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QUALITY AND EVALUATION LABORATORY

Rating Report No: 93NR8 Issue 1 Date: 6 June 1996

Origin: Q.E.L. Pages: 13

Stud Based Diode Type : SM02-06PCN/R085-1

Written by: M Baker Checked by: Approved:

The PCN/R085-1 is a fast recovery all-diffused silicon diode with a wafer diameter of 8.4mm mounted in a standard DO5 housing.

This page supersedes Issue 1 of page 1, dated 21.6.93.

Ratings

Voltage Grades	: 02-06
V_{RSM}	: 300-700V
V_{RRM}	: 200-600V
$I_{F(AV)}$ Single phase: 50 Hz 180° half sinewave: T_{CASE} = 65°C	: 85A
$I_{F(rms)}$ max. (T_{CASE} 72°C) Housing limited	: 118A
I_F max. (T_{CASE} 49°C) Housing limited	: 118A
I_{FSM} : t = 10ms half sinewave: T_j (initial) = 125°C V_{RM} = 0.6$V_{RRM(MAX)}$	: 1100A
I_{FSM} : t = 10ms half sinewave: T_j (initial) = 125°C V_{RM} = ≤ 10V	: 1300A
I^2t : t = 10ms: Tj (initial) = 125°C: V_{RM} = 0.6V_{RRM}(MAX)	6050A^{2}S
I^2t : t = 10ms; Tj (initial) = 125°C; V_{RM} = 10V	8450A^{2}S
I^2t : t = 3ms: Tj (initial) = 125°C; V_{RM} ≤ 10V	6200A^{2}S
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 :	: 1.24V
r_s :	: 1.91mohms
A : T_j = 25°C	:
B : T_j = 25°C	:
C : T_j = 25°C	:
D : T_j = 25°C	:
A	:
B	:
C	:
D	:
V_{FM} at I_{FM} = 267A : 25°C	: 1.84V
R_{th}(J-C)	: 0.44 K/W
R_{th}(C-HS)	: 0.1 K/W
I_{RRM} : at $V_{VRRM(MAX)}$	: 20mA
I_{RRM} : at $V_{RRM(MAX)}$: 25°C	: 2mA
Reverse recovery at I_{FM} = 267A; di_R/dt = 25A/µs; V_{RM} = 30V; Tj = 25°C	
Q_{RR} (total area)	: 400nC
t_{rr} (25% chord)	: 200ns
I_{RM}	: 2.4A
Mounting Torque	: 4 - 4.7 Nm.
Outline Drawing	: 100A262
JEDEC Outline No.	: D05

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

ABCD Constants for V_F Characteristics

Applicable over curent range of V_F characteristics on page 5. They form the co-efficients of the expression for the forward voltage characteristics as follows:

$$V_F = A - B \ln(i_F) + C(i_F) + D\sqrt{i_F}$$

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Changes at 22 May 1996

1. Q_{RR} now 400nC (p.2)
2. I_{RRM} at 25°C now 2mA (p.2)
3. Changes added (p.3)
4. Q_{RR} curves at 25°C re-drawn (p.8)
5. Q_{RR} curves at 125°C re-drawn (p.9)
6. Outline drawing replaced with current issue (p.13)

