MDFB85

FAST RECOVERY DIODE

APPLICATIONS

- Freewheel Diode.
- D.C. Motor Drives.
- Welding.
- High Frequency Rectification.
- Power Supplies.

KEY PARAMETERS

V_{RRM}	4500V
$I_{F(AV)}$	2130A
I_{FSM}	20000A
Q_r	2200μC
t_{rr}	6.0μs

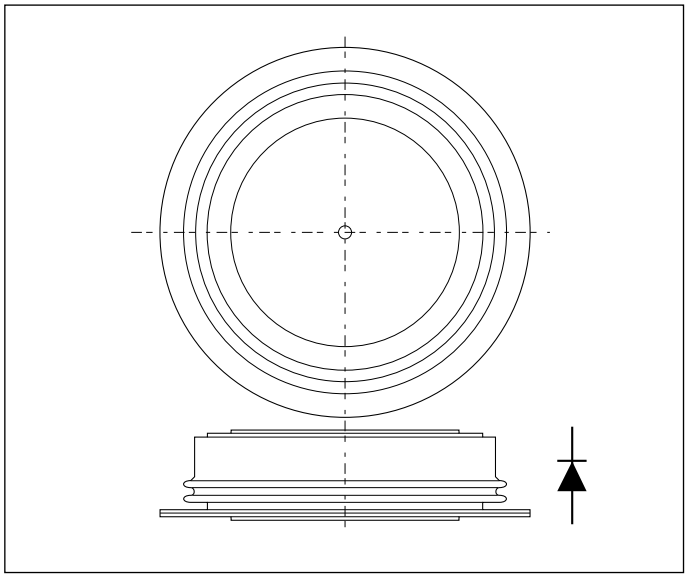
FEATURES

- Double side cooling.
- High surge capability.
- Low recovery charge.

VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage V_{RRM} V	Conditions
MDFB85 45	4500	$V_{RSM} = V_{RRM} + 100V$

Lower voltage grades available.



Outline type code: CB486. Turn to page 8 for further information.

CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, T_{case} = 65°C	2130	A
$I_{F(RMS)}$	RMS value	T_{case} = 65°C	3350	A
I_F	Continuous (direct) forward current	T_{case} = 65°C	3020	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, T_{case} = 65°C	1340	A
$I_{F(RMS)}$	RMS value	T_{case} = 65°C	2110	A
I_F	Continuous (direct) forward current	T_{case} = 65°C	1810	A

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with 0% $V_{RRM,}$ T_j = 150°C	20.0	kA
I^2t	I^2t for fusing		2.0×10^6	A^2s
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with 50% $V_{RRM,}$ T_j = 150°C	16.0	kA
I^2t	I^2t for fusing		1.28×10^6	A^2s
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with 100% $V_{RRM,}$ T_j = 150°C	-	kA
I^2t	I^2t for fusing		-	A^2s

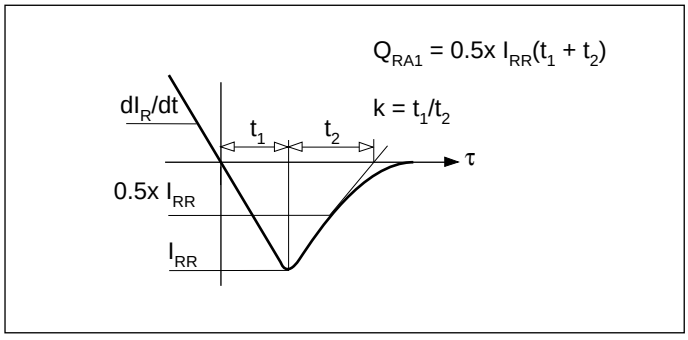
THERMAL AND MECHANICAL DATA

Symbol	Parameter	Conditions		Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance - junction to case	Double side cooled	dc	-	0.011	°C/W
		Single side cooled	Anode dc	-	0.021	°C/W
			Cathode dc	-	0.023	°C/W
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 44.0kN with mounting compound	Double side	-	0.03	°C/W
			Single side	-	0.06	°C/W
T_{vj}	Virtual junction temperature	On-state (conducting)		-	150	°C
T_{stg}	Storage temperature range			-55	175	°C
-	Clamping force			41.0	48.0	kN

