MDFB51

FAST RECOVERY DIODE

APPLICATIONS

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

KEY PARAMETERS

V_{RRM}	2500V
$I_{F(AV)}$	2212A
I_{FSM}	24000A
Q_r	1000μC
t_{rr}	6.0μs

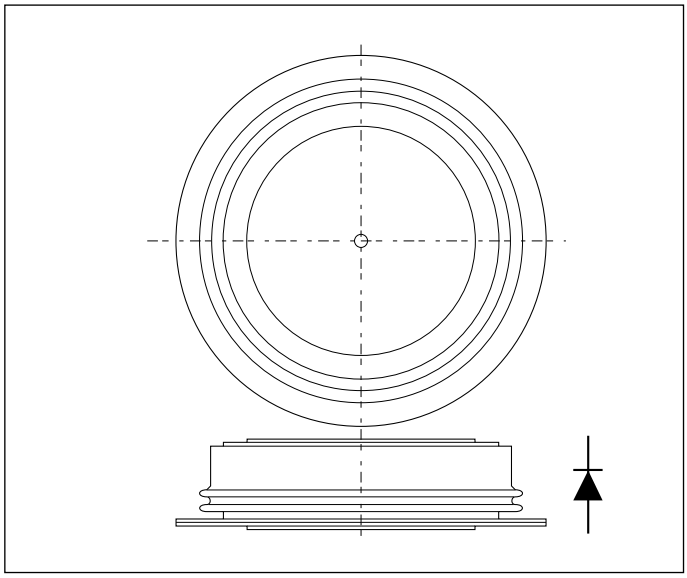
FEATURES

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

VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage V_{RRM} V	Conditions
MDFB51 25	2500	$V_{RSM} = V_{RRM} + 100V$
MDFB51 24	2400	
MDFB51 22	2200	
MDFB51 20	2000	

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	2212	A
$I_{F(RMS)}$	RMS value	T_{case} = 65°C	3850	A
I_F	Continuous (direct) forward current	T_{case} = 65°C	3560	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, T_{case} = 65°C	1627	A
$I_{F(RMS)}$	RMS value	T_{case} = 65°C	2555	A
I_F	Continuous (direct) forward current	T_{case} = 65°C	2272	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	24.0	kA
I^2t	I^2t for fusing		2880 x 10^3	A^2s
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with 50% $V_{RRM,}$ T_j = 150°C	19.2	kA
I^2t	I^2t for fusing		1843 x 10^3	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

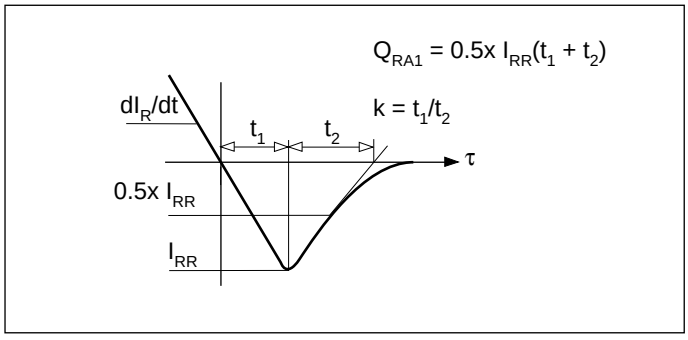
THERMAL AND MECHANICAL DATA

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			40.0	44.0	kN

CHARACTERISTICS

Symbol	Parameter	Conditions	Typ.	Max.	Units
V_{FM}	Forward voltage	At 1500A peak, T_{case} = 25°C	-	1.6	V
I_{RRM}	Peak reverse current	At V_{RRM}, T_{case} = 150°C	-	100	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)		-	1000	µC
I_{RM}	Reverse recovery current		-	400	A
K	Soft factor		1.8	-	-
V_{TO}	Threshold voltage	At T_{vj} = 150°C	-	1.1	V
r_T	Slope resistance	At T_{vj} = 150°C	-	0.3	mΩ
V_{FRM}	Forward recovery voltage	di/dt = 1000A/µs, T_j = 125°C	-	40	V

