

DF051

FAST RECOVERY DIODE

APPLICATIONS

- Induction Heating.
- A.C. Motor Drives.
- Inverters And Choppers.
- Welding.
- High Frequency Rectification.
- UPS.

FEATURES

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

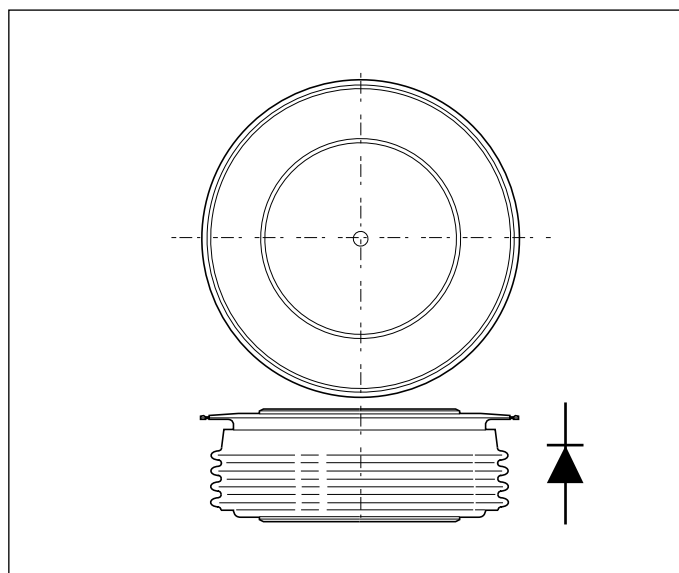
VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage V_{RRM} V	Conditions
DF051 25	2500	$V_{RSM} = V_{RRM} + 100V$
DF051 24	2400	
DF051 22	2200	
DF051 20	2000	

Lower voltage grades available.

KEY PARAMETERS

V_{RRM}	2500V
$I_{F(AV)}$	1490A
I_{FSM}	14000A
Q_r	800μC
t_{rr}	5.0μs



Outline type code: CB450.
See package outlines for further information.

CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 65^{\circ}C$	1490	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^{\circ}C$	2340	A
I_F	Continuous (direct) forward current	$T_{case} = 65^{\circ}C$	2160	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 65^{\circ}C$	995	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^{\circ}C$	1560	A
I_F	Continuous (direct) forward current	$T_{case} = 65^{\circ}C$	1390	A

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with 0% V_{RRM} , $T_j = 150^\circ\text{C}$	14.0	kA
I^2t	I^2t for fusing		980×10^3	A^2s
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with 50% V_{RRM} , $T_j = 150^\circ\text{C}$	11.2	kA
I^2t	I^2t for fusing		627×10^3	A^2s

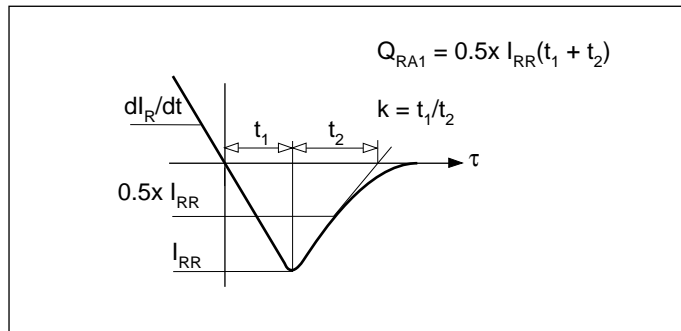
THERMAL AND MECHANICAL DATA

Symbol	Parameter	Conditions		Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance - junction to case	Double side cooled	dc	-	0.018	$^\circ\text{C/W}$
		Single side cooled	Anode dc	-	0.034	$^\circ\text{C/W}$
			Cathode dc	-	0.038	$^\circ\text{C/W}$
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 23.5kN with mounting compound	Double side	-	0.003	$^\circ\text{C/W}$
			Single side	-	0.006	$^\circ\text{C/W}$
T_{vj}	Virtual junction temperature	On-state (conducting)		-	150	$^\circ\text{C}$
T_{stg}	Storage temperature range			-55	150	$^\circ\text{C}$
-	Clamping force			21.0	25.0	kN