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Voltage Ratings

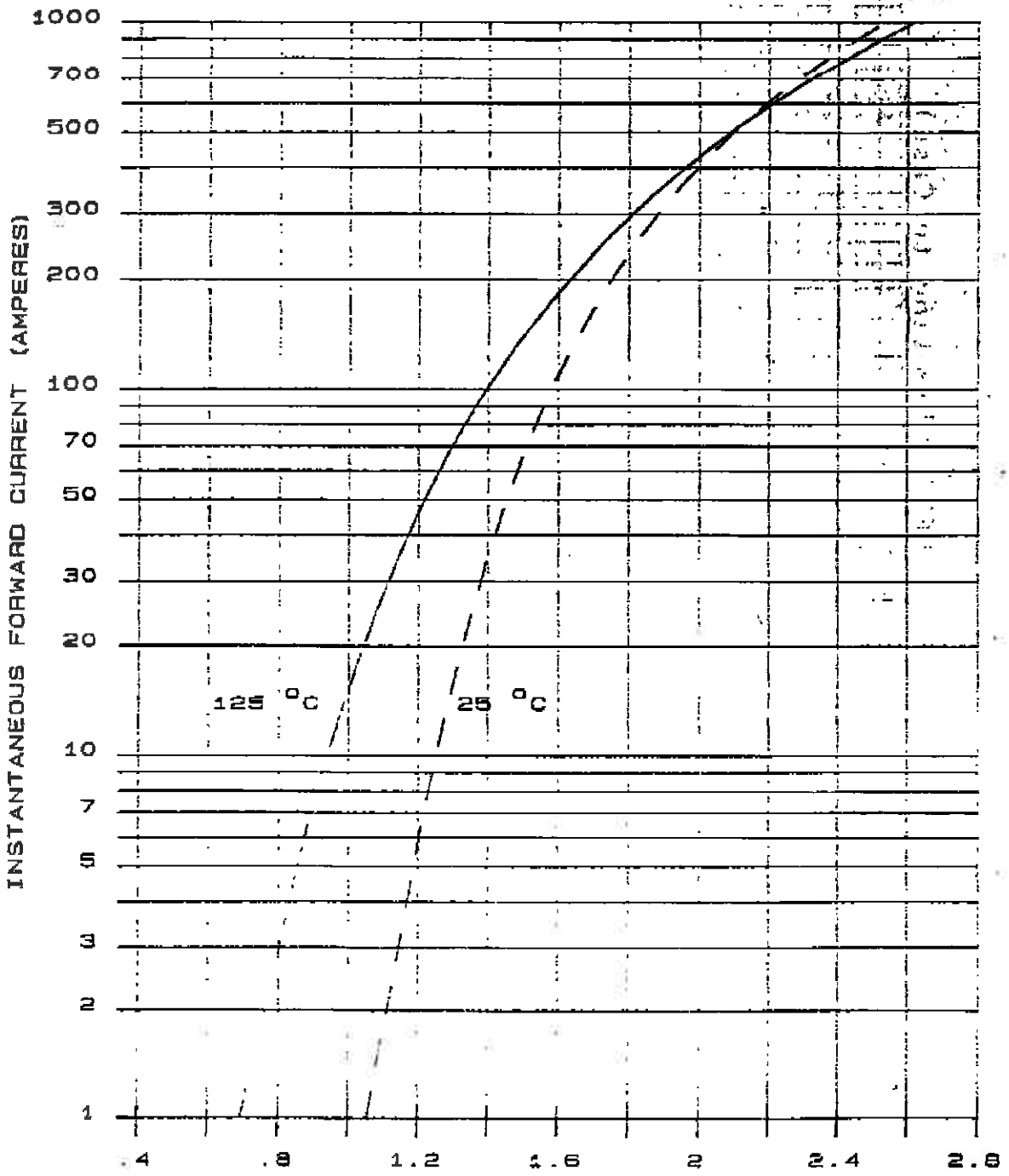
Voltage Class	V_{RRM} V	V_{RSM} V
02	200	300
04	400	500
06	600	700