DEFINITION OF K FACTOR AND Q_{RA1}



CURVES

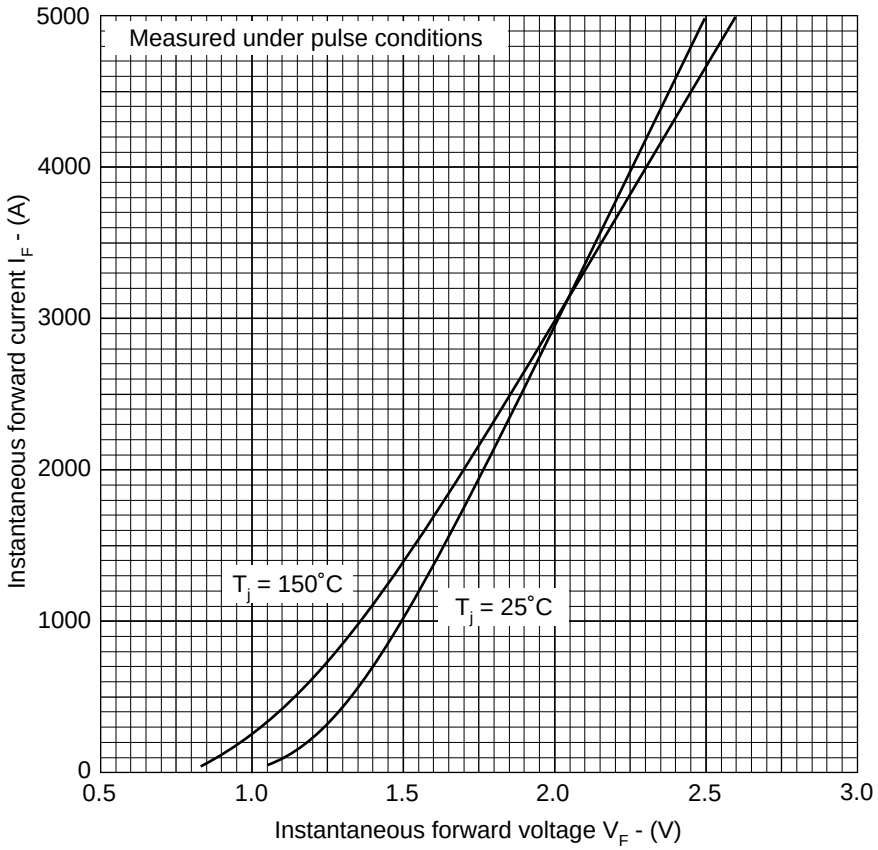


FIG. 1 MAXIMUM (LIMIT) FORWARD CHARACTERISTICS

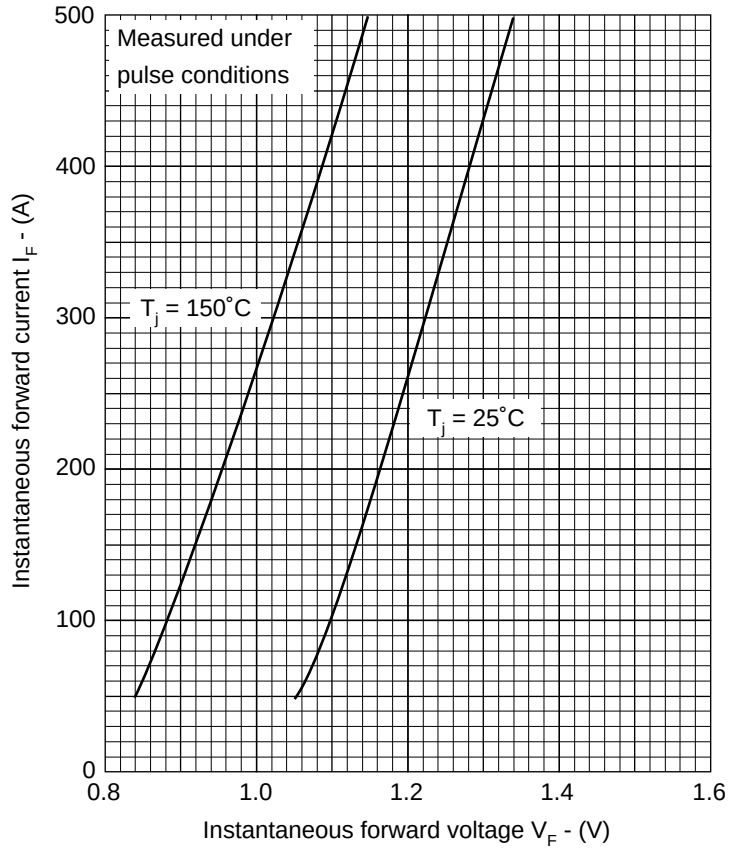


