M12 Ceramic stud and lug  
[Outline W21](#) – 3/8" Ceramic stud



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.

<b>Ordering Particulars</b>			
M0130	S/RX	◆◆	0
Fixed Type Code	S/RL – M12 Ceramic stud and lug S/RM – 3/8" Ceramic stud	Voltage code $V_{RRM}/100$ 20-25	Fixed Code
Typical Order Code: M0130SL200, Normal polarity M12 Ceramic stud and lug, 2000V $V_{RRM}$			

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<p>The information contained herein is confidential and is protected by Copyright. The information may not be used or disclosed except with the written permission of and in the manner permitted by the proprietors Westcode Semiconductors Ltd.</p> <p>In the interest of product improvement, Westcode reserves the right to change specifications at any time without prior notice.</p> <p>Devices with a suffix code (2-letter, 3-letter or letter/digit/letter combination) added to their generic code are not necessarily subject to the conditions and limits contained in this report.</p>			<p>© Westcode Semiconductors Ltd.</p>

**QUALITY EVALUATION LABORATORY**

Rating Report No: 90NR1 (Issue 2)

Date: 4th March, 1993


Origin: Q.E.L.

Pages: 26

Stud Based Diode SM16-25MCN/R094

Written by: B. Holloway

Checked: M Baker

Approved: 

The MCN/R094 series of fast recovery diodes are based on a 19 mm diameter silicon slice mounted under spring pressure in a stud base housing. These diodes are particularly suitable for use in G.T.O. snubber networks.

This supersedes 90NR1 Issue 1 dated 8.2.90.

Ratings

Voltage Grades	: 16 - 25
$V_{RSM}$	: 1700-2600V
$V_{RRM}$	: 1600-2500V
$I_{F(AV)}$ Single phase: 50 Hz 180° half sinewave; $T_{CASE} = 100^{\circ}C$	: 56A
$I_{F(rms)}$ max.	: 170A
$I_F$ max.	: 170A
$I_{FSM}$ : t = 10ms half sinewave; $T_J$ (initial) = 125°C	
$V_{RM} = 0.6V_{RRM(MAX)}$	: 2240A
$I_{FSM}$ : t = 10ms half sinewave; $T_J$ (initial) = 125°C	
$V_{RM} \leq 10V$	: 2450A
$I^2t$ : t = 10ms $T_J$ (initial) = 125°C; $V_{RM} = 0.6V_{RRM(MAX)}$	: $2.5 \times 10^4 A^2S$
$I^2t$ : t = 10ms; $T_J$ (initial) = 125°C; $V_{RM} \leq 10V$	: $3 \times 10^4 A^2S$
$I^2t$ : t = 3ms; $T_J$ (initial) = 125°C; $V_{RM} \leq 10V$	: $2.2 \times 10^4 A^2S$
$T_{CASE}$ Operating Range	: -40 to 125°C
$T_{stg}$ : Non-operating	: -40 to 150°C

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Characteristics

(Maximum values unless otherwise stated)

$V_o$ :	: 1.29V
$r_s$ :	: 1.54mohms
A : $T_J = 25^\circ\text{C}$	: -1.100995
B : $T_J = 25^\circ\text{C}$	: 0.6774339
C : $T_J = 25^\circ\text{C}$	: 0.0018742
D : $T_J = 25^\circ\text{C}$	: $-8.277599 \times 10^{-2}$
A	: -2.047925
B	: 0.8725644
C	: $2.428484 \times 10^{-3}$
D	: -0.1139999
$V_{FM}$ at $I_{FM} = 280\text{A}$	: 1.64V
$R_{th(J-C)}$	: 0.30 K/W
$R_{th(C-HS)}$	: 0.08 K/W
$I_{RRM}$ : at $V_{RRM(MAX)}$	: 20mA
$V_{fr}$ : at $dI/dt = 400\text{A}/\mu\text{S}$	: 80V
Reverse recovery at $I_{FM} = 1000\text{A}; t_p = 200\mu\text{s}$ $di_R/dt = 150\text{A}/\mu\text{s}; V_{RM} = 50\text{V}$	
$Q_{RR}$ (total area)	: 480 $\mu\text{C}$
$Q_{RA}$ (50% chord)	: 237 $\mu\text{C}$
$t_{rr}$ (50% chord)	: 2.6 $\mu\text{s}$ Typ.
$I_{RM}$	: 235A
Mounting Torque	: 14 Nm
Outline Drawing	: 100A303
JEDEC Outline No.	: -

NOTE: All characteristics are at  $T_{VJ} = T_{Jmax}$  operating unless stated otherwise.

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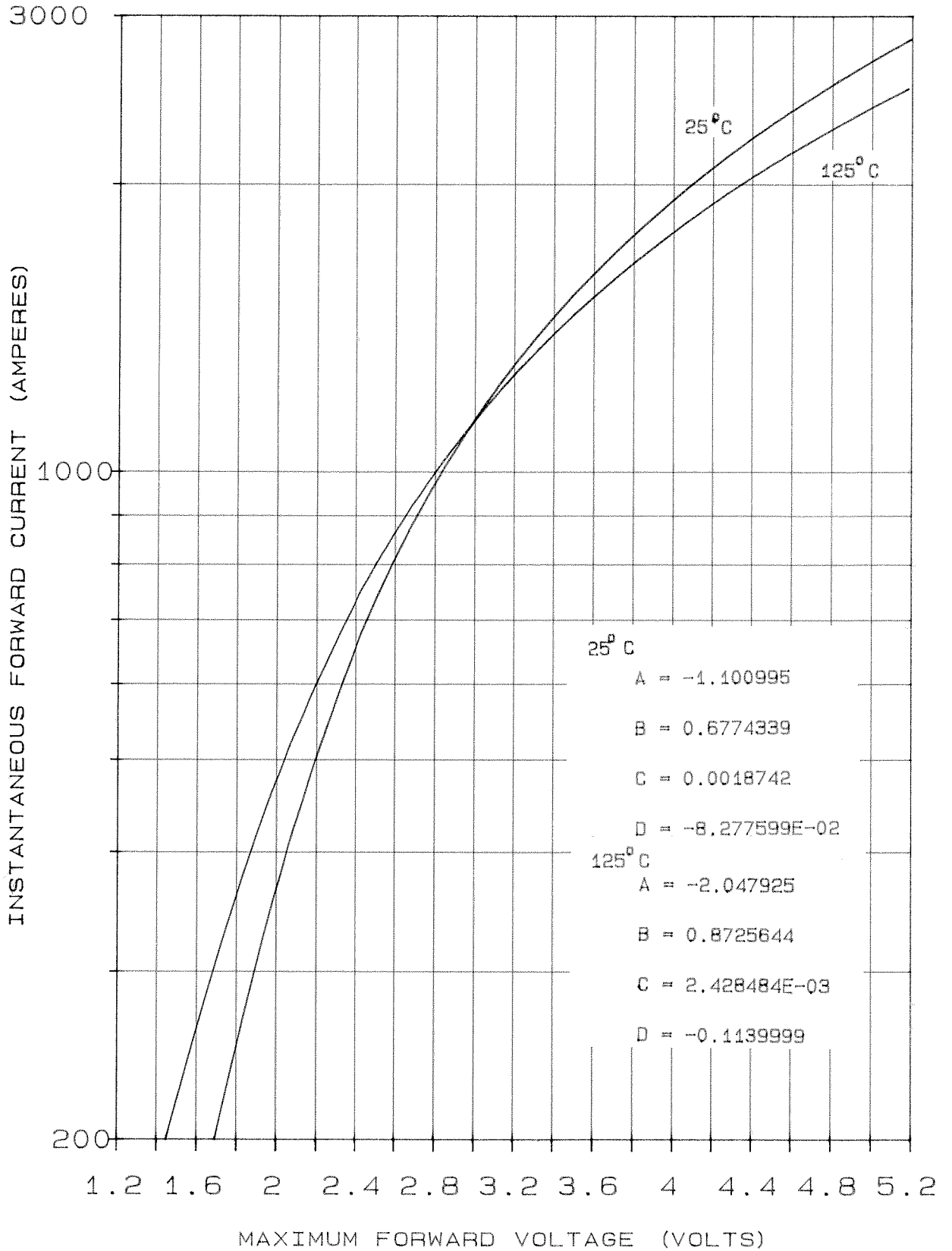
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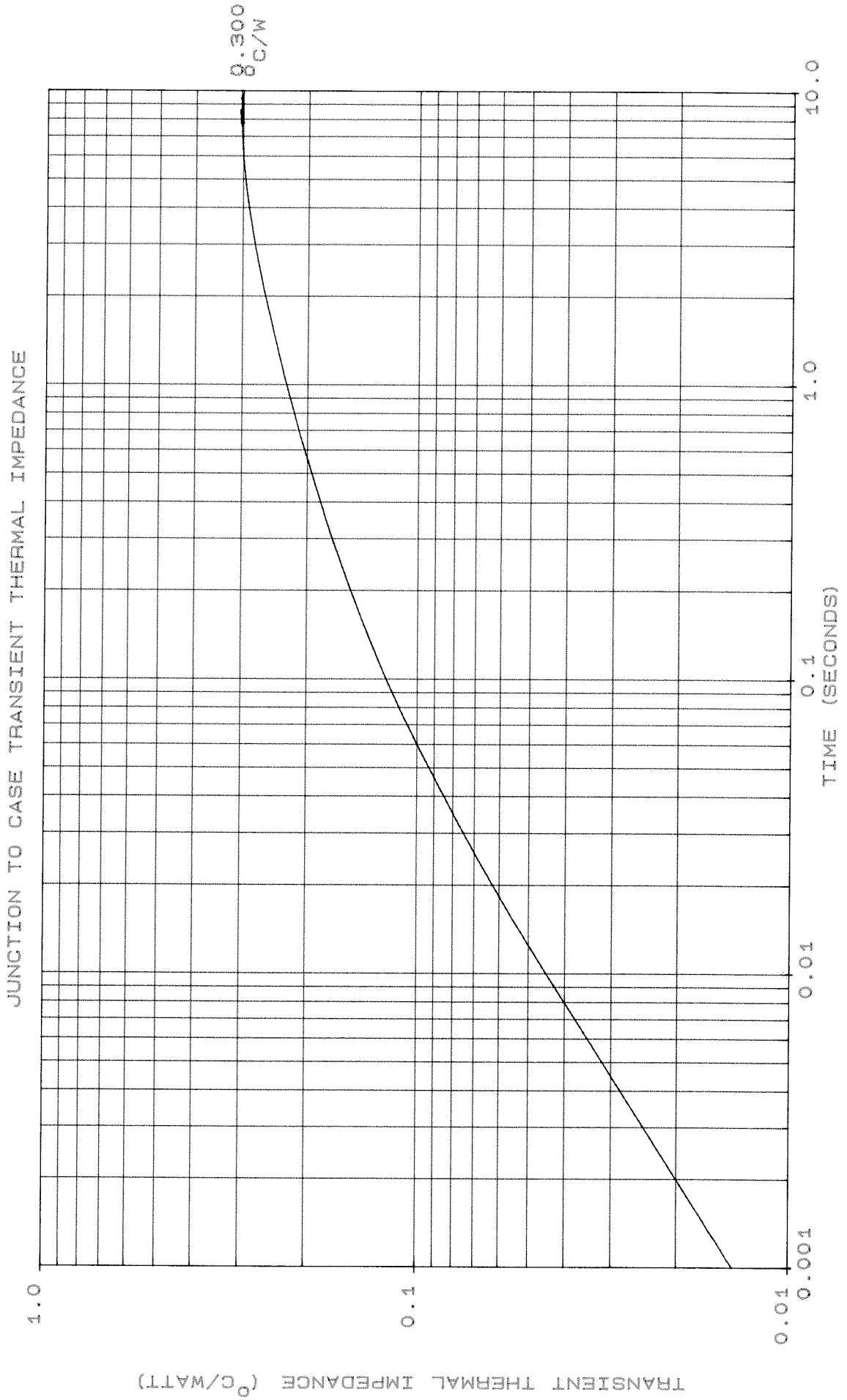
Voltage Ratings