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

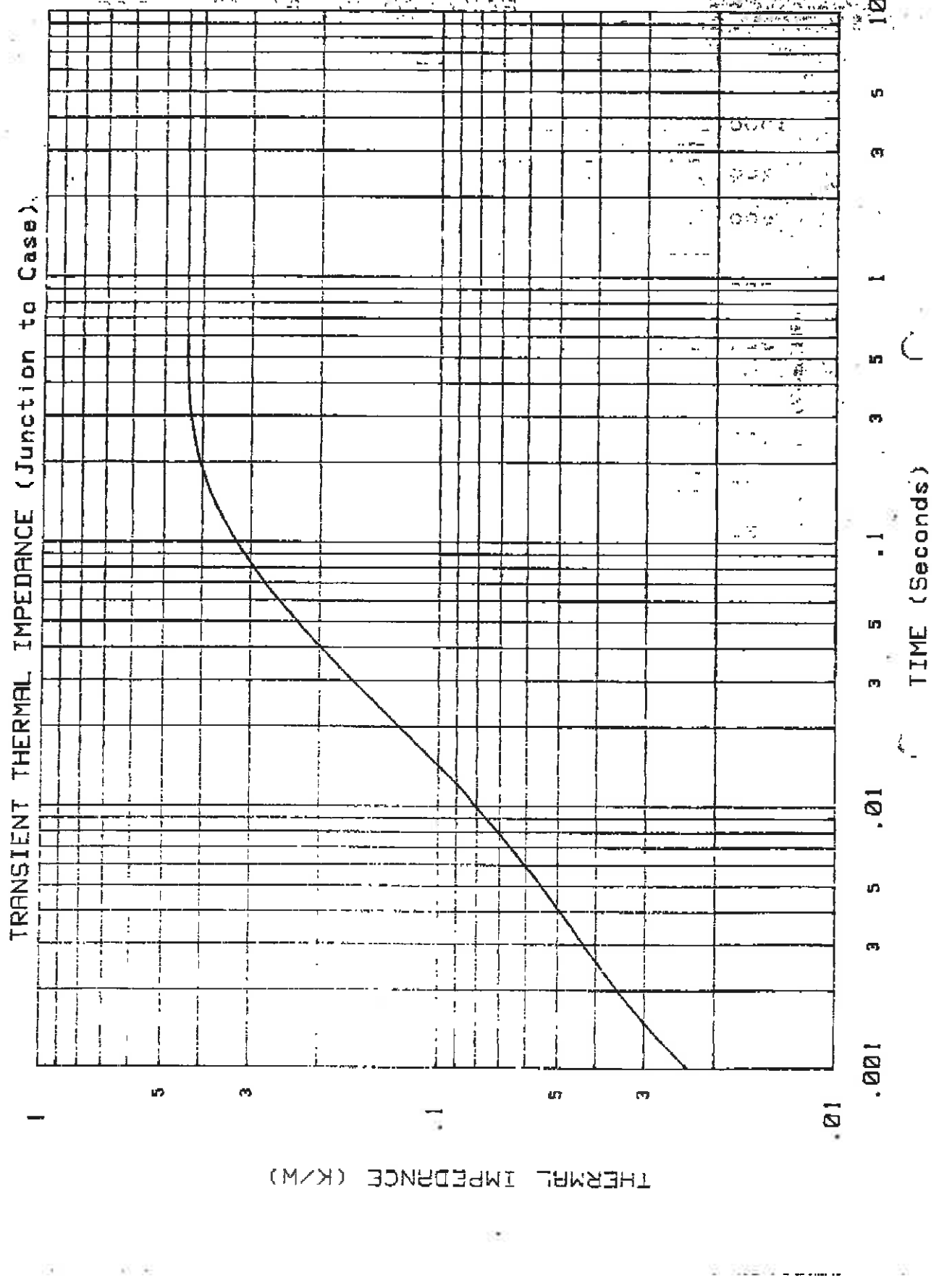
2. A blocking voltage derating factor of 0.13% per deg. Celsius is applicable to this device for T_j below 25°C.