FIG. 2 MAXIMUM (LIMIT) FORWARD CHARACTERISTICS

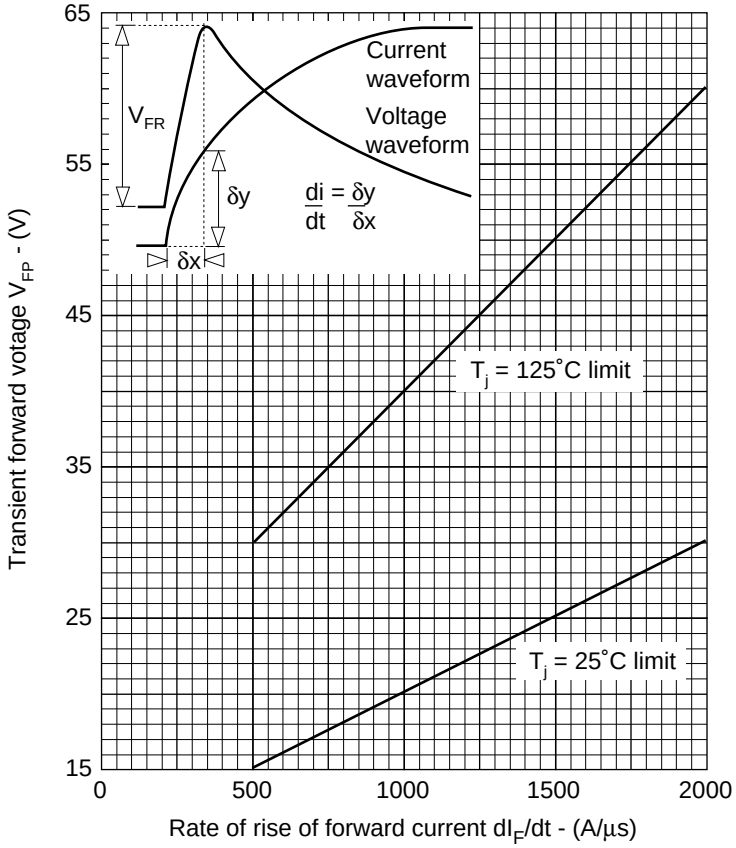


FIG. 3 TRANSIENT FORWARD VOLTAGE vs RATE OF RISE OF FORWARD CURRENT

