

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

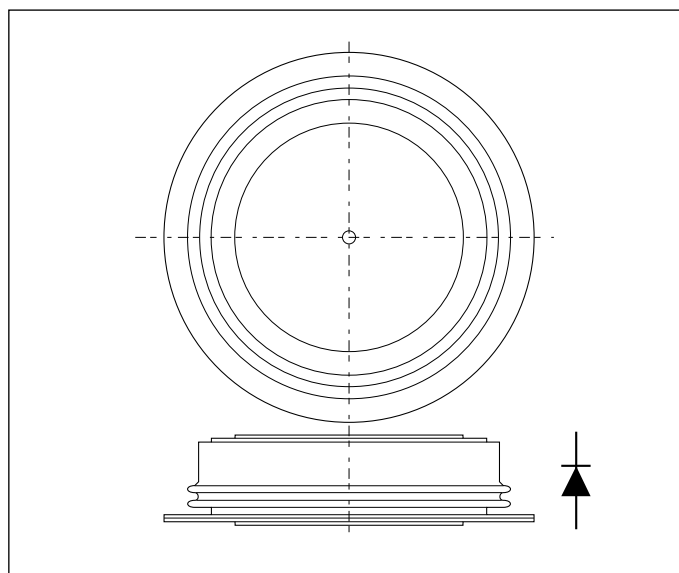
FEATURES

- 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, $T_{case} = 65^{\circ}C$	2130	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^{\circ}C$	3350	A
I_F	Continuous (direct) forward current	$T_{case} = 65^{\circ}C$	3020	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 65^{\circ}C$	1340	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^{\circ}C$	2110	A
I_F	Continuous (direct) forward current	$T_{case} = 65^{\circ}C$	1810	A

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with 0% V_{RRM} , $T_j = 150^\circ\text{C}$	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} , $T_j = 150^\circ\text{C}$	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} , $T_j = 150^\circ\text{C}$	-	kA
I^2t	I^2t for fusing		-	A^2s

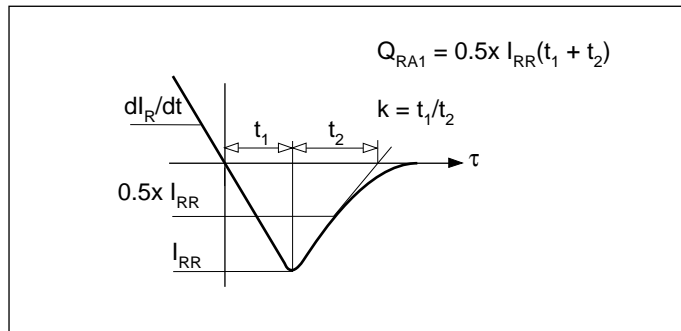
THERMAL AND MECHANICAL DATA

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

CHARACTERISTICS

Symbol	Parameter	Conditions	Typ.	Max.	Units
V_{FM}	Forward voltage	At 2000A peak, $T_{case} = 25^{\circ}C$	-	2.2	V
I_{RRM}	Peak reverse current	At V_{RRM} , $T_{case} = 150^{\circ}C$	-	200	mA
t_{rr}	Reverse recovery time	$I_F = 1000A$, $di_{RR}/dt = 100A/\mu s$ $T_{case} = 150^{\circ}C$, $V_R = 100V$	-	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 $T_{vj} = 150^{\circ}C$	-	1.5	V
r_T	Slope resistance	At $T_{vj} = 150^{\circ}C$	-	0.35	$m\Omega$
V_{FRM}	Forward recovery voltage	$di/dt = 1000A/\mu s$, $T_j = 125^{\circ}C$	-	80	V