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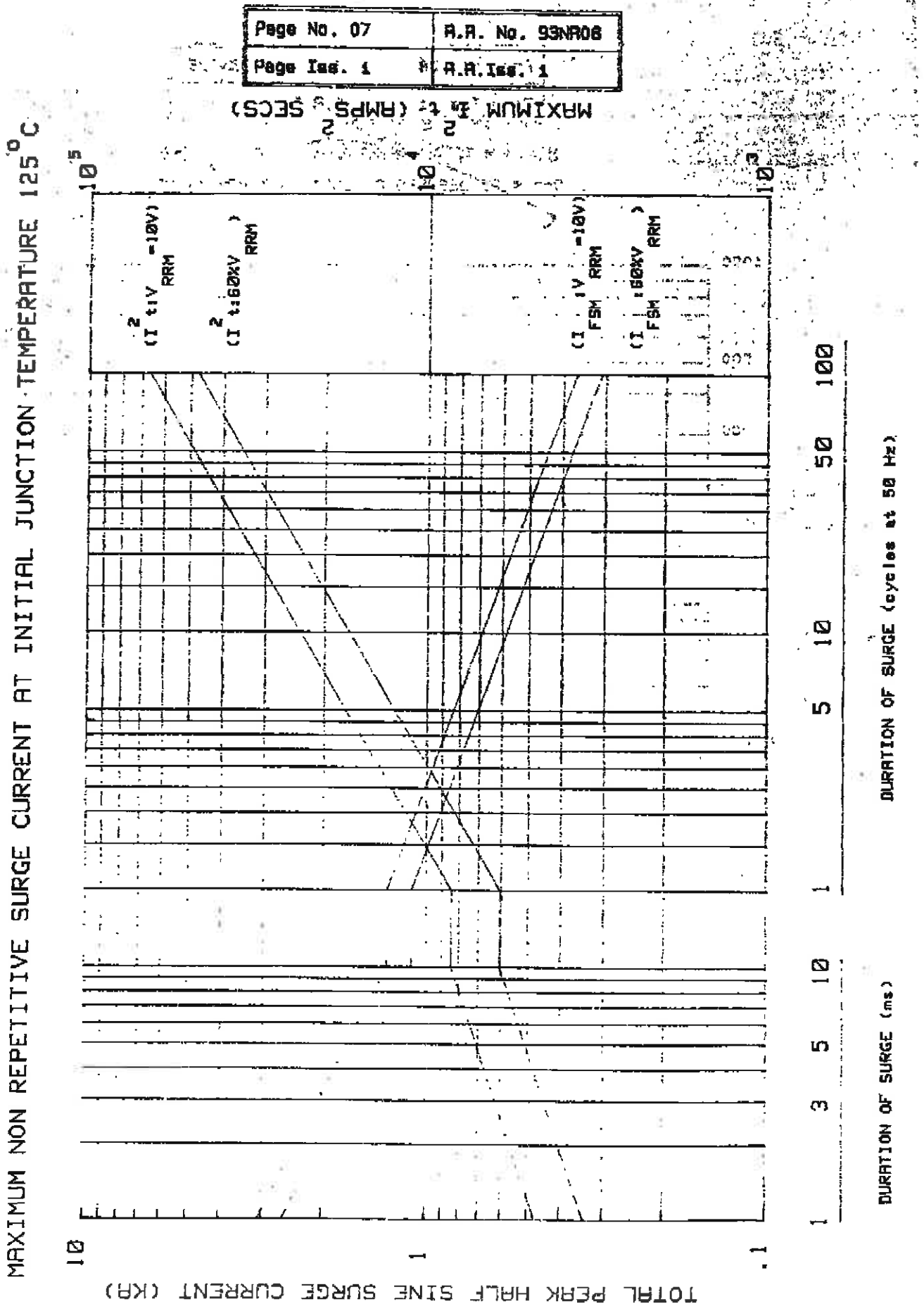
FORWARD CHARACTERISTIC OF LIMIT DEVICE