CHARACTERISTICS

Symbol	Parameter	Conditions	Typ.	Max.	Units
V_{FM}	Forward voltage	At 2000A peak, T_{case} = 25°C	-	2.2	V
I_{RRM}	Peak reverse current	At V_{RRM}, T_{case} = 150°C	-	200	mA
t_{rr}	Reverse recovery time	I_F = 1000A, di_{RR}/dt = 100A/µs T_{case} = 150°C, V_R = 100V	-	6.0	µs
Q_{RA1}	Recovered charge (50% chord)		-	1200	µC
I_{RM}	Reverse recovery current		400	-	A
K	Soft factor		1.8	-	-
V_{TO}	Threshold voltage	At T_{vj} = 150°C	-	1.5	V
r_T	Slope resistance	At T_{vj} = 150°C	-	0.35	mΩ
V_{FRM}	Forward recovery voltage	di/dt = 1000A/µs, T_j = 125°C	-	80	V

DEFINITION OF K FACTOR AND Q_{RA1}



CURVES

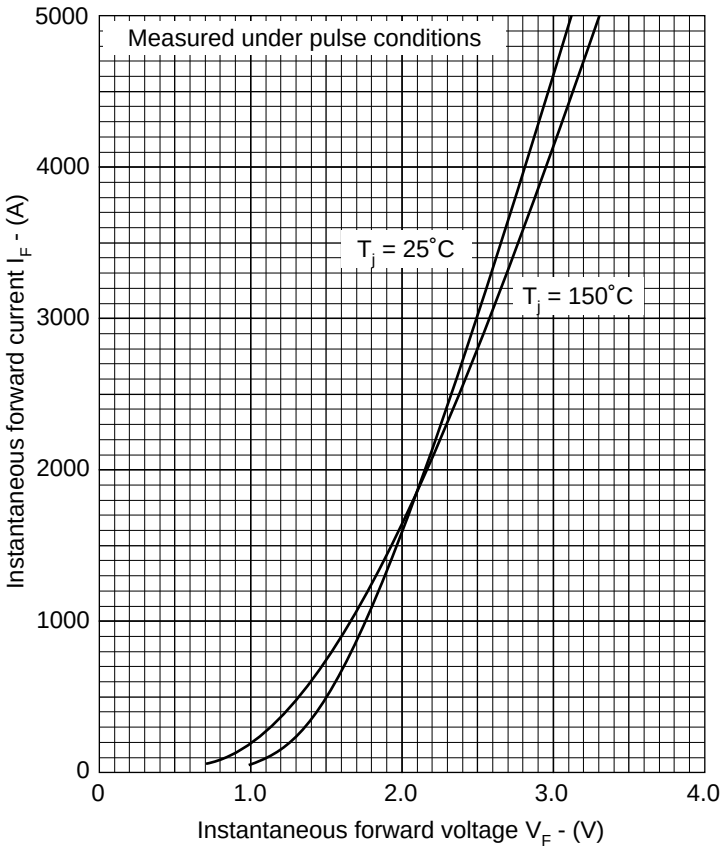


FIG. 1 MAXIMUM (LIMIT) FORWARD CHARACTERISTICS