CHARACTERISTICS

Symbol	Parameter	Conditions	Typ.	Max.	Units
V_{FM}	Forward voltage	At 1500A peak, $T_{case} = 25^{\circ}C$	-	1.85	V
I_{RRM}	Peak reverse current	At V_{RRM} , $T_{case} = 150^{\circ}C$	-	100	mA
t_{rr}	Reverse recovery time	$I_F = 1000A$, $di_{RR}/dt = 100A/\mu s$ $T_{case} = 150^{\circ}C$, $V_R = 100V$	5.0	-	μs
Q_{RA1}	Recovered charge (50% chord)		-	800	μC
I_{RM}	Reverse recovery current		-	250	A
K	Soft factor		1.6	-	-
V_{TO}	Threshold voltage	At $T_{vj} = 150^{\circ}C$	-	1.1	V
r_T	Slope resistance	At $T_{vj} = 150^{\circ}C$	-	0.5	$m\Omega$
V_{FRM}	Forward recovery voltage	$di/dt = 1000A/\mu s$, $T_j = 125^{\circ}C$	-	-	V

DEFINITION OF K FACTOR AND Q_{RA1}



CURVES

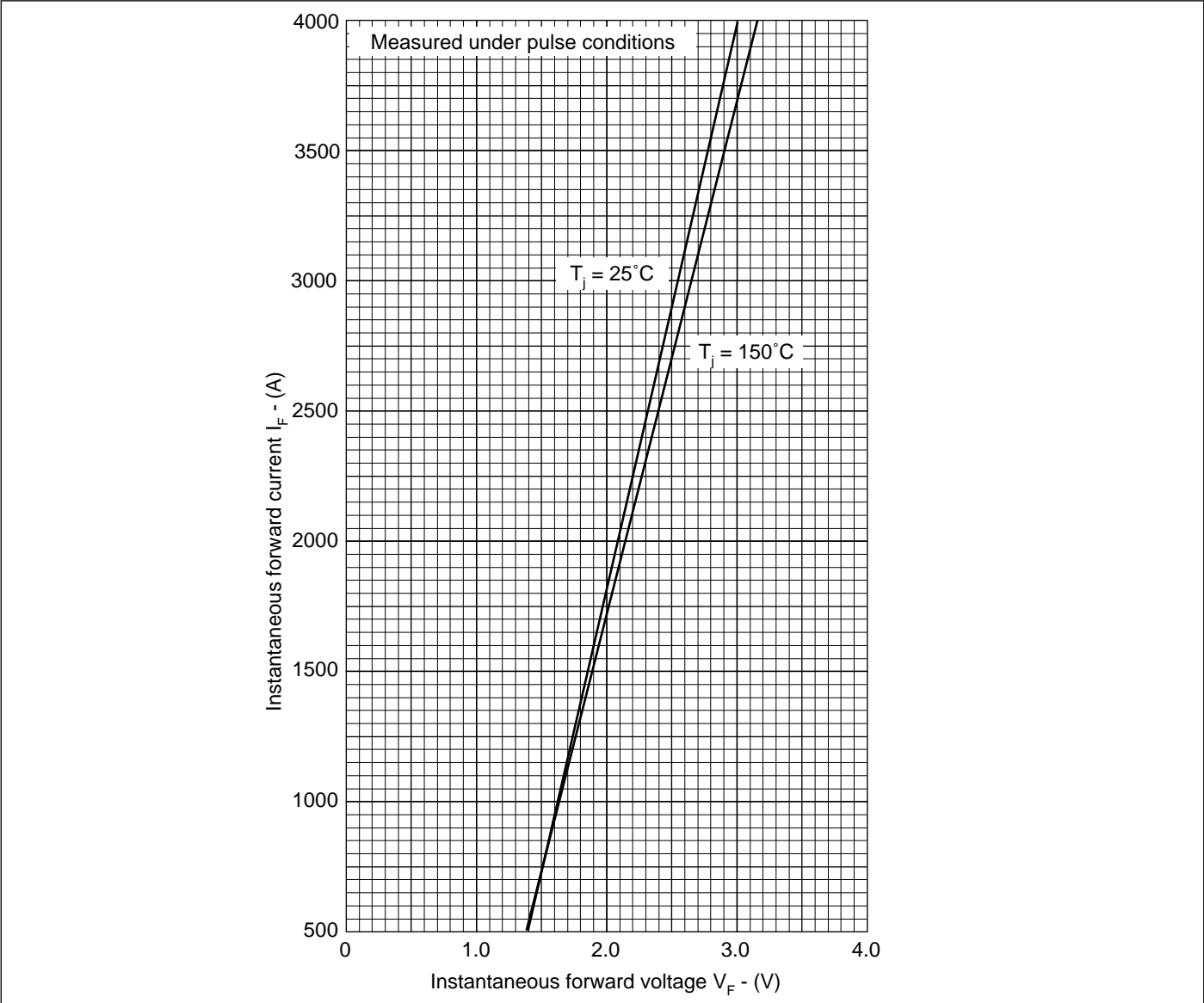


Fig.1 Maximum (limit) forward characteristics

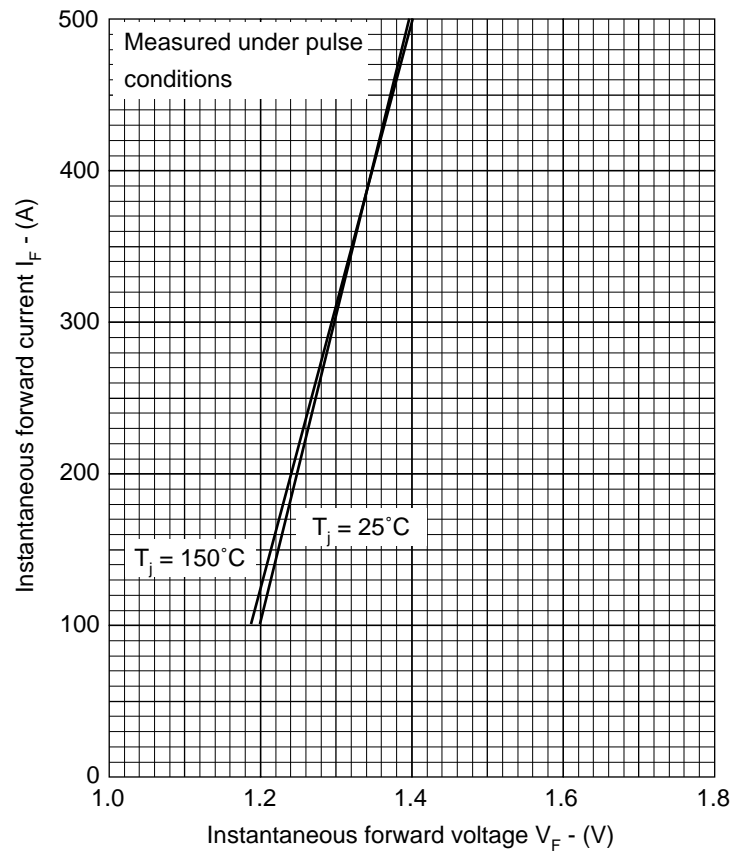