DEFINITION OF K FACTOR AND Q_{RA1}



CURVES

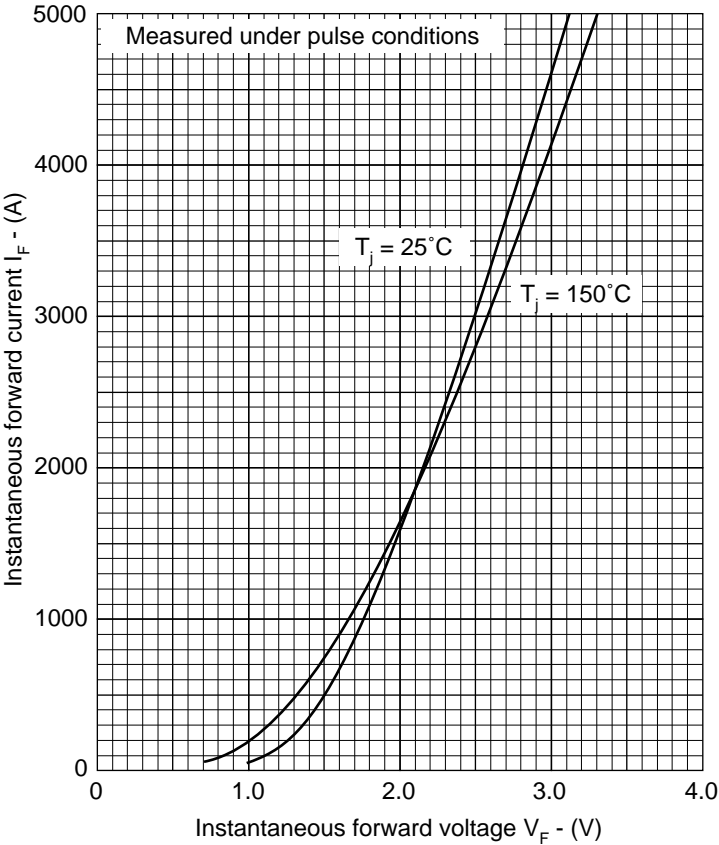


FIG. 1 MAXIMUM (LIMIT) FORWARD CHARACTERISTICS

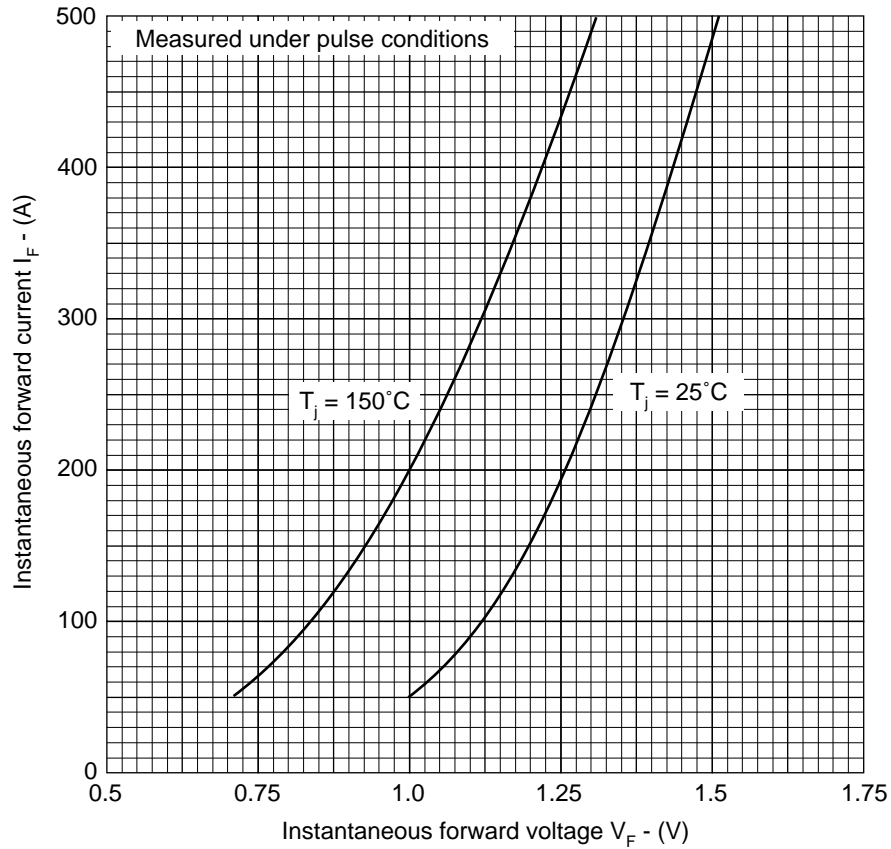