Voltage Class	$V_{RRM}$ V	$V_{RSM}$ V
16	1600	1700
18	1800	1900
20	2000	2100
22	2200	2300
24	2400	2500
25	2500	2600

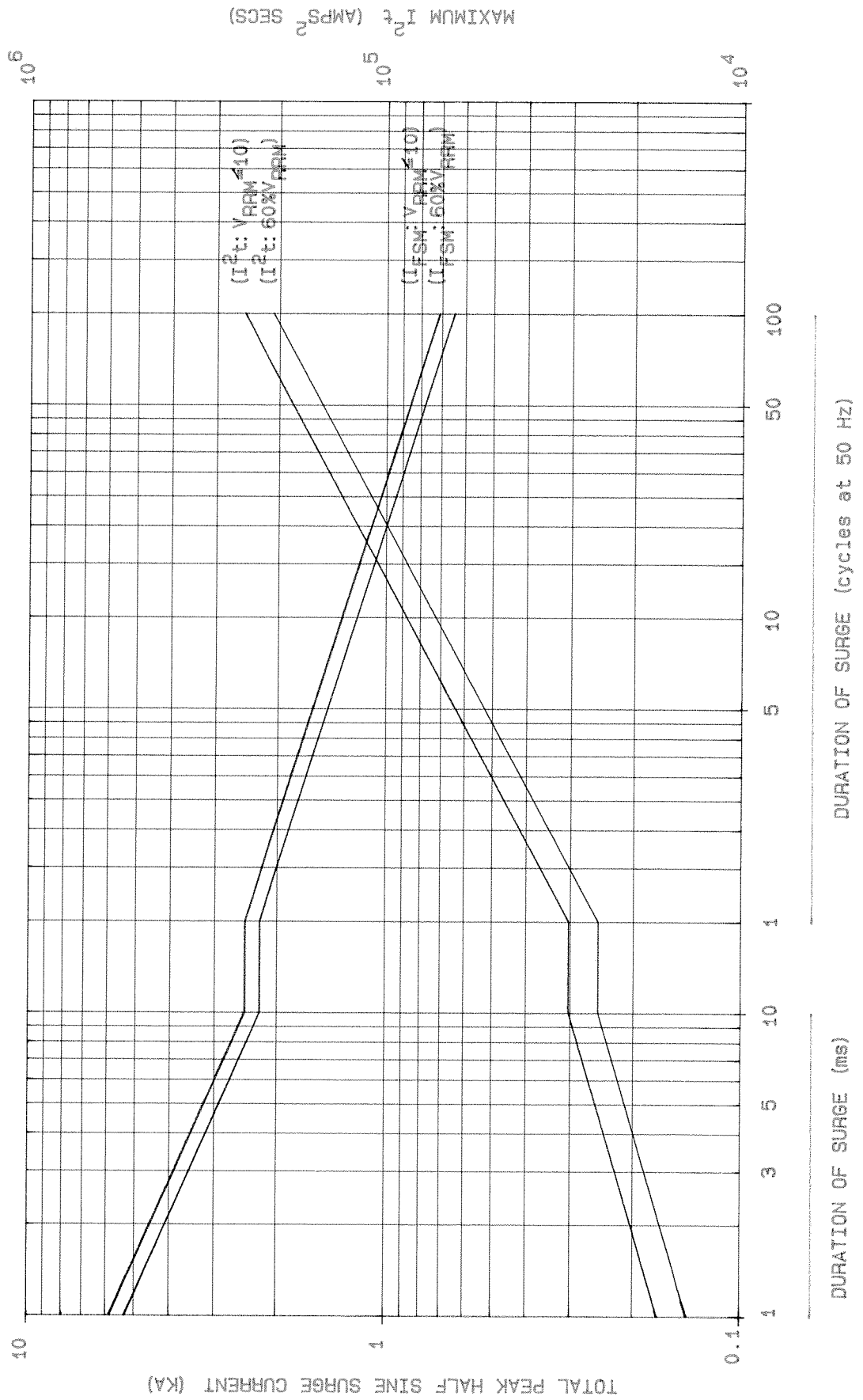
This Report is applicable to higher or lower voltage grades when supply has been agreed by Sales/Production.