Fig.2 Maximum (limit) forward characteristics

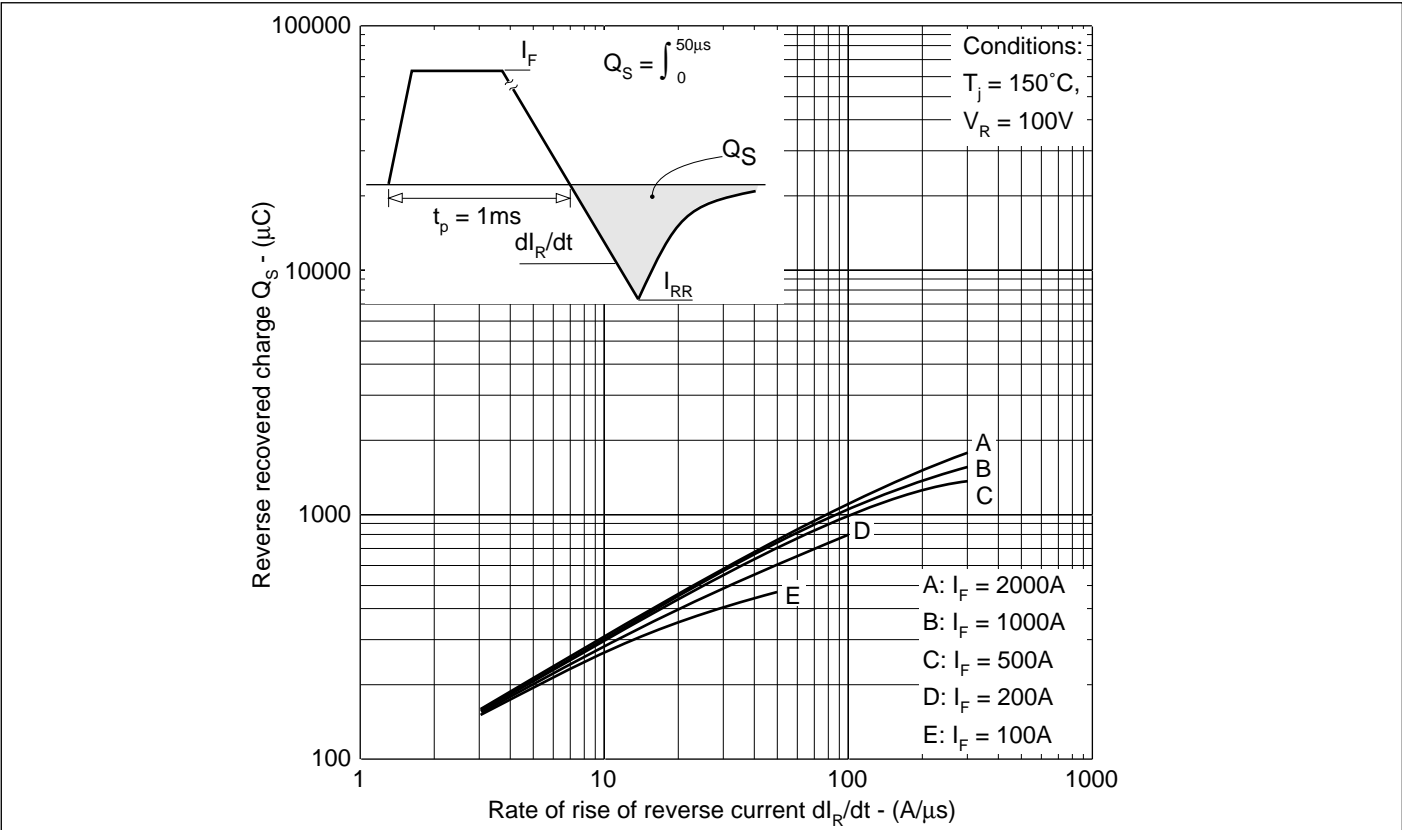


Fig.3 Recovered charge

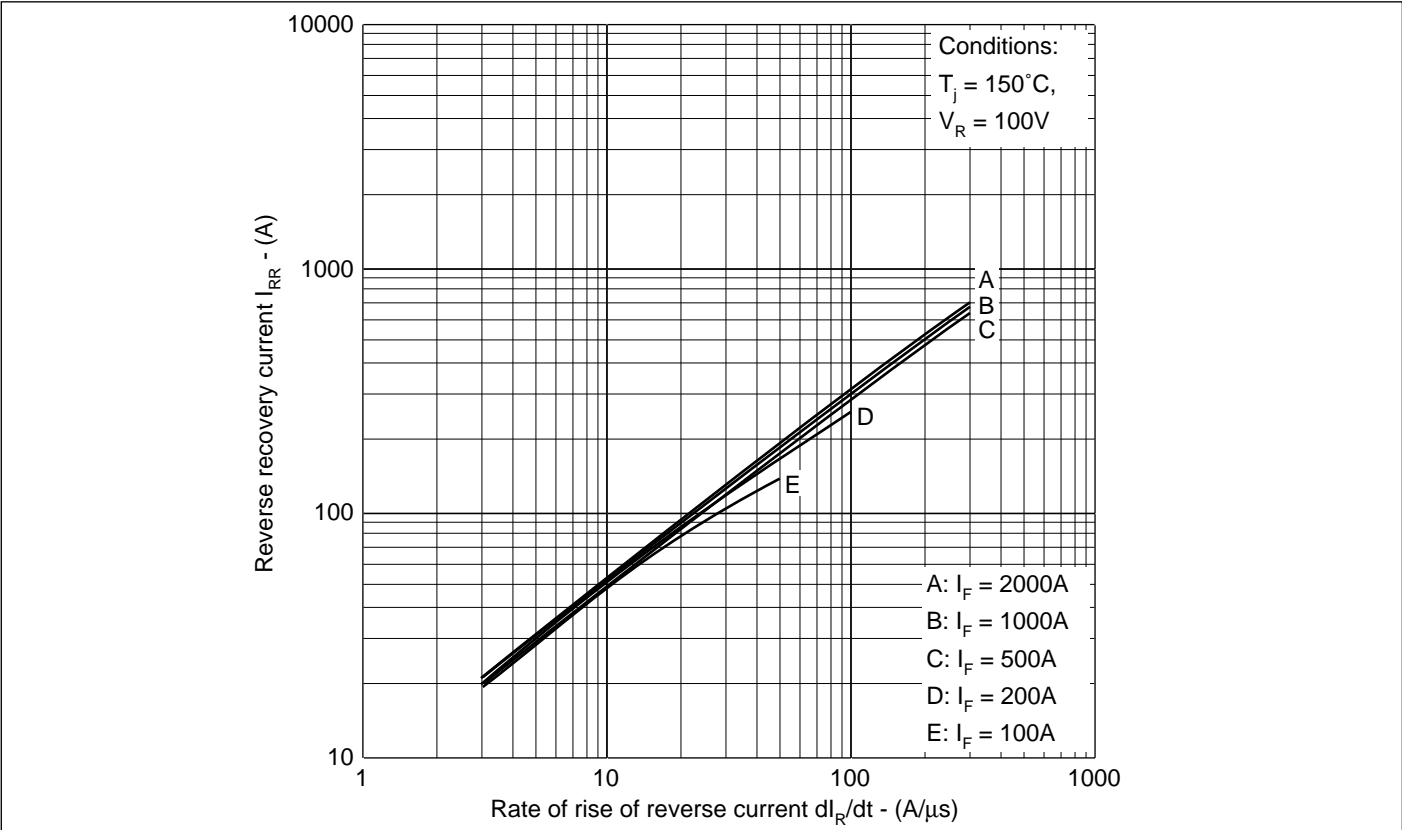


Fig.4 Typical reverse recovery current vs rate of rise of reverse current

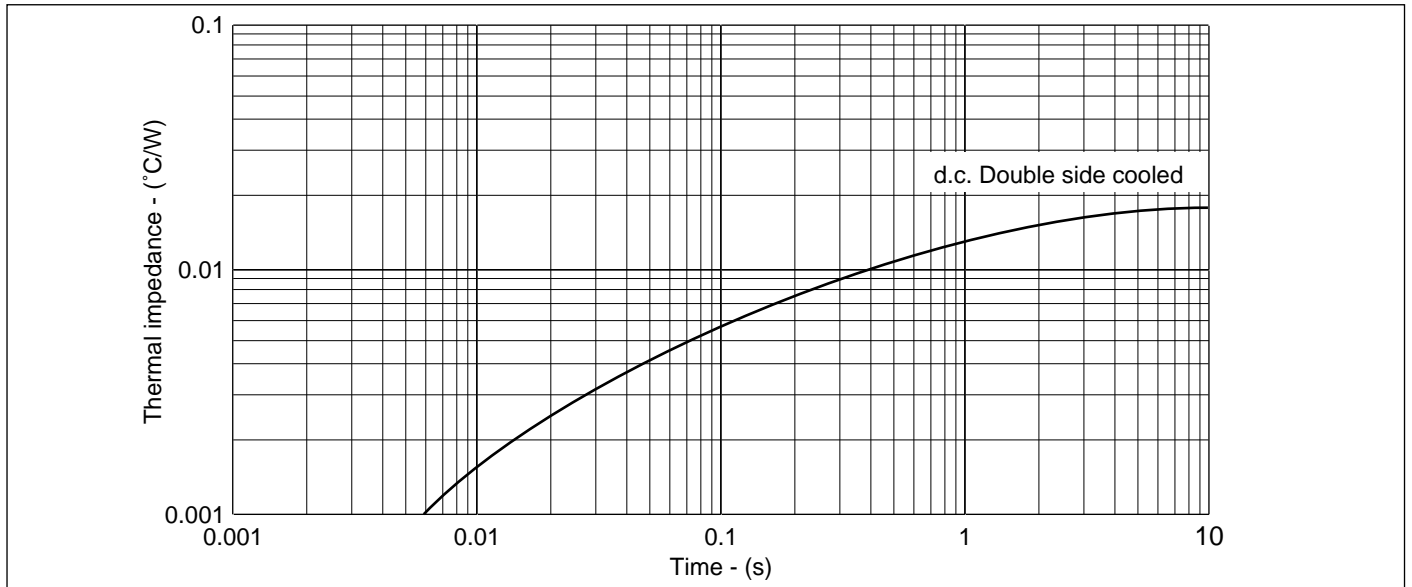