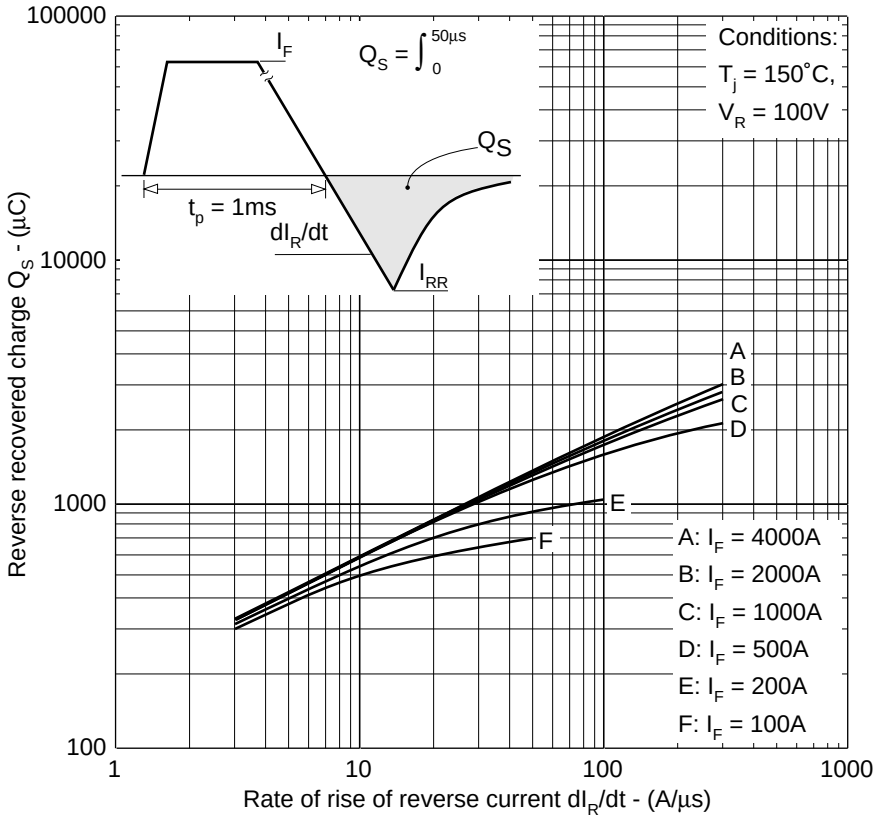


FIG. 4 RECOVERED CHARGE

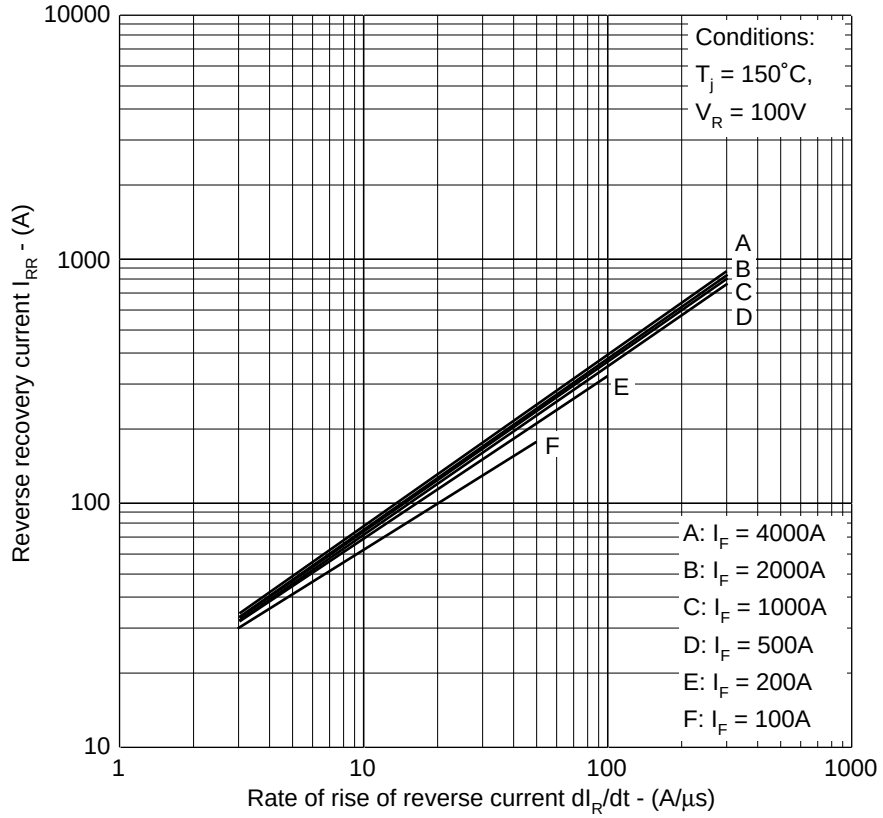


FIG. 5 MAXIMUM REVERSE RECOVERY CURRENT vs