FORWARD CHARACTERISTIC OF LIMIT DEVICE



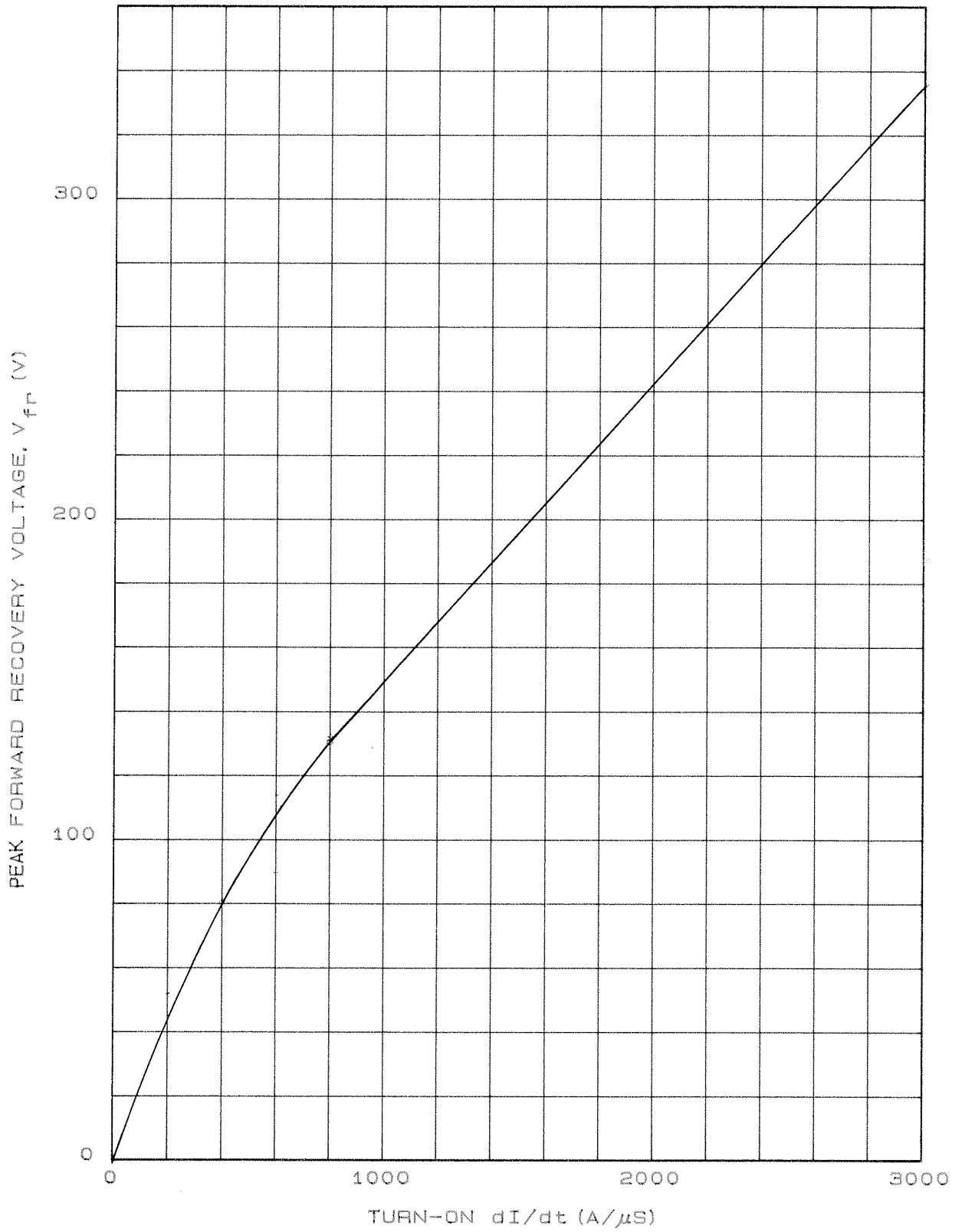


MAXIMUM NON REPETITIVE SURGE CURRENT AT INITIAL JUNCTION TEMPERATURE 125°C

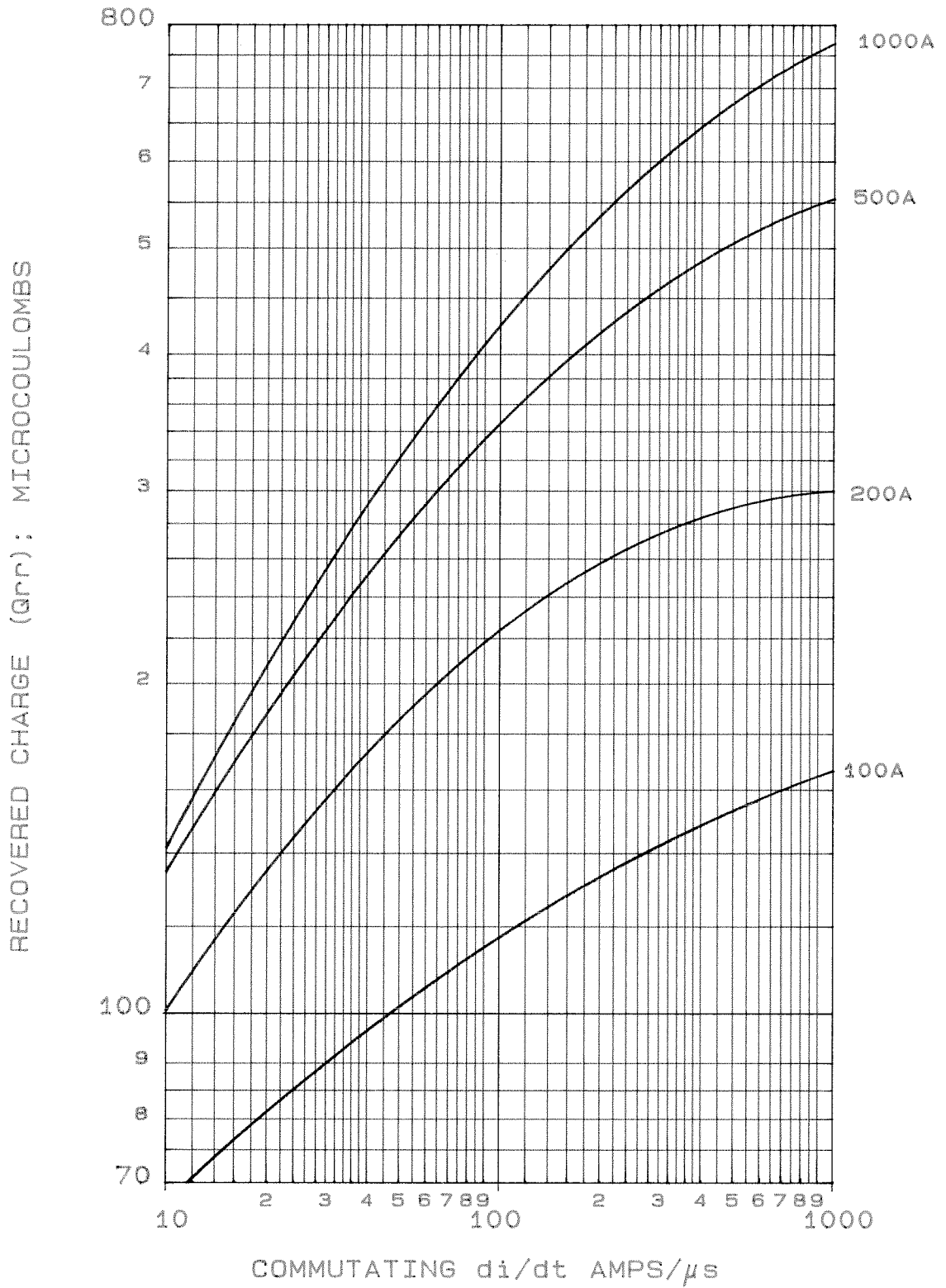




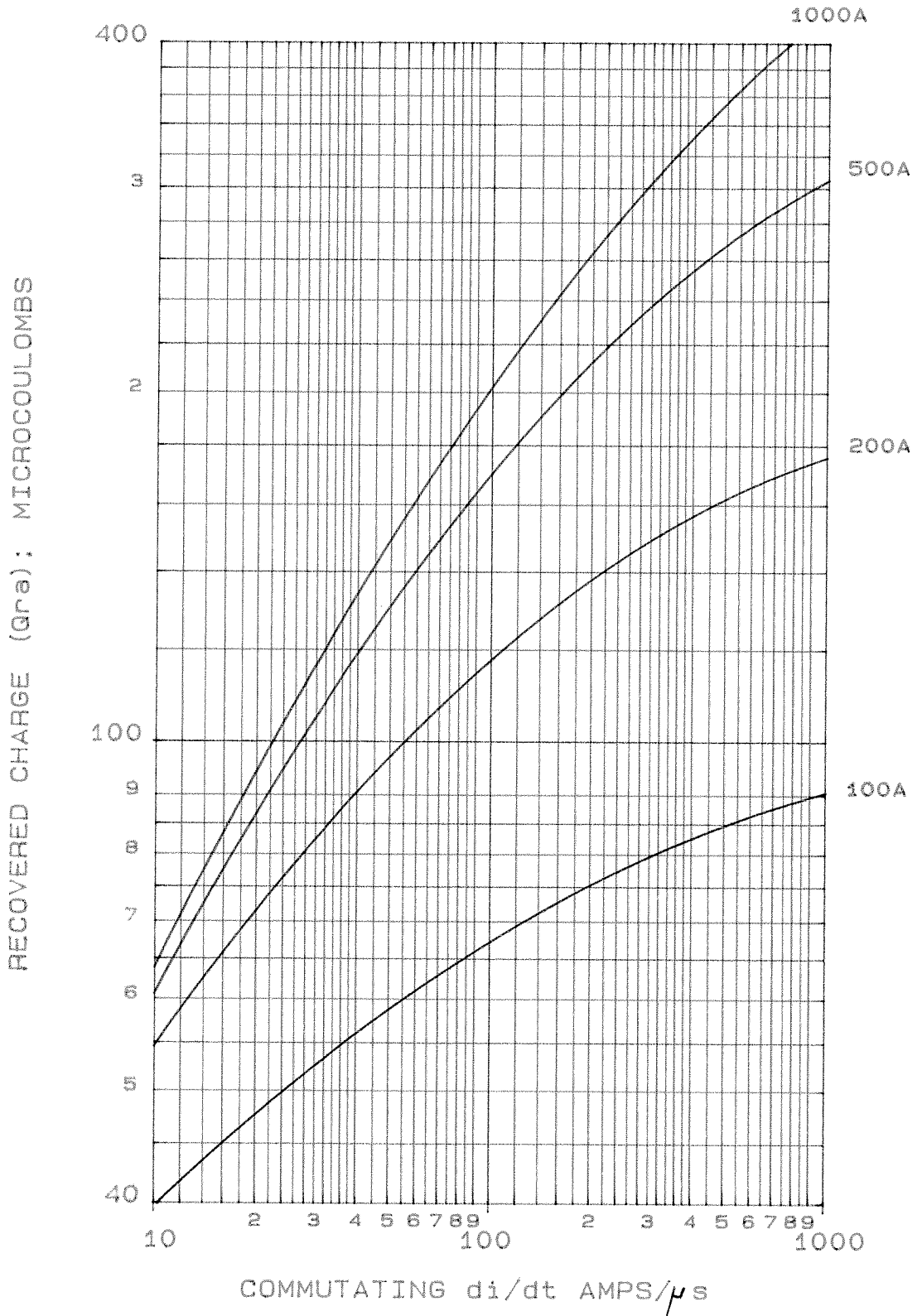
TYPICAL FORWARD RECOVERY VOLTAGE  
Tj 125 C