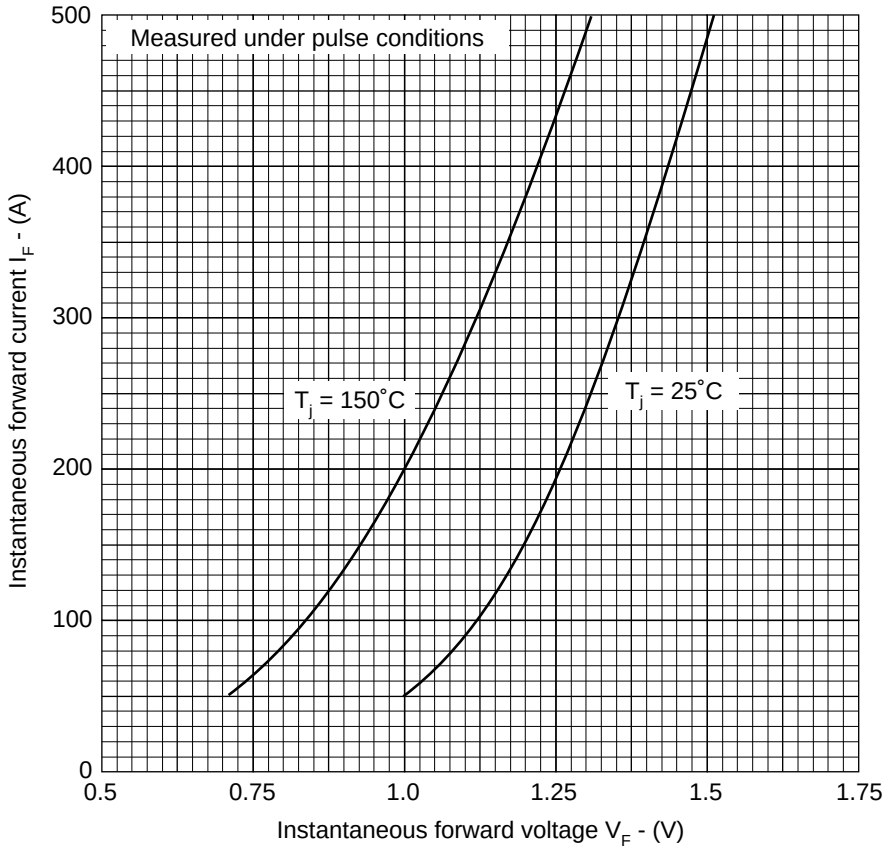


FIG. 2 MAXIMUM (LIMIT) FORWARD CHARACTERISTICS

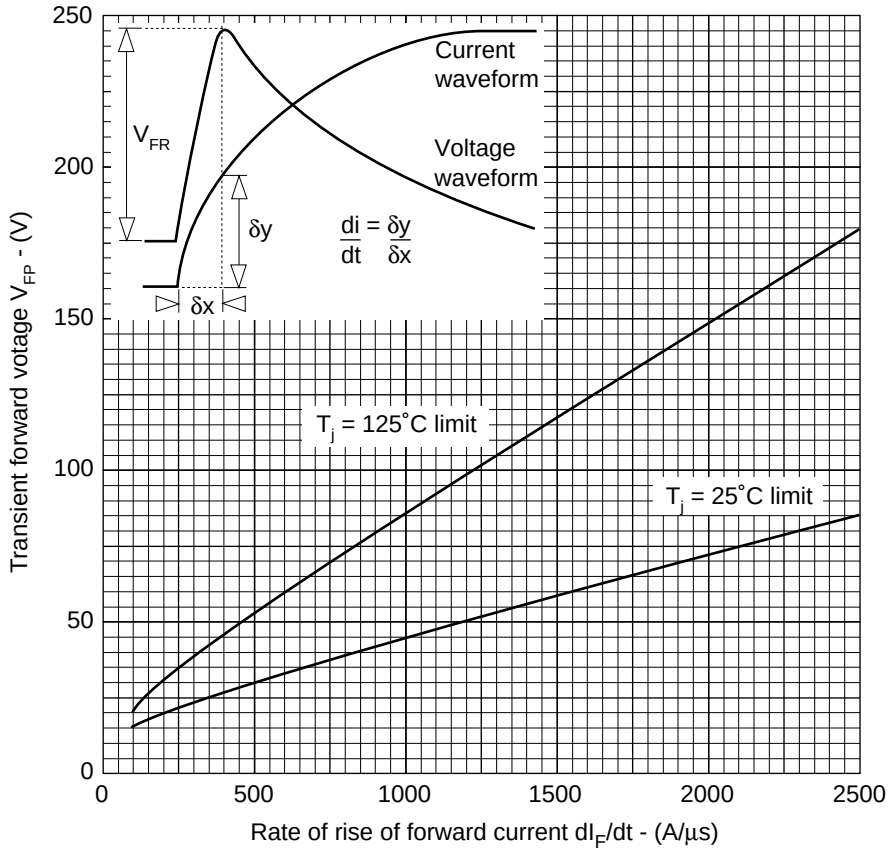


FIG. 3 TRANSIENT FORWARD VOLTAGE vs RATE OF RISE OF FORWARD CURRENT

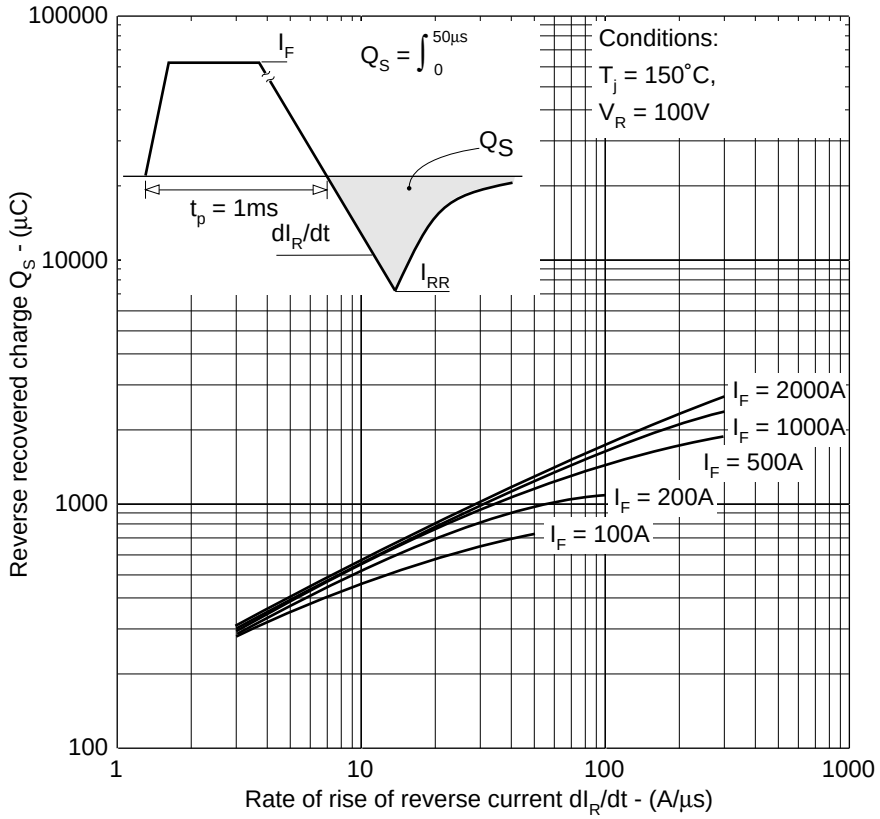