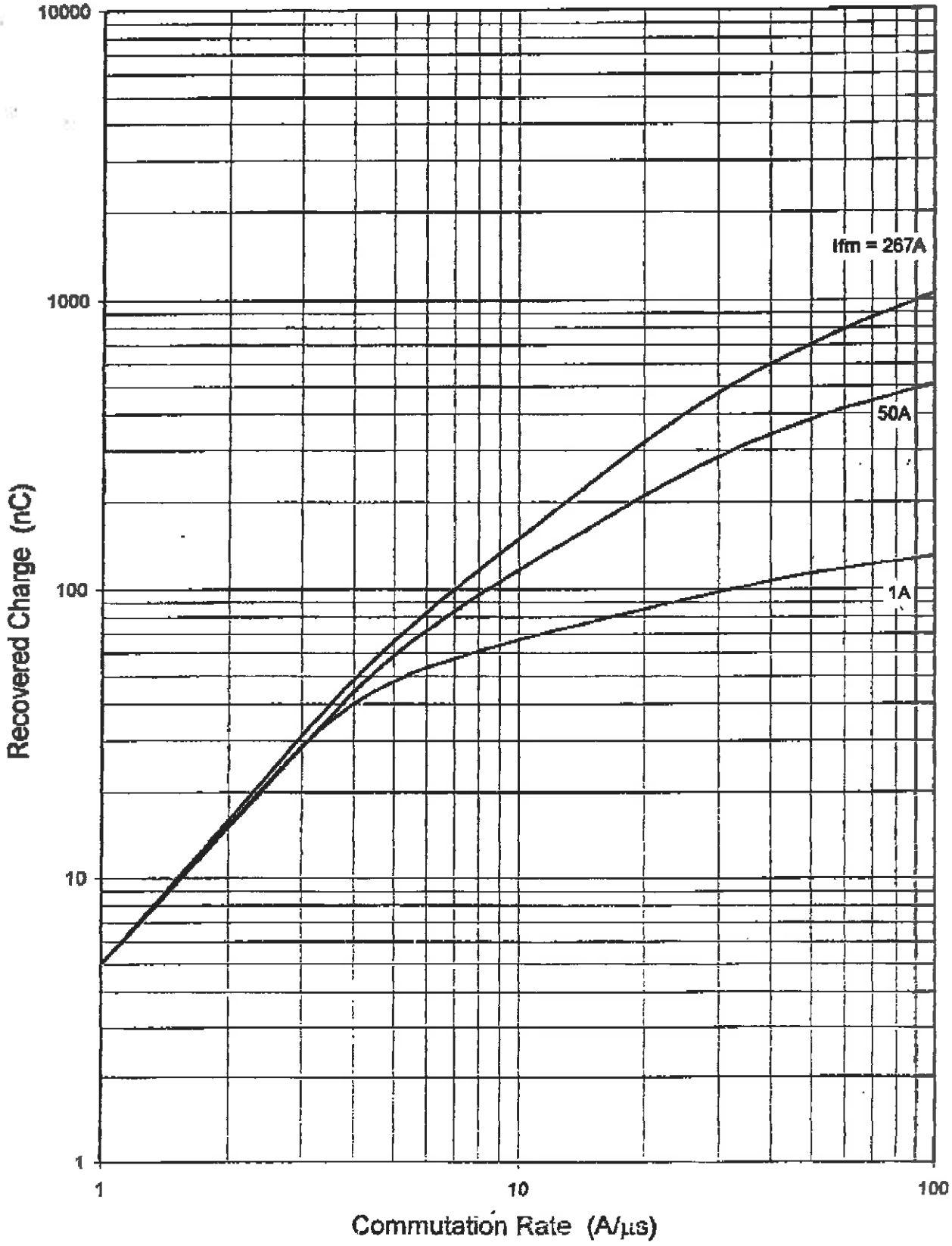
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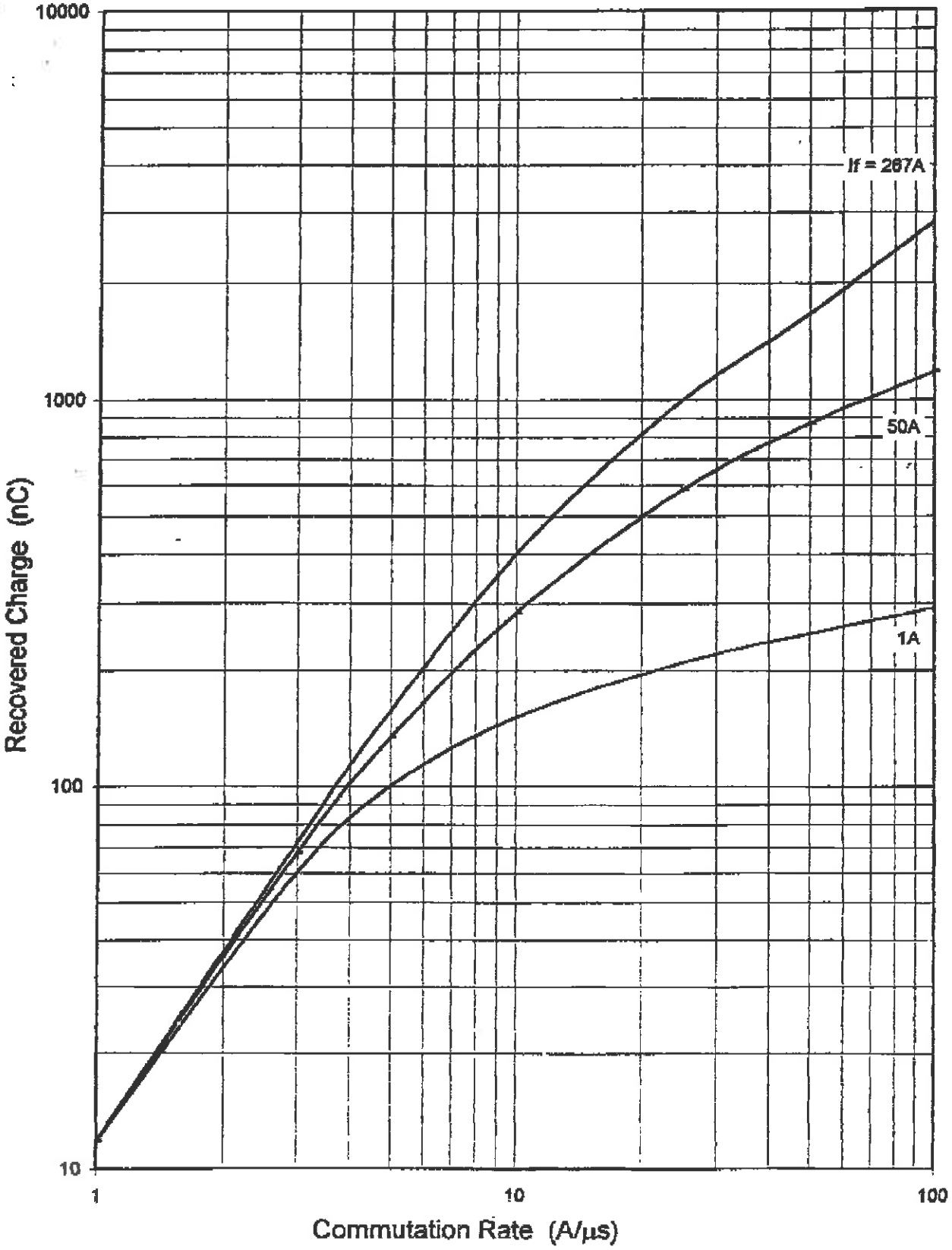
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Maximum Total Recovered Charge Qrr
@ 25 °C Junction Temperature