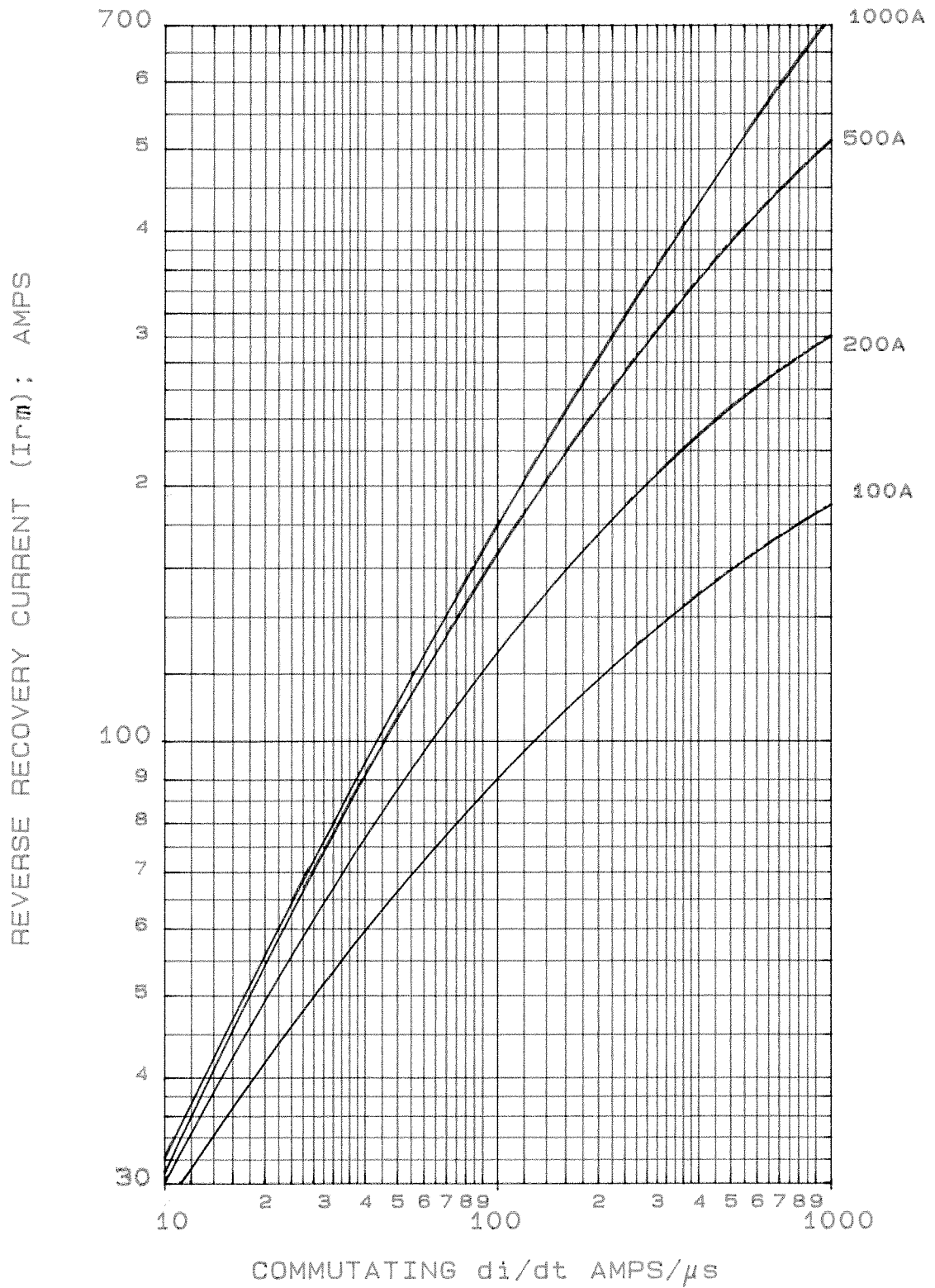
MAXIMUM RECOVERED CHARGE AT 125°C JUNCTION TEMPERATURE



MAXIMUM RECOVERED CHARGE AT 125°C JUNCTION TEMPERATURE

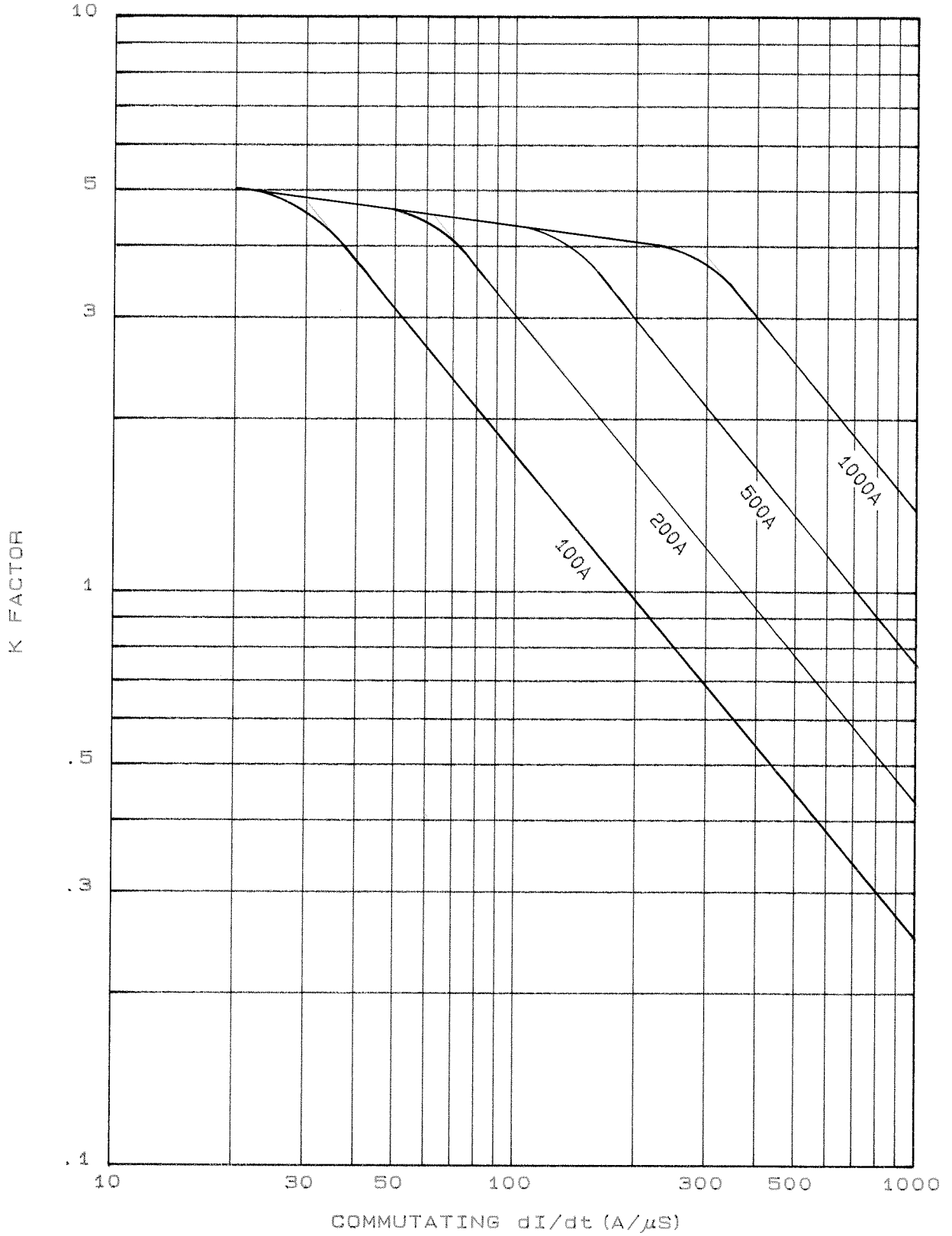


MAXIMUM REVERSE RECOVERY CURRENT  
AT 125°C JUNCTION TEMPERATURE

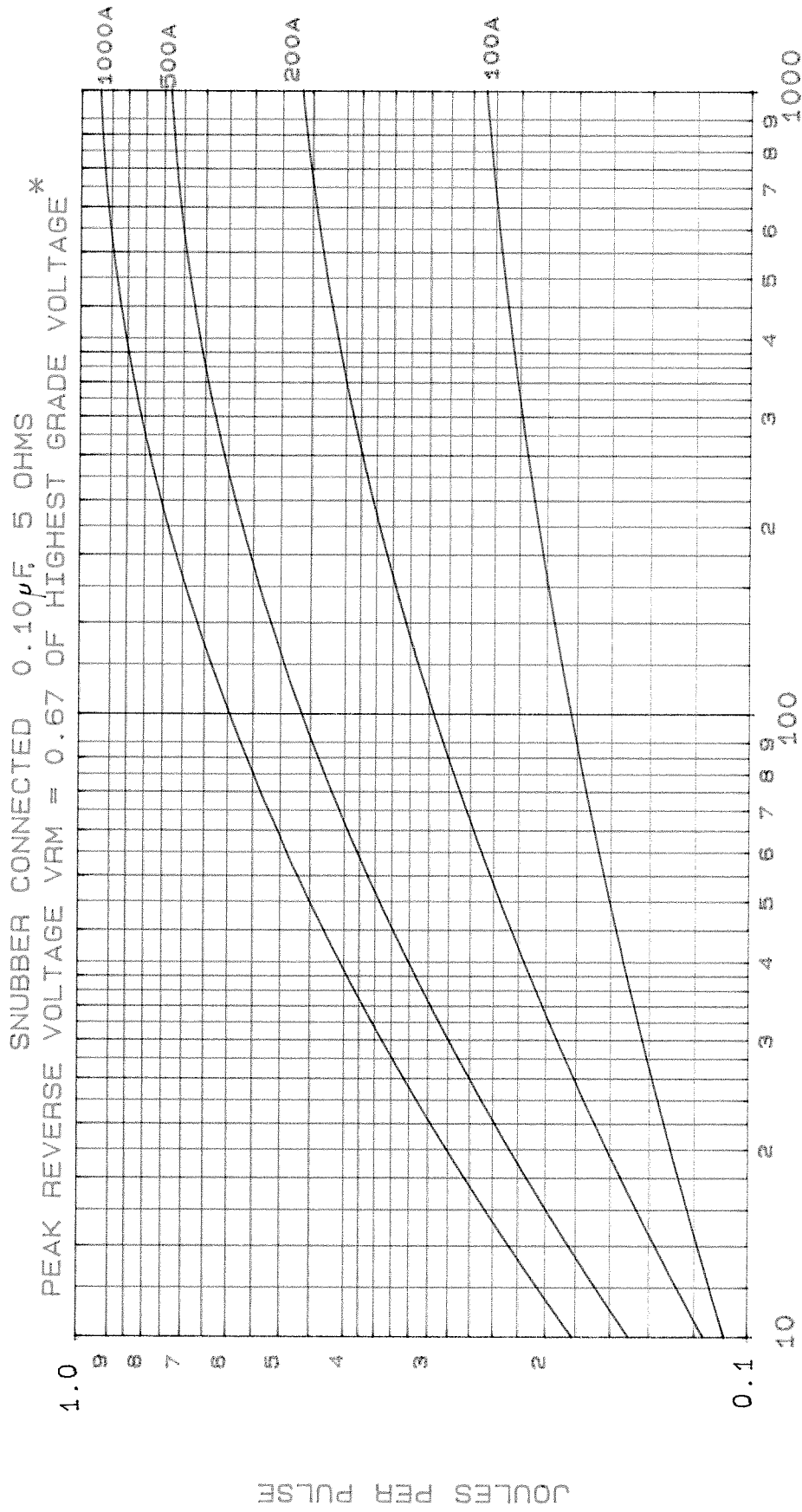


MAXIMUM K FACTOR

$$T_j = 125^{\circ}\text{C}$$