FIG. 4 RECOVERED CHARGE

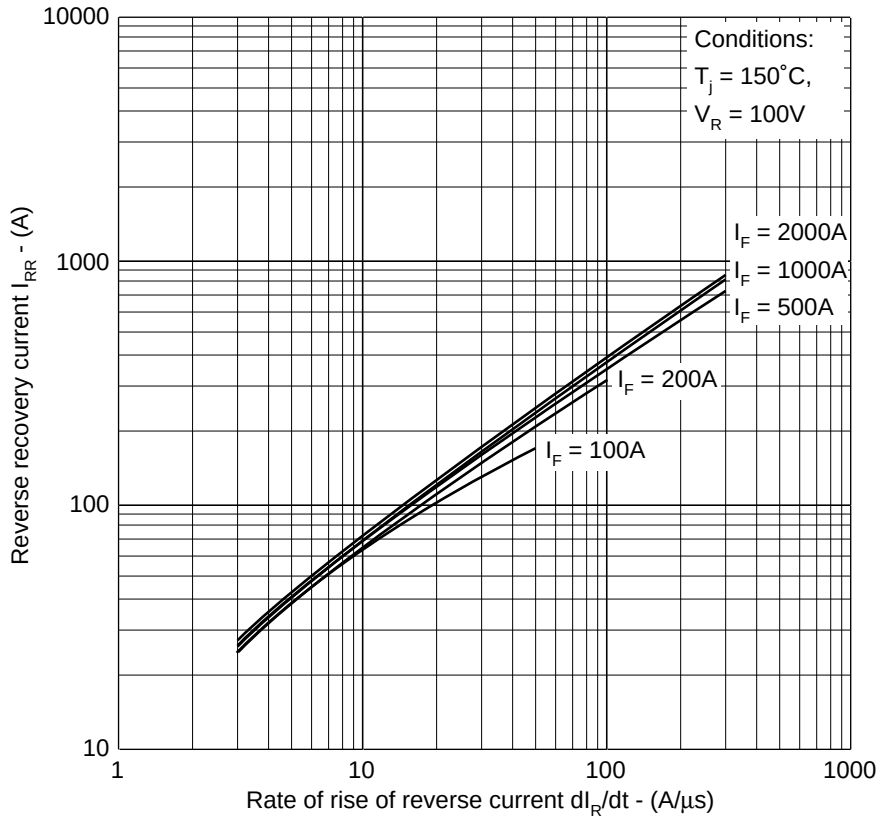


FIG. 5 TYPICAL REVERSE RECOVERY CURRENT vs RATE OF RISE OF REVERSE CURRENT

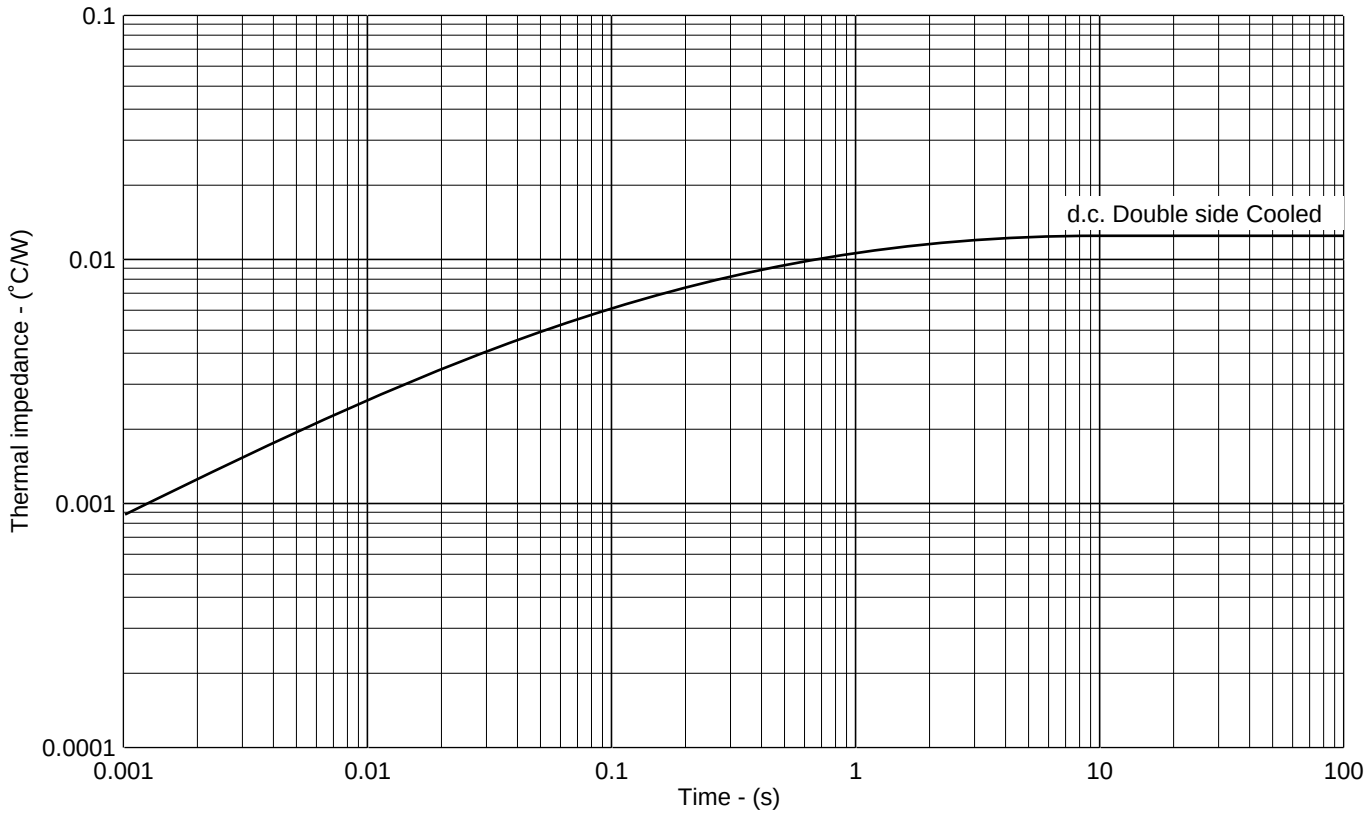
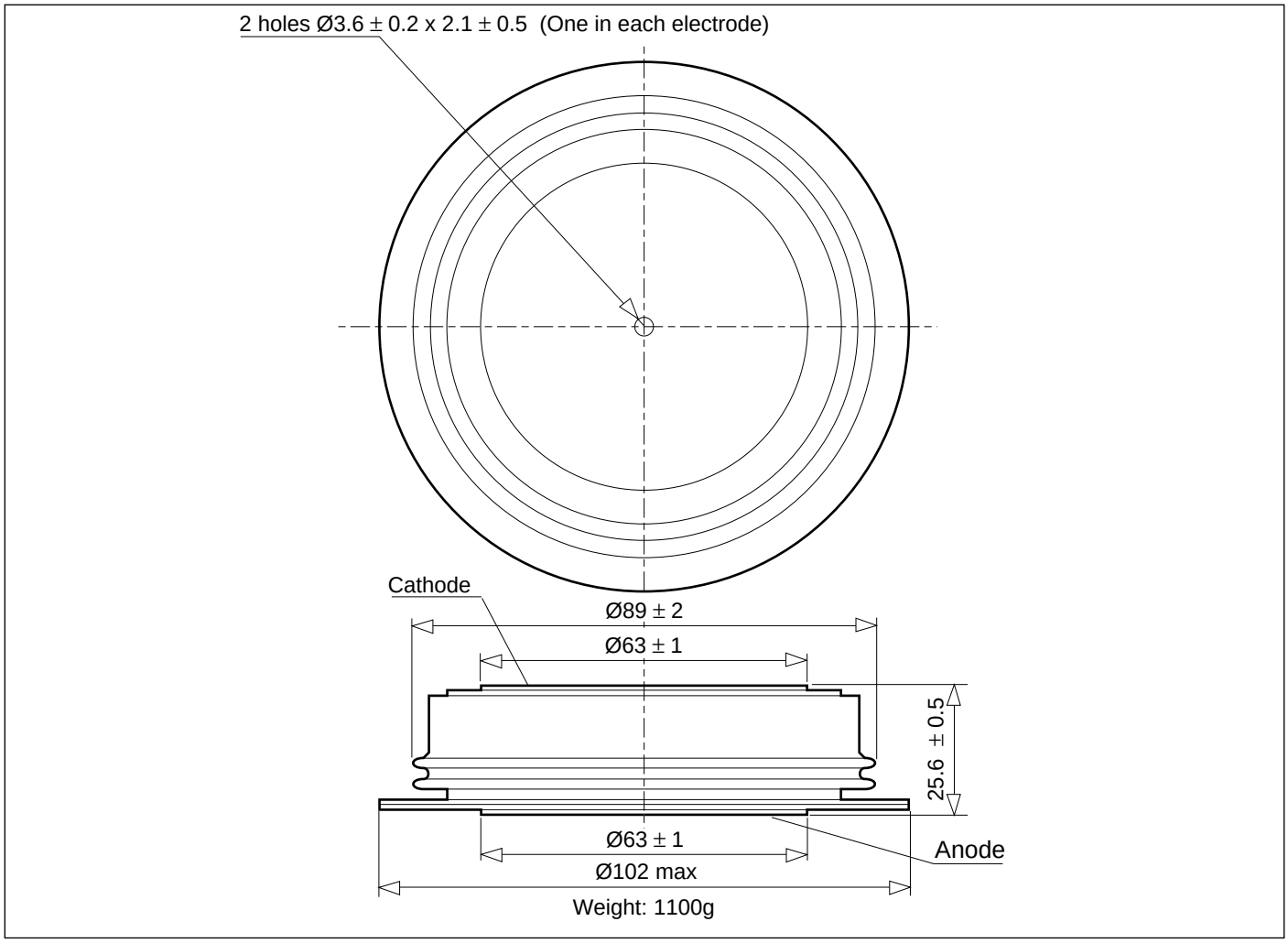