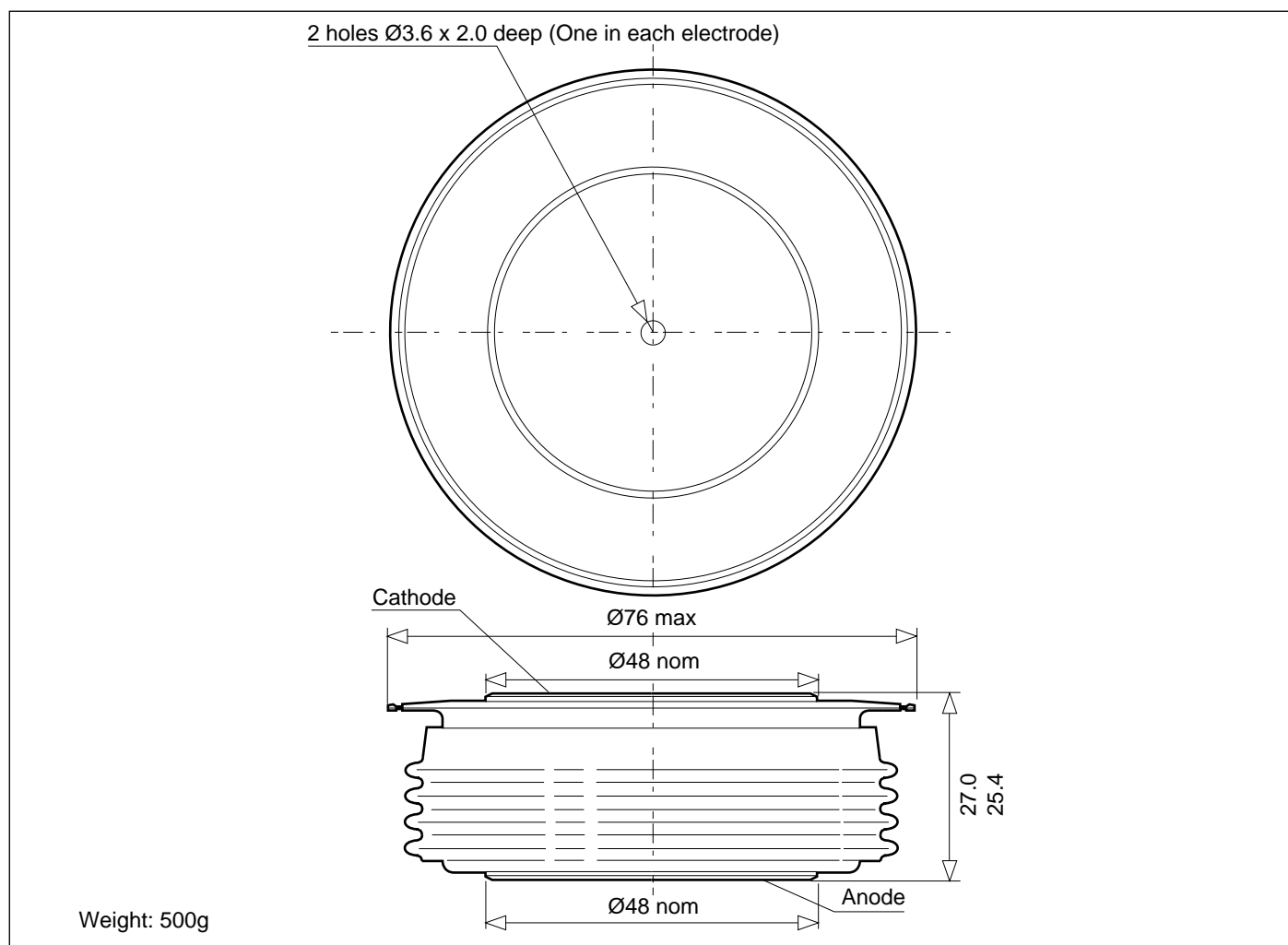


Fig.5 Maximum (limit) transient thermal impedance - junction to case - ($^{\circ}\text{C/W}$)

PACKAGE DETAILS - CB450

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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