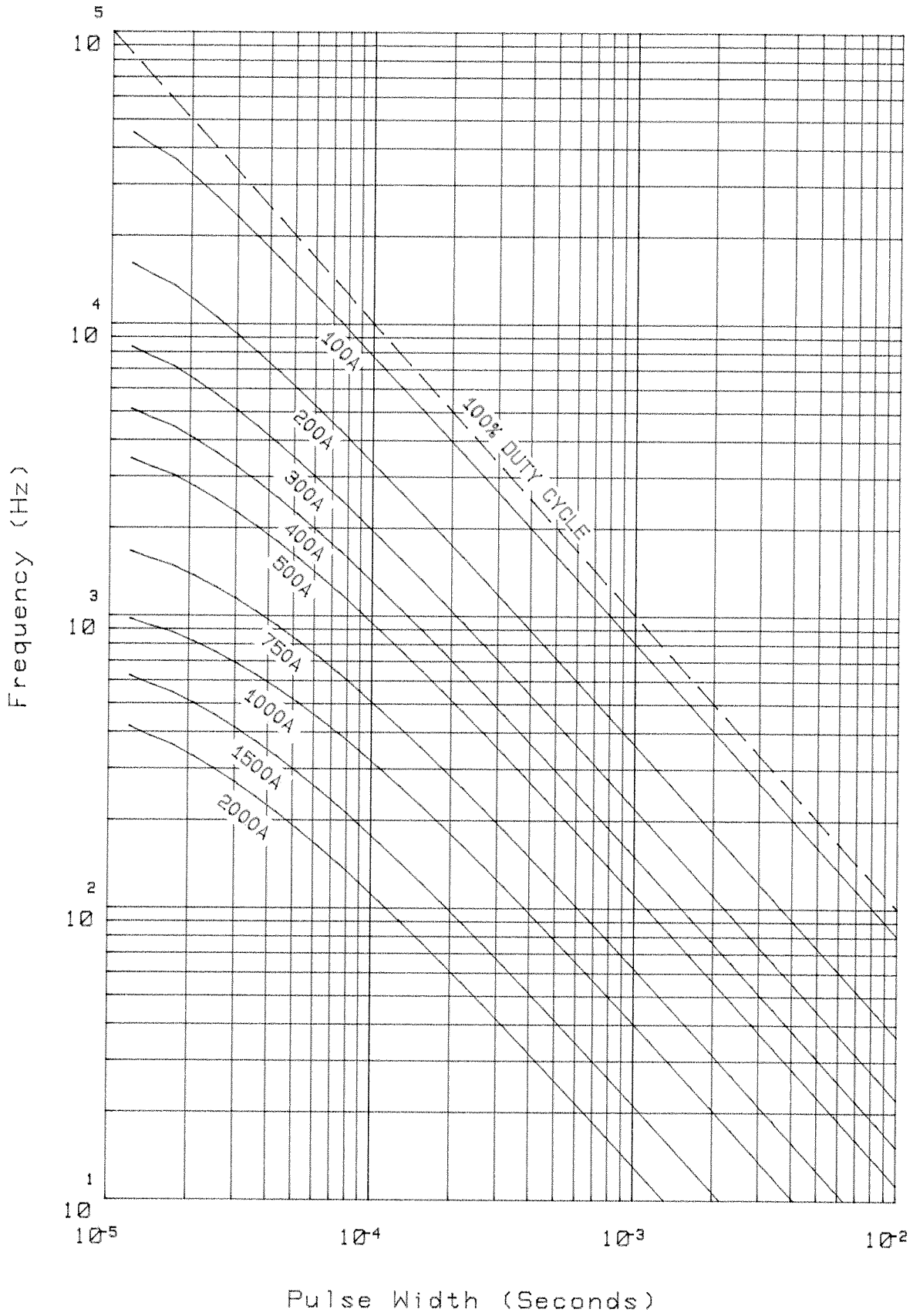
MAXIMUM REVERSE RECOVERY ENERGY LOSS PER PULSE, 125°C JUNCTION TEMPERATURE



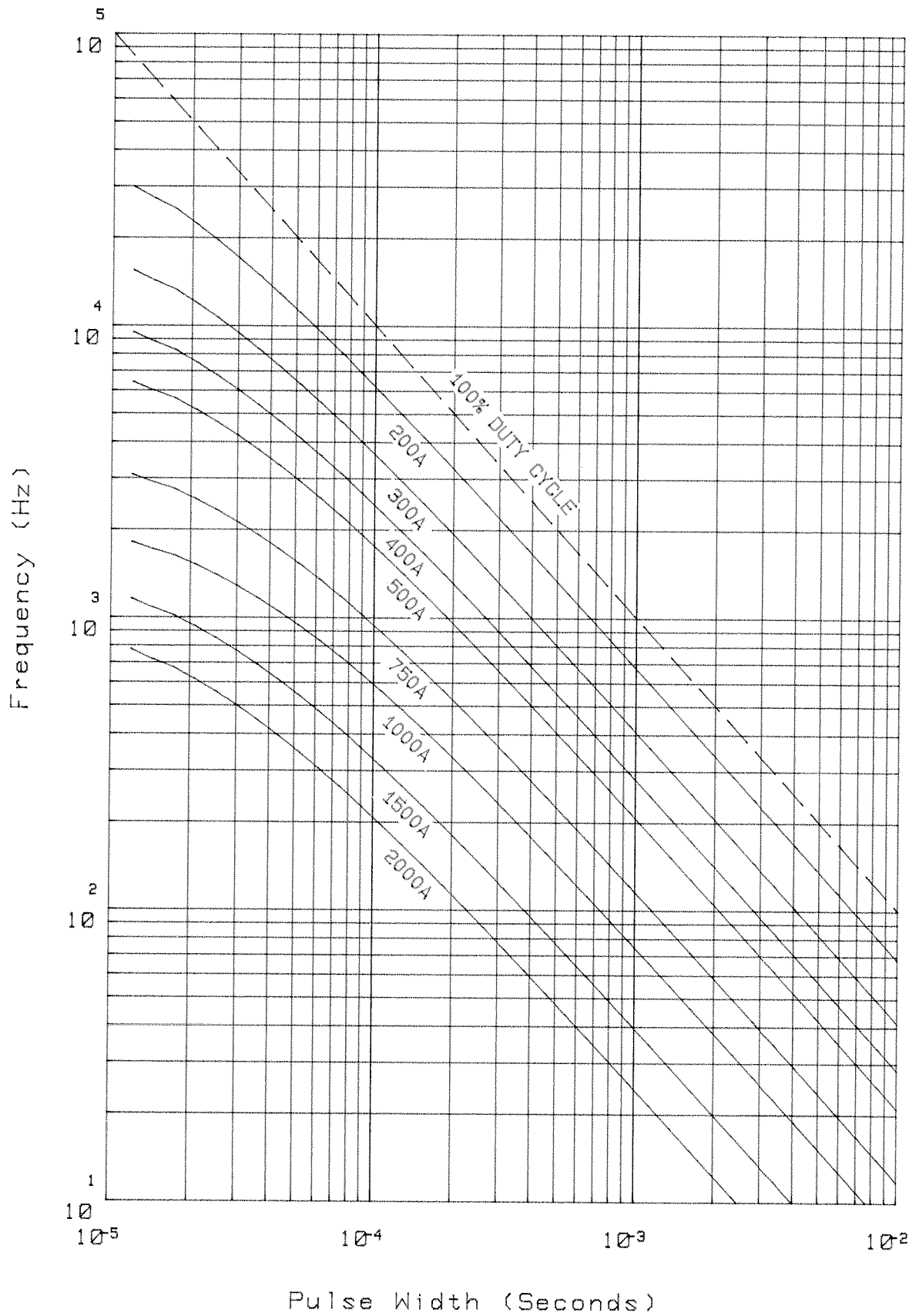
COMMUTATING di/dt AMPS/ $\mu$ s

\* NOTE: ENERGY PER PULSE SHOULD BE ADJUSTED PRO RATA WITH APPLIED PEAK RECOVERY VOLTAGE

T CASE 90 °C. 1000 A/uS

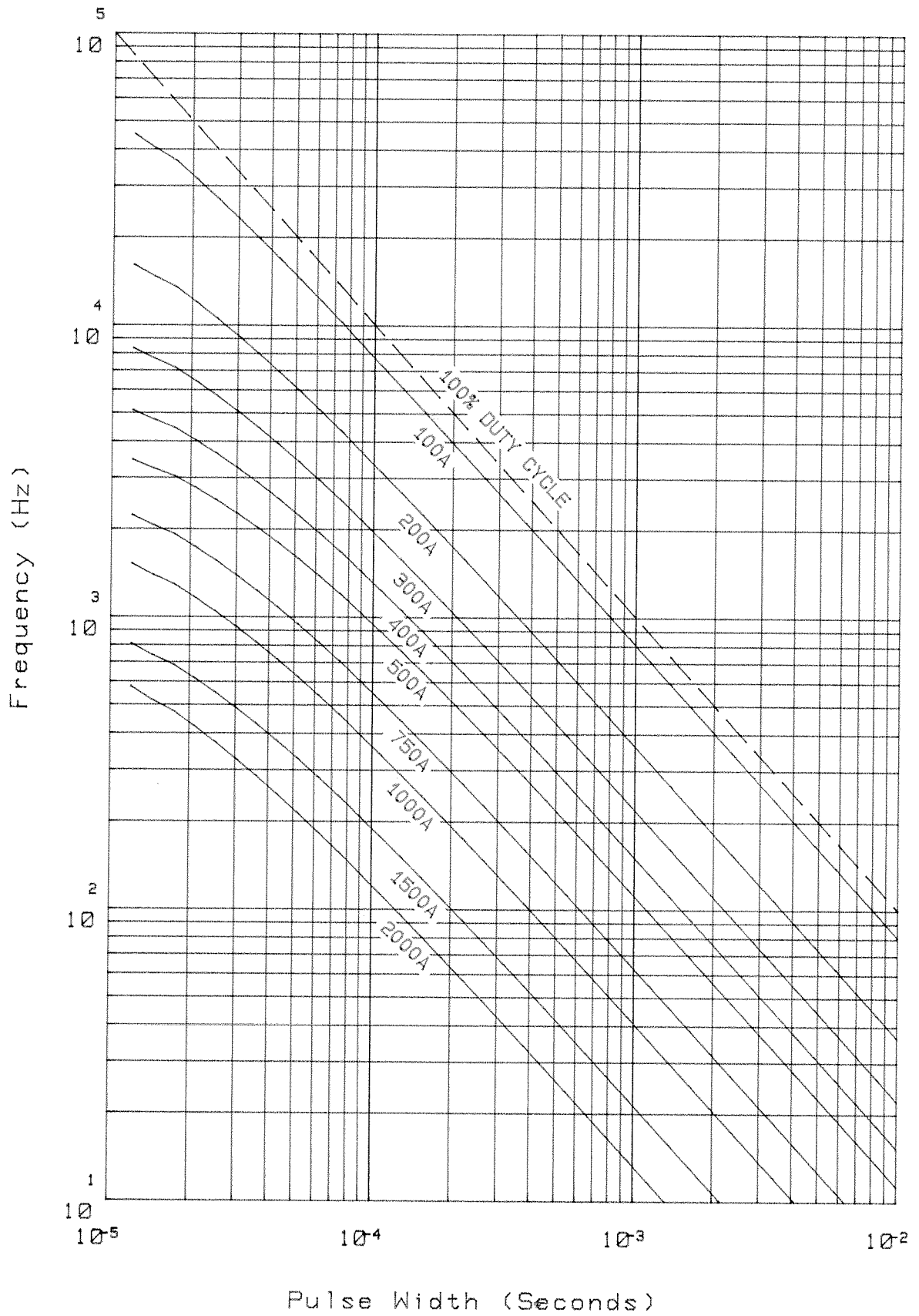


T CASE 60 °C. 1000 A/μS