FIG. 6 MAXIMUM (LIMIT) TRANSIENT THERMAL IMPEDANCE - JUNCTION TO CASE - (°C/W)

PACKAGE DETAILS - CB486

For further package information, please contact your local Customer Service Centre. All dimensions in mm, unless stated otherwise. DO NOT SCALE.



GEC PLESSEY
SEMICONDUCTORS

HEADQUARTERS OPERATIONS

GEC PLESSEY SEMICONDUCTORS
Cheney Manor, Swindon,
Wiltshire, SN2 2QW, United Kingdom.
Tel: + 44 (0)1793 518000
Fax: + 44 (0)1793 518411

GEC PLESSEY SEMICONDUCTORS
P.O. Box 660017
1500 Green Hills Road,
Scotts Valley, California 95067-0017,
United States of America.
Tel: + 1 (408) 438 2900
Fax: + 1 (408) 438 5576

POWER PRODUCT CUSTOMER SERVICE CENTRES

- **FRANCE.** 2 rue Henri-Bergson, 92665 Asnieres Cedex.
  Tel: + 33 1 40 80 54 00. Fax: + 33 1 40 80 55 87.
- **GERMANY**. Ungererstrasse 129, 80505 München.
  Tel: + 49 (0)89 36 09 060. Fax: + 49 (0)89 36 09 06 55.
- **NORTH AMERICA.** Two Dedham Place, Suite 125, 3 Allied Drive, Dedham. MA 02026.
  Tel: + 1 617 251 0126. Fax: + 1 617 251 0106.
- **UNITED KINGDOM.** Doddington Road, Lincoln. LN6 3LF.
  Tel: + 44 (0)1522 500500. Fax: + 44 (0)1522 500550.

These are supported by Agents and Distributors in major countries world-wide.

 Publication No. DS4177-1 Issue No. 1.2 August 1995