FIG. 2 MAXIMUM (LIMIT) FORWARD CHARACTERISTICS

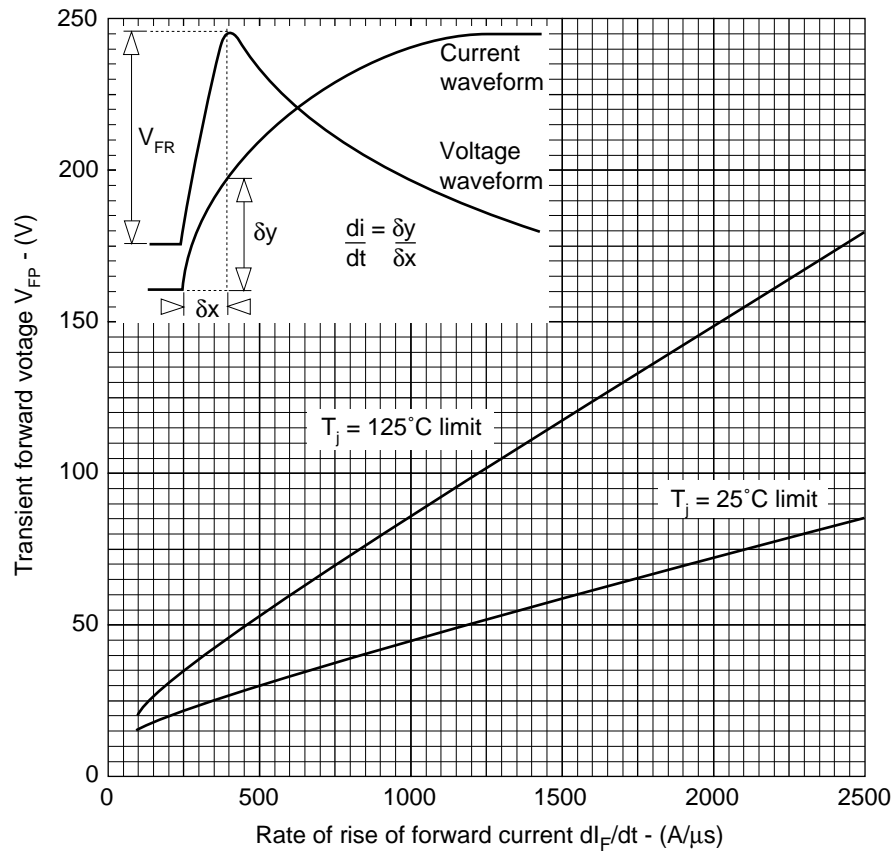


FIG. 3 TRANSIENT FORWARD VOLTAGE vs RATE OF RISE OF FORWARD CURRENT