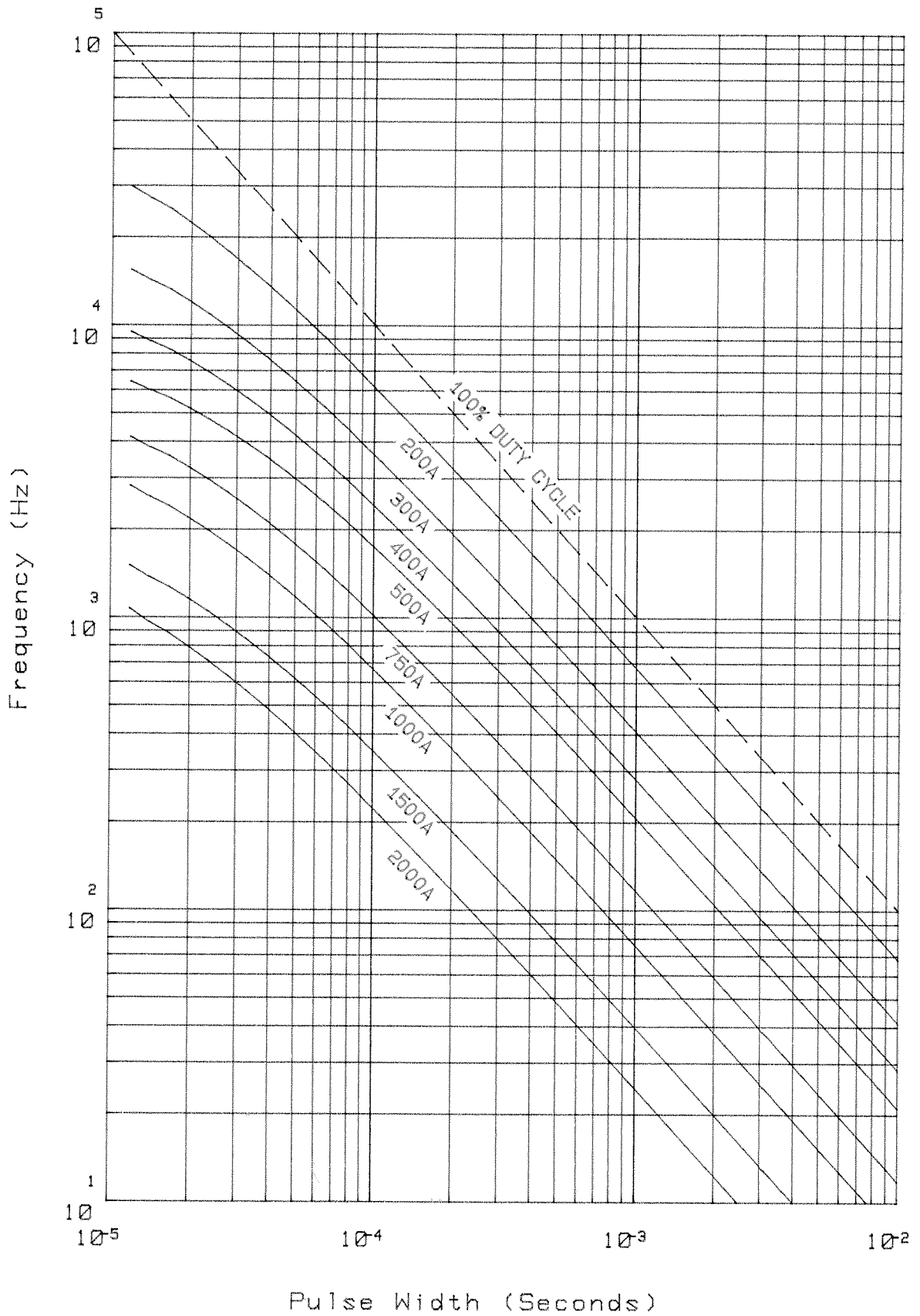




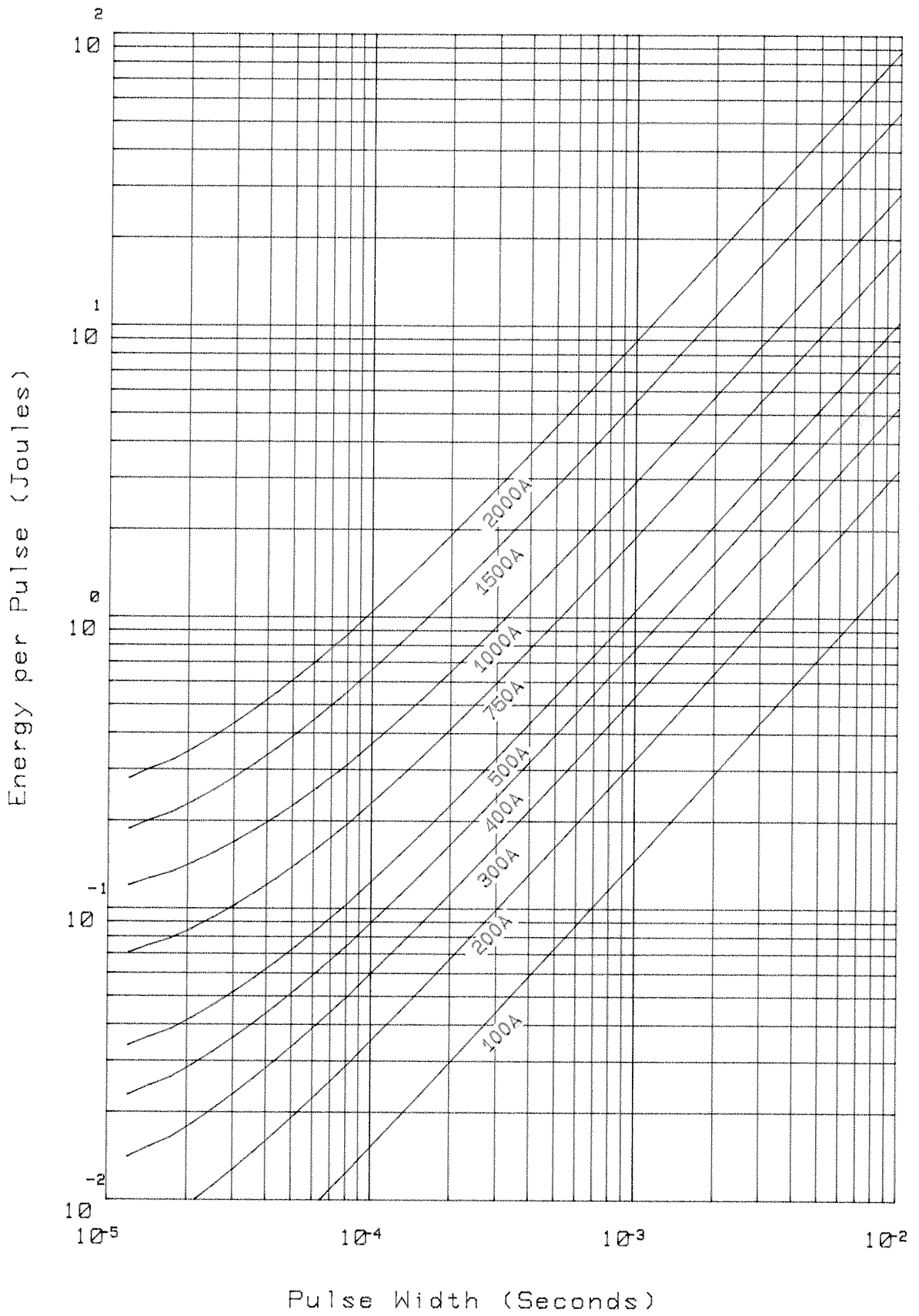
T CASE 90 °C. 500 A/μS



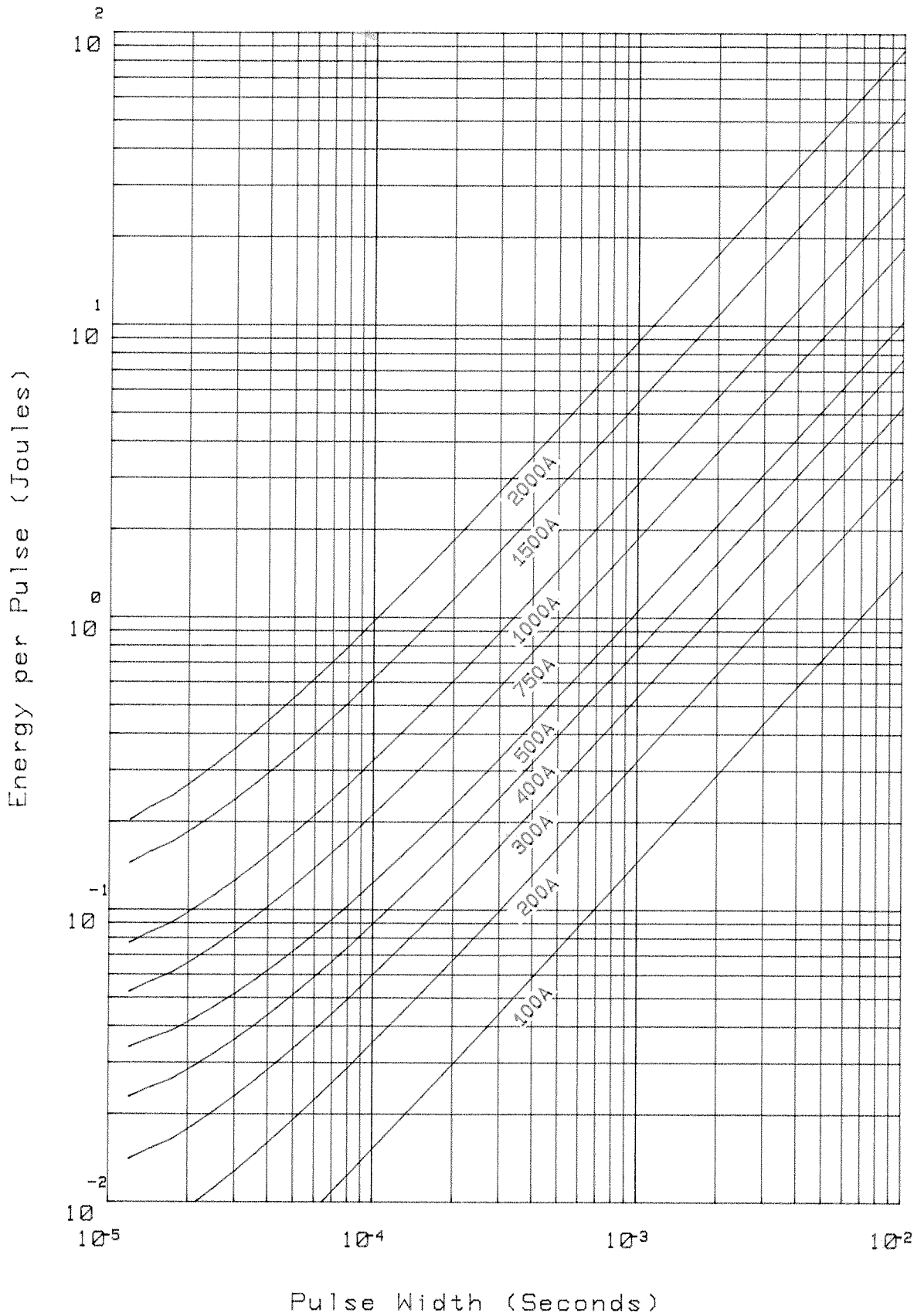
T CASE 60 °C. 500 A/μS



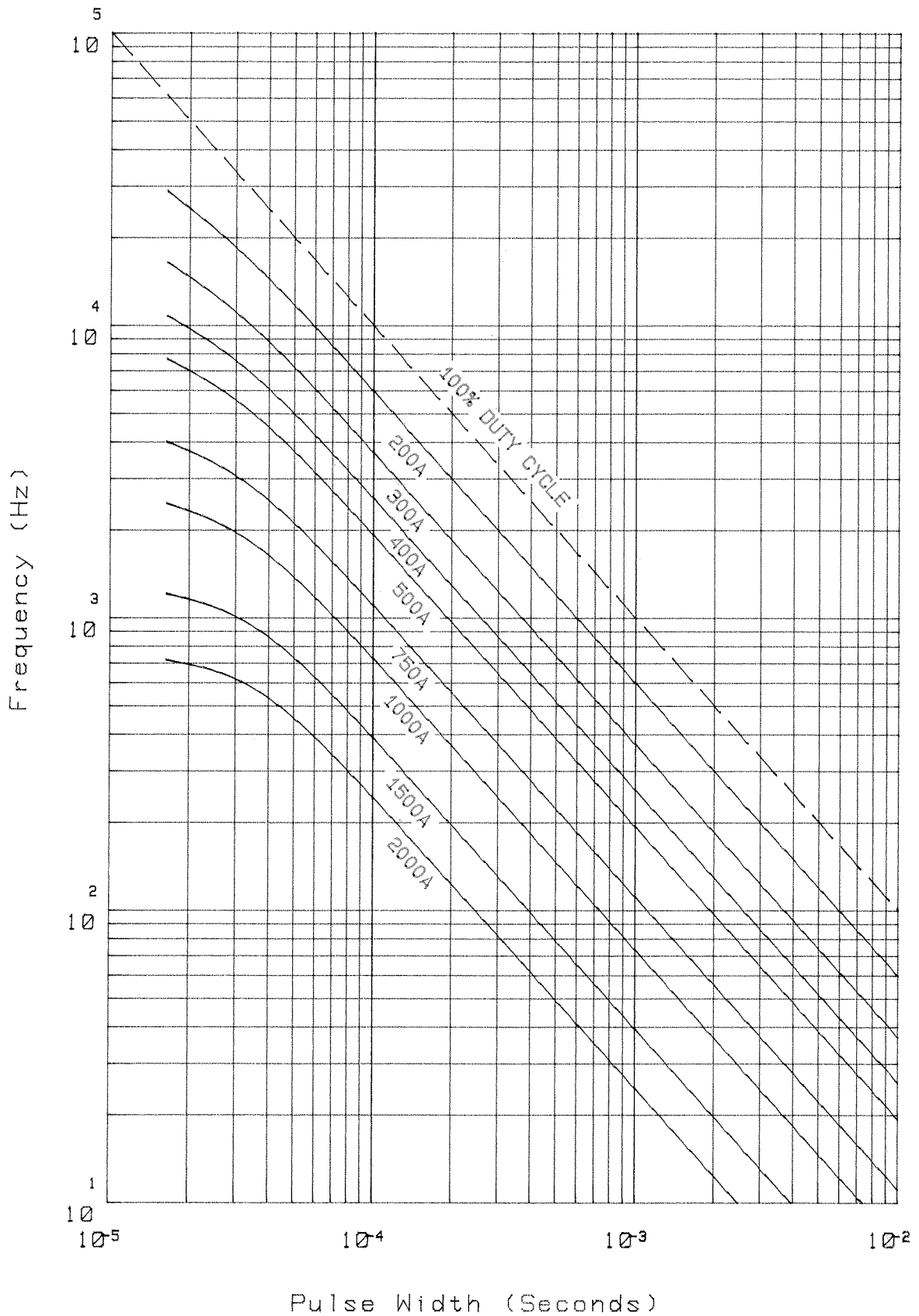
Tj 125 C 1000 A/uS



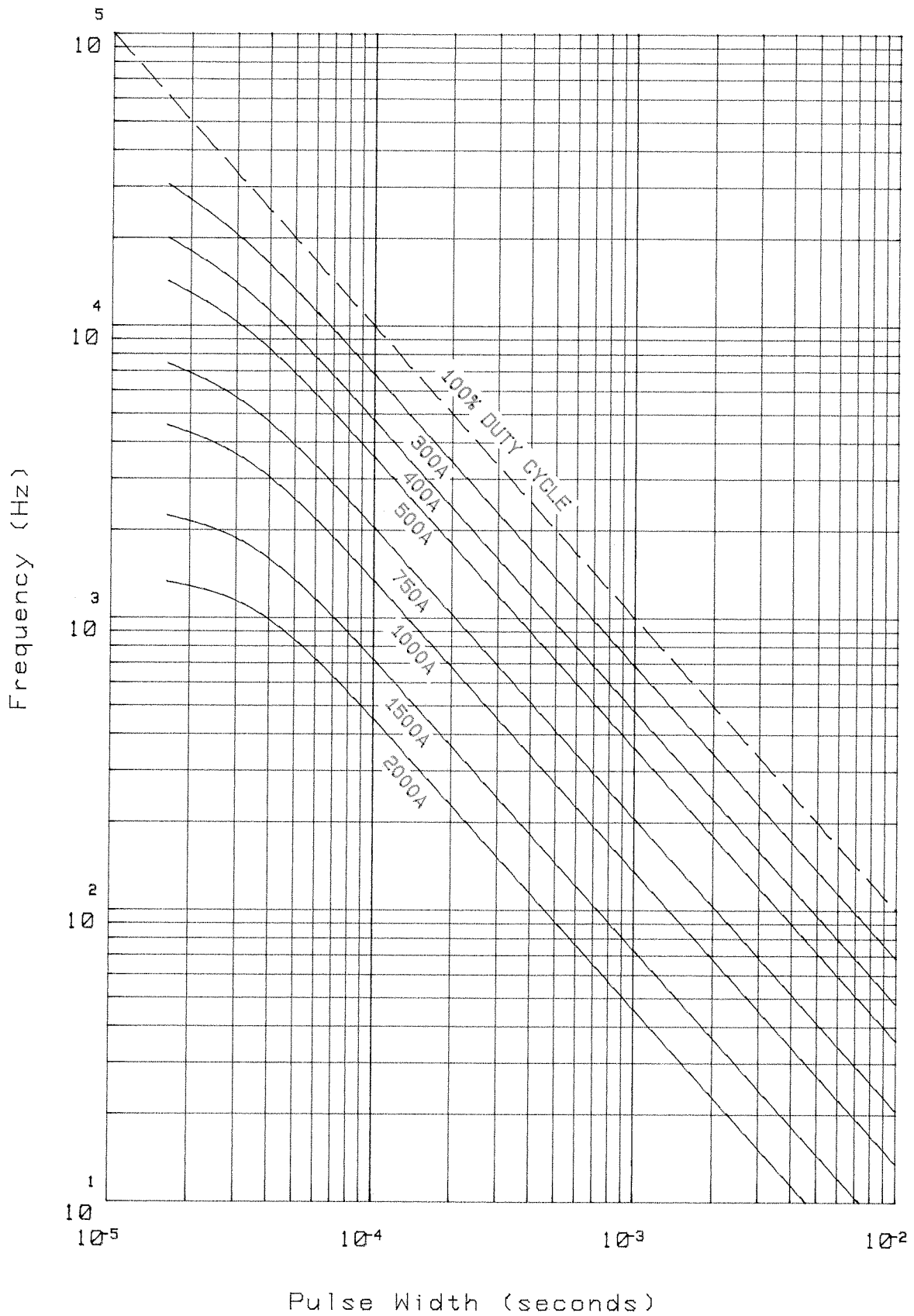
Tj 125 C 500 A/uS



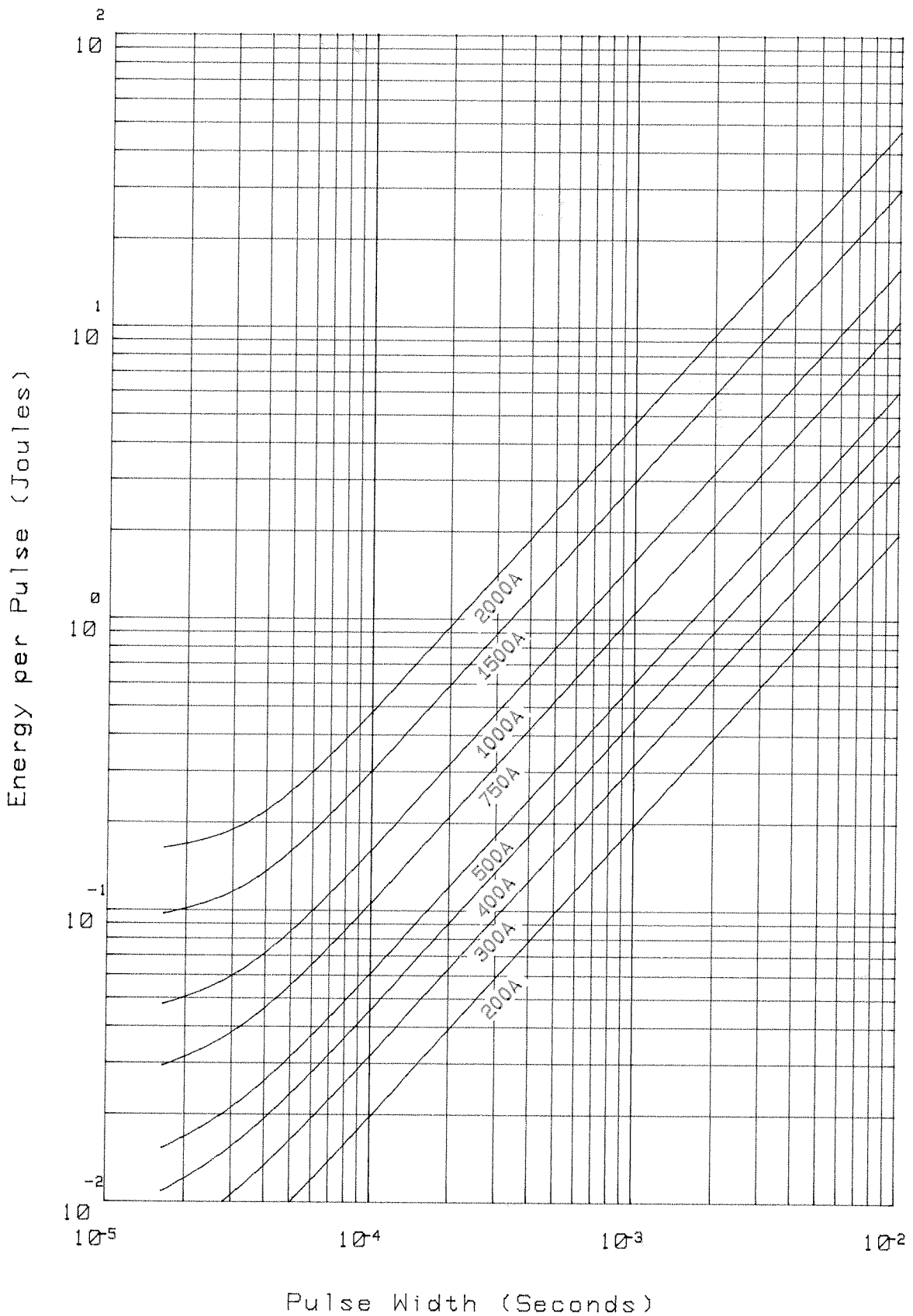
T CASE 90 °C. SINE WAVE



T CASE 60 °C. SINE WAVE