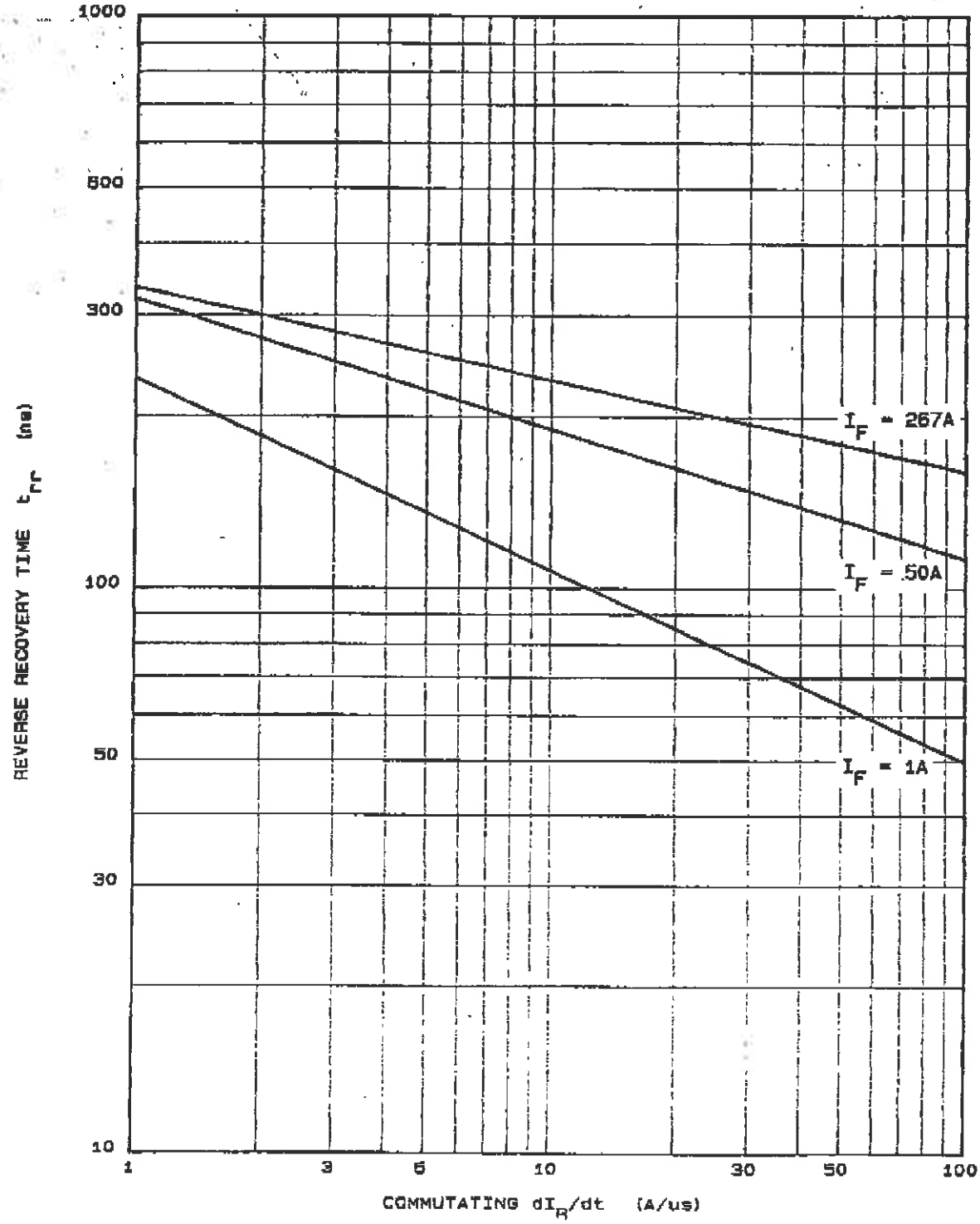
Maximum Total Recovered Charge Qrr
@ 125 °C Junction Temperature