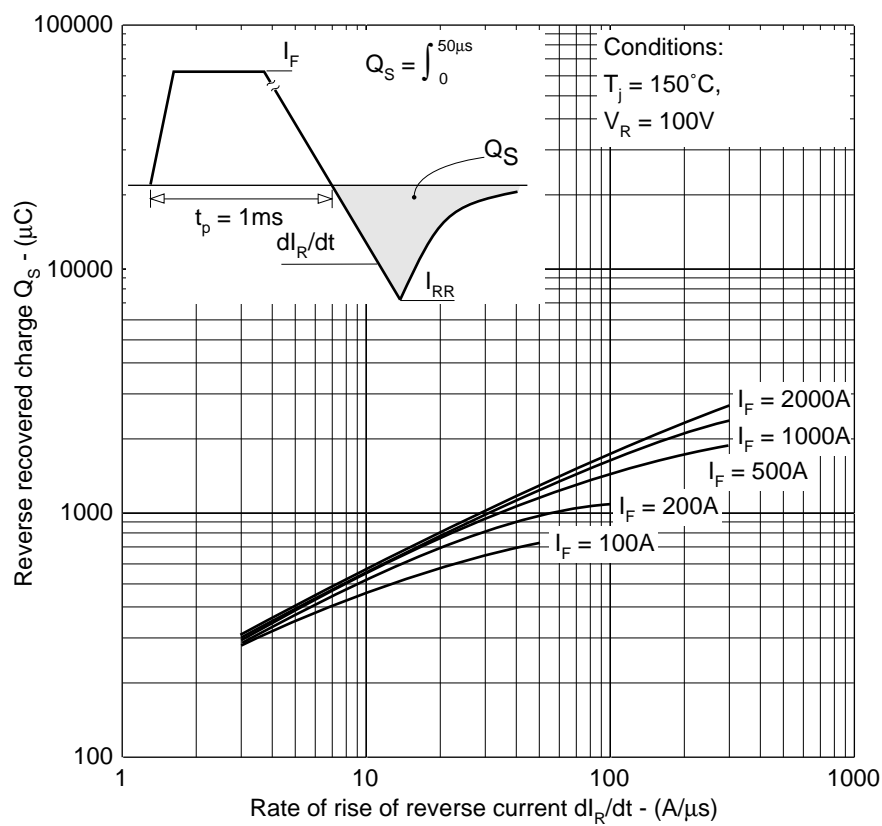


FIG. 4 RECOVERED CHARGE

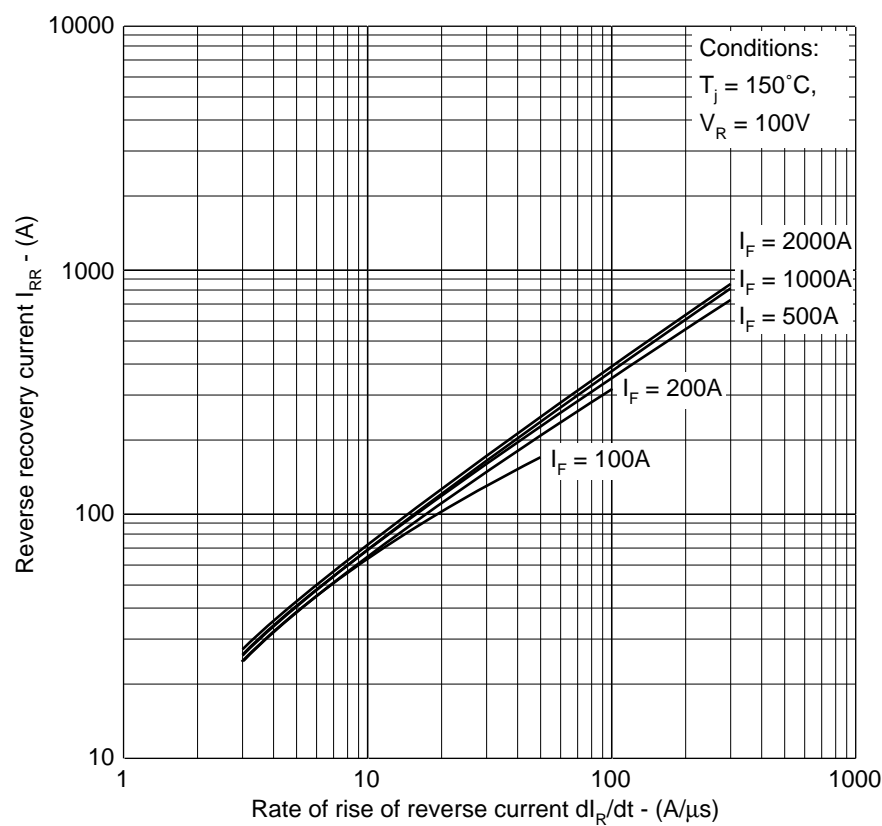


FIG. 5 TYPICAL REVERSE RECOVERY CURRENT vs RATE OF RISE OF REVERSE CURRENT