RATE OF FALL OF FORWARD CURRENT

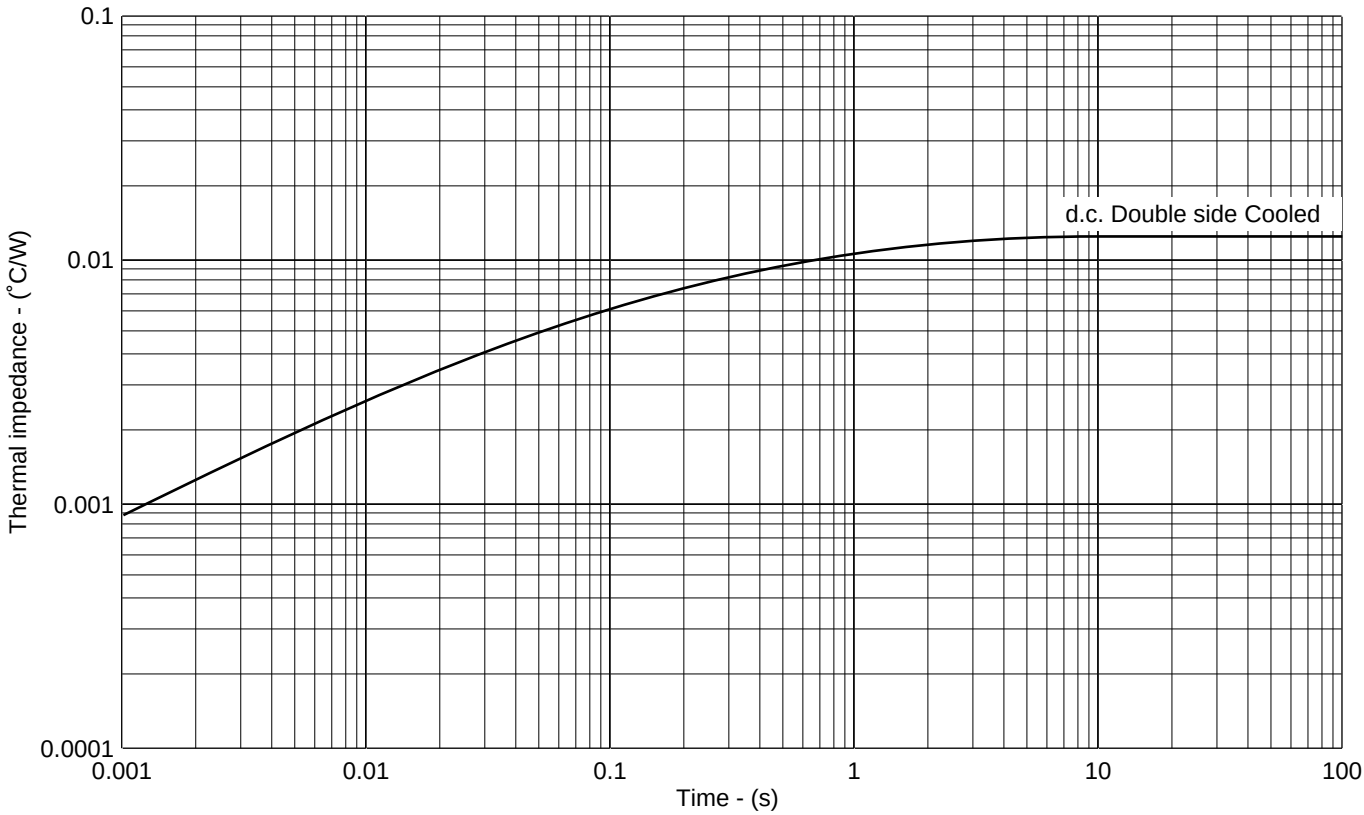
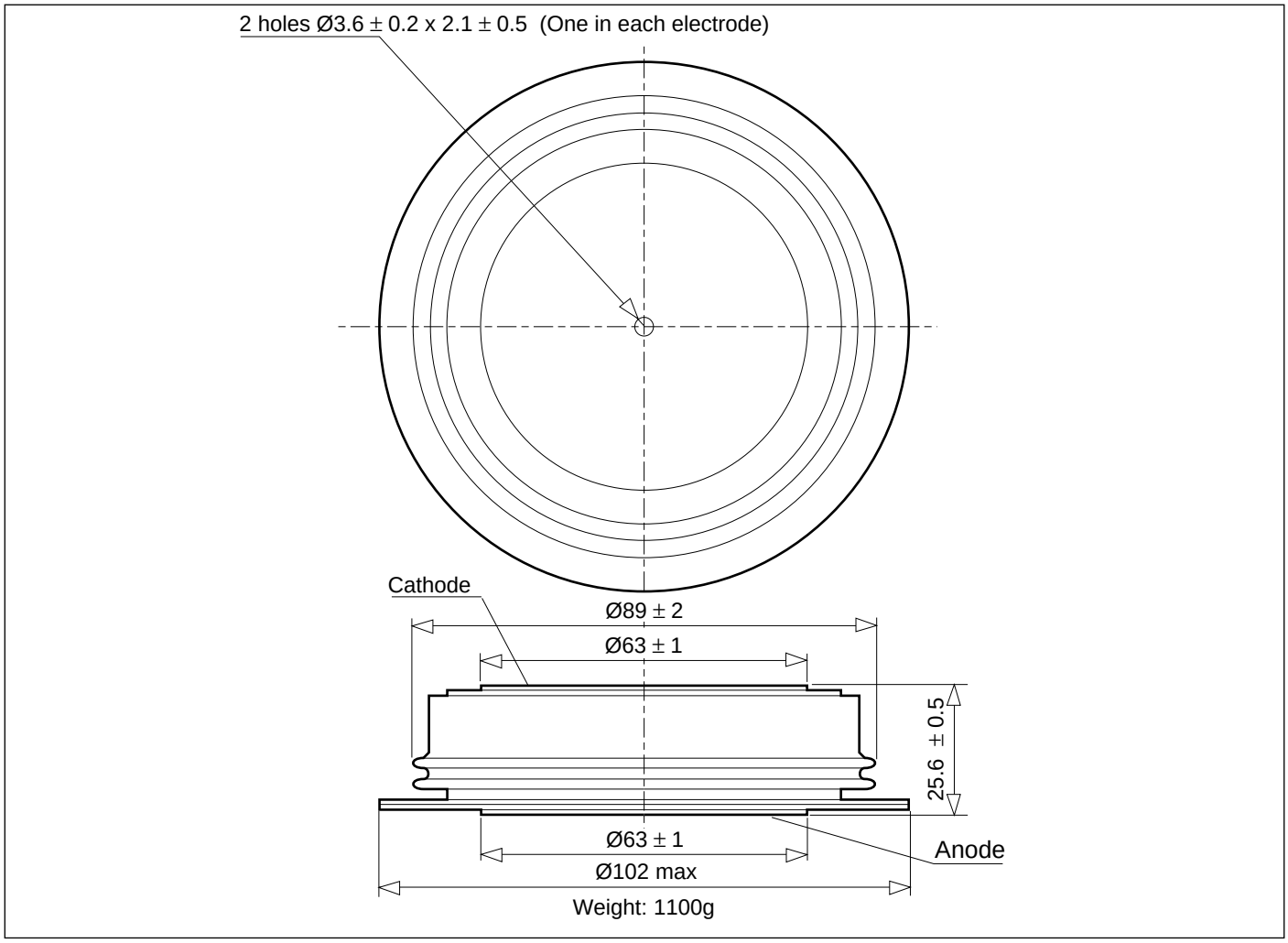


FIG. 6 MAXIMUM (LIMIT) TRANSIENT THERMAL IMPEDANCE - JUNCTION TO CASE - (˚C/W)

PACKAGE DETAILS - CB486

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



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