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MAXIMUM REVERSE RECOVERY TIME

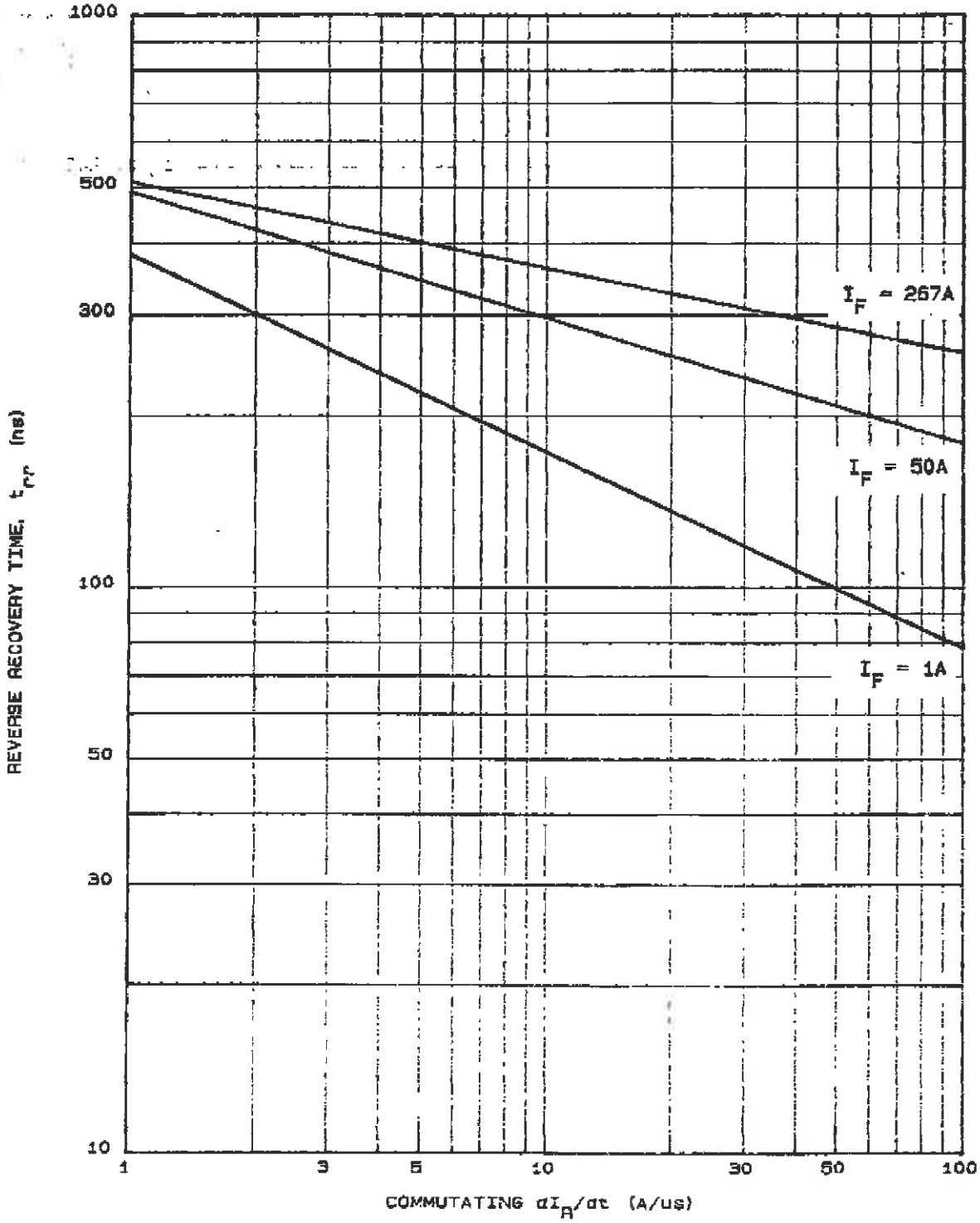
t_{rr} @ 25 °C JUNCTION TEMPERATURE



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MAXIMUM REVERSE RECOVERY TIME

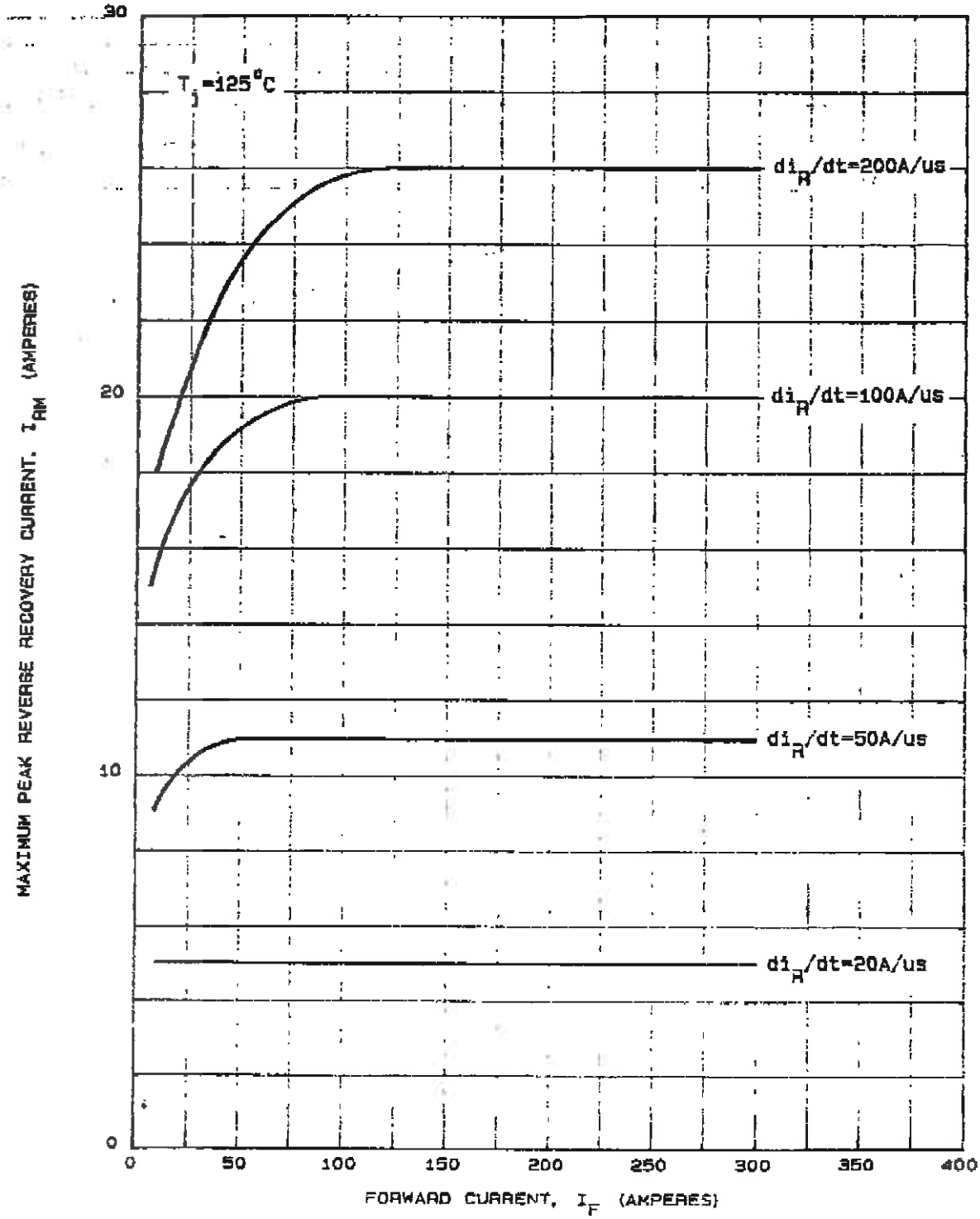
T_{rr} @ 125 DEGREES C JUNCTION TEMPERATURE