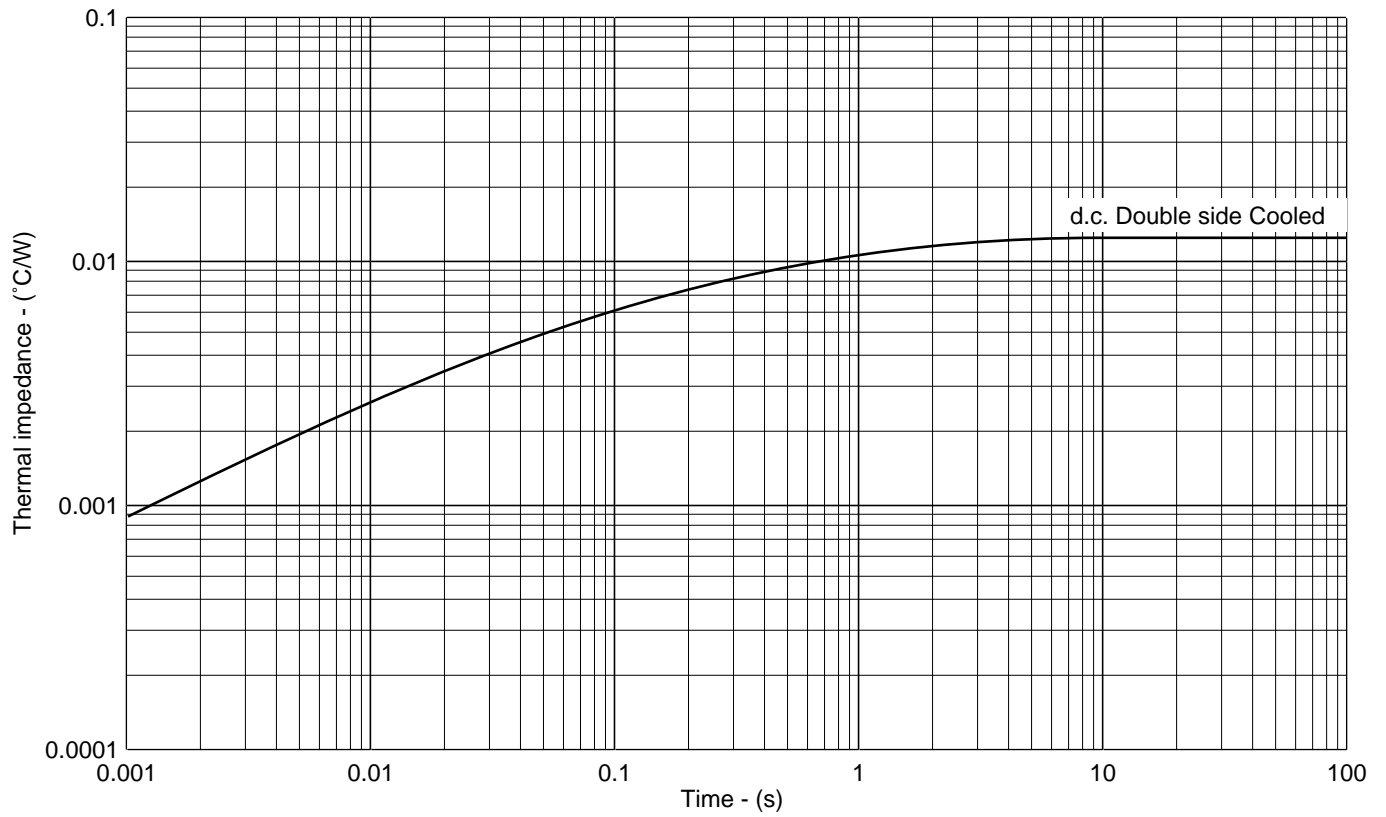
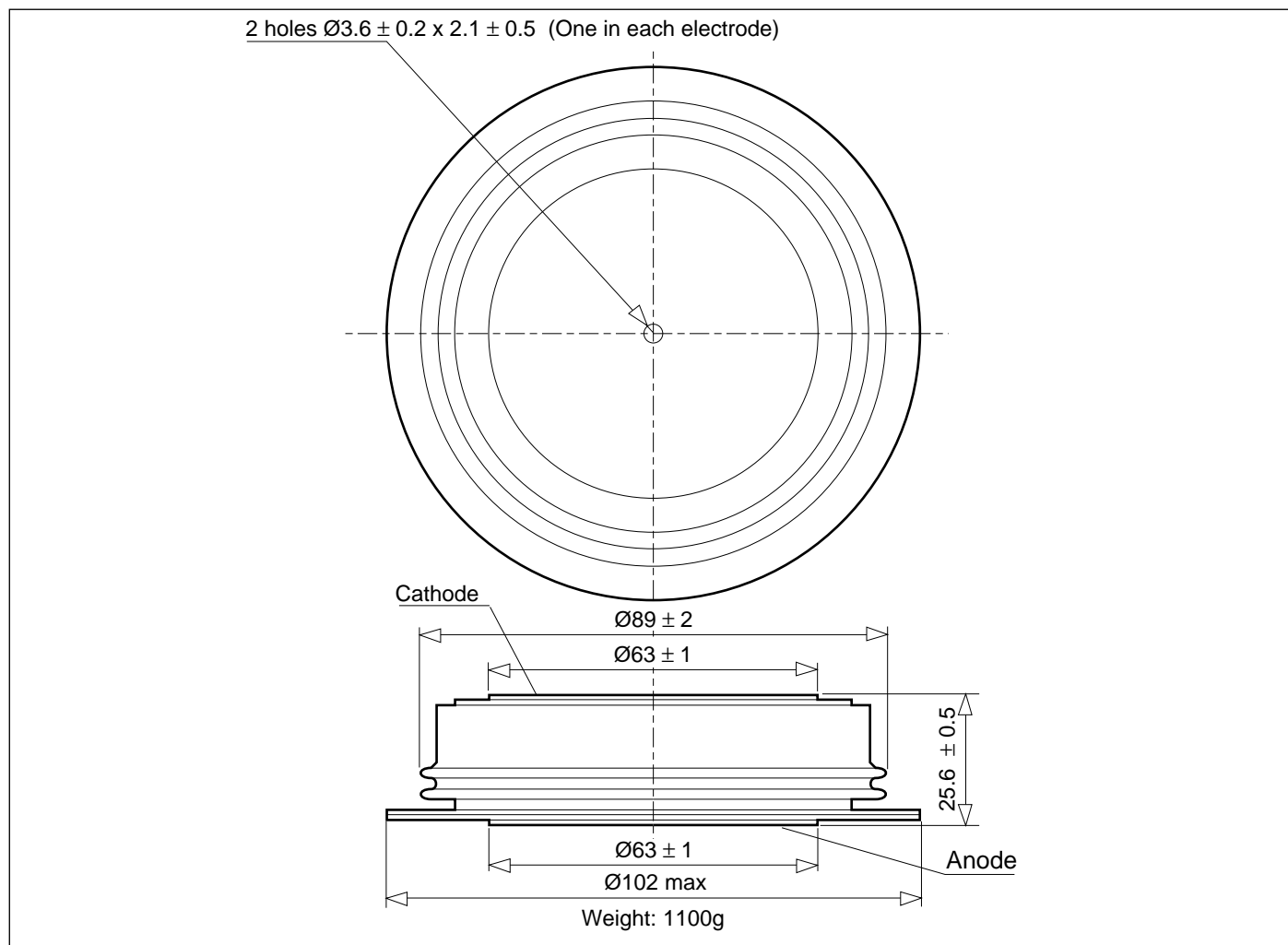


FIG. 6 MAXIMUM (LIMIT) TRANSIENT THERMAL IMPEDANCE - JUNCTION TO CASE - ($^{\circ}\text{C/W}$)

PACKAGE DETAILS - CB486

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



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