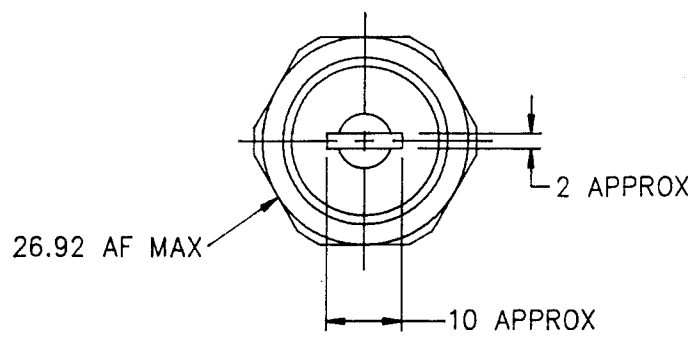
Tj 125 C SINE WAVE



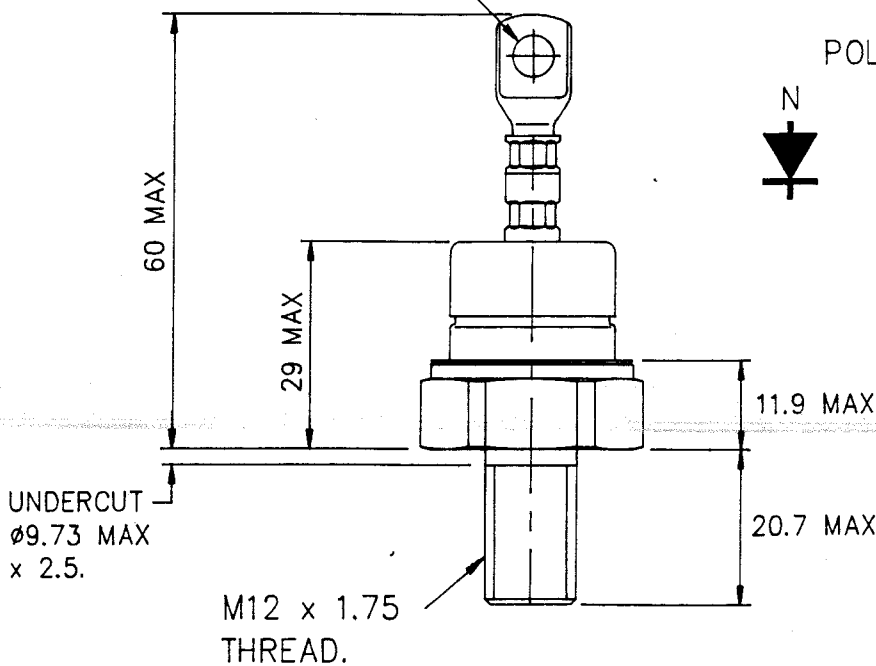
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INTERNATIONAL OUTLINE No.  
 G.A. DWG No. 102A232  
 WEIGHT. 85 GRAMS  
 FINISH. BRIGHT NICKEL PLATE.  
 DEVICE MOUNTING TORQUE: M12 THREAD 14 Nm (1.4 kgf m)  
 DO NOT LUBRICATE THREADS.

TYPE NUMBER
MCN094
MCR094
MCN100
MCR100



HOLE FOR M5 SCREW.



ISS	REVISIONS
1	13.9.89 AWF
2	26.1.90 DRG. No. WAS 101A303 AF.
3D	9.6.90 M1525 U9142 ADDED.
	METRIC VERSION ADDED. RFCB
4D	24.2.93 M2131 PCN/R094 & 100 DIODE OPTION TRANSFERRED TO DRG. 100A302. AWF

THIRD ANGLE PROJECTION.
DWG. COMPLIES WITH BS 308.
DIMNS. IN MILLIMETRES.
DWG No. 100A303

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