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MAXIMUM PEAK REVERSE RECOVERY CURRENT

vs FORWARD CURRENT

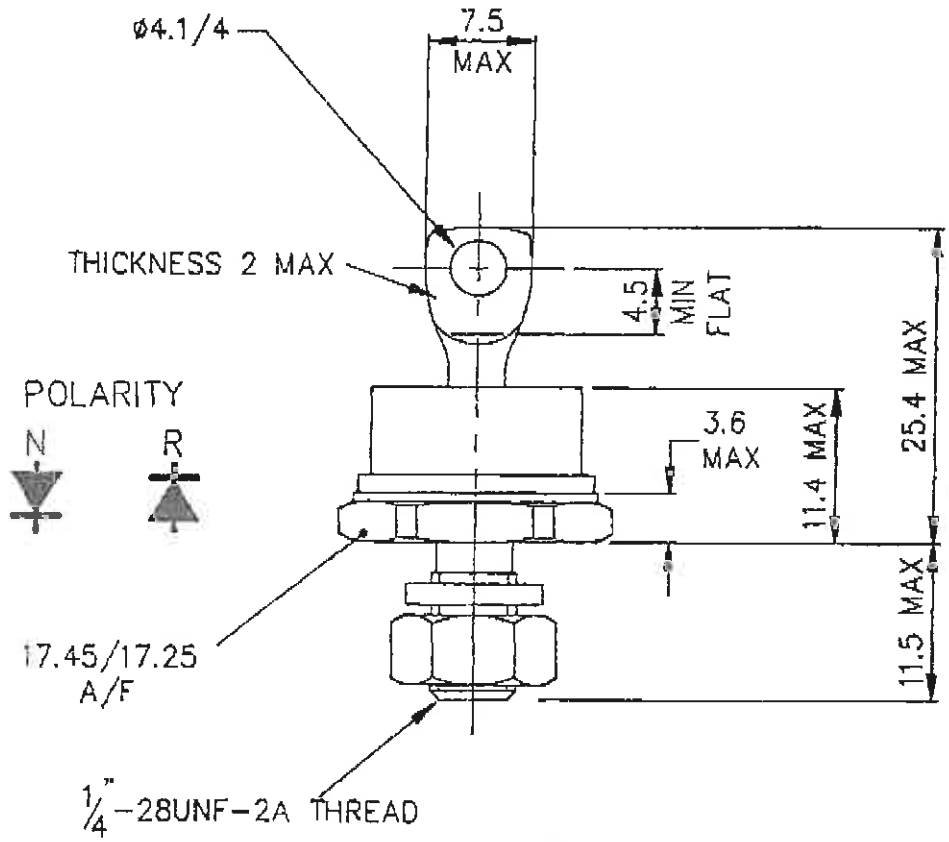


ACAD REF: 100A262

INTERNATIONAL OUTLINE No. DO-5
G.A. DWG No. 102A220
WEIGHT. 20 GRAMS
FINISH. BRIGHT NICKEL PLATE
DEVICE MOUNTING:

TORQUE REQUIRED 4-4.7Nm (0.4-0.48kgf-m).
DO NOT LUBRICATE THREADS.

TYPE NUMBERS.	
PCN040	PCR040
PCN046	PCR046
PCN050	PCR050
PCN055	PCR055
PCN070-1	PCR070-1
PCN070-2	PCR070-2
PCN074	PCR074
PCN075	PCR075
PCN076	PCR076
PCN085	PCR085



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ISS	REVISIONS
1	13.2.79
5 E	REDRAWN ON CAD. M2425 AWF

SCALE 1/1
DRAWN AWF

THIRD ANGLE PROJECTION.
DWG. COMPLIES WITH BS 308.
DIMNS. IN MILLIMETRES.
DWG No. 100A262

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