

# DF054

## FAST RECOVERY DIODE

### APPLICATIONS

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

### KEY PARAMETERS

$V_{RRM}$	3500V
$I_{F(AV)}$	1470A
$I_{FSM}$	14000A
$Q_r$	1200μC
$t_{rr}$	6.0μs

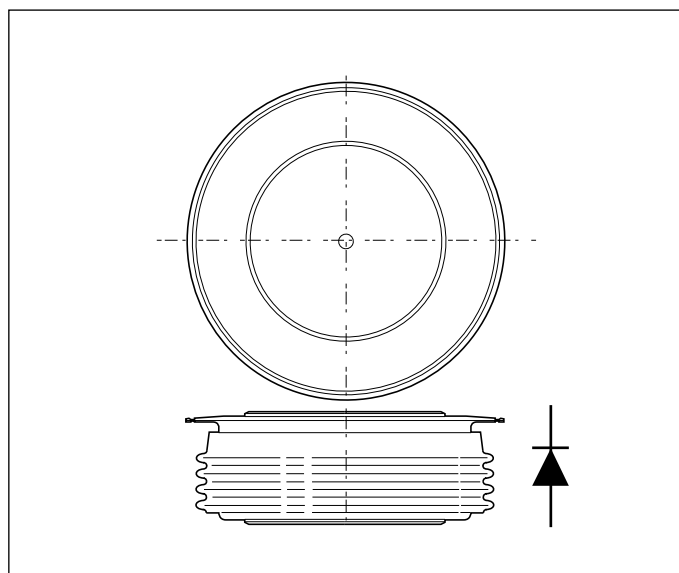
### FEATURES

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

### VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage $V_{RRM}$ V	Conditions
DF054 35 DF054 34 DF054 32 DF054 30	3500 3400 3200 3000	$V_{RSM} = V_{RRM} + 100V$

Lower voltage grades available.



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

### CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
<b>Double Side Cooled</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 65^{\circ}C$	1470	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^{\circ}C$	2310	A
$I_F$	Continuous (direct) forward current	$T_{case} = 65^{\circ}C$	2130	A
<b>Single Side Cooled (Anode side)</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 65^{\circ}C$	984	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^{\circ}C$	1540	A
$I_F$	Continuous (direct) forward current	$T_{case} = 65^{\circ}C$	1365	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		$980 \times 10^3$	$\text{A}^2\text{s}$
$I_{FSM}$	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		$627 \times 10^3$	$\text{A}^2\text{s}$

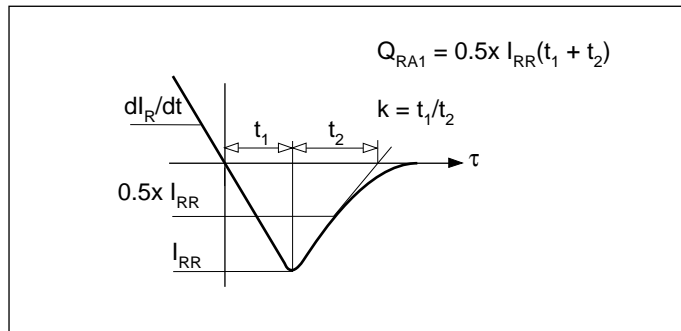
## THERMAL AND MECHANICAL DATA

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	Forward (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, $T_{case} = 25^{\circ}C$	-	1.7	V
$I_{RRM}$	Peak reverse current	At $V_{RRM}$ , $T_{case} = 150^{\circ}C$	-	100	mA
$t_{rr}$	Reverse recovery time	$I_F = 1000A$ , $di_{RR}/dt = 100A/\mu s$ $T_{case} = 150^{\circ}C$ , $V_R = 100V$	6.0	-	$\mu s$
$Q_{RA1}$	Recovered charge (50% chord)		-	1200	$\mu C$
$I_{RM}$	Reverse recovery current		-	400	A
K	Soft factor		-	-	-
$V_{TO}$	Threshold voltage	At $T_{vj} = 150^{\circ}C$	-	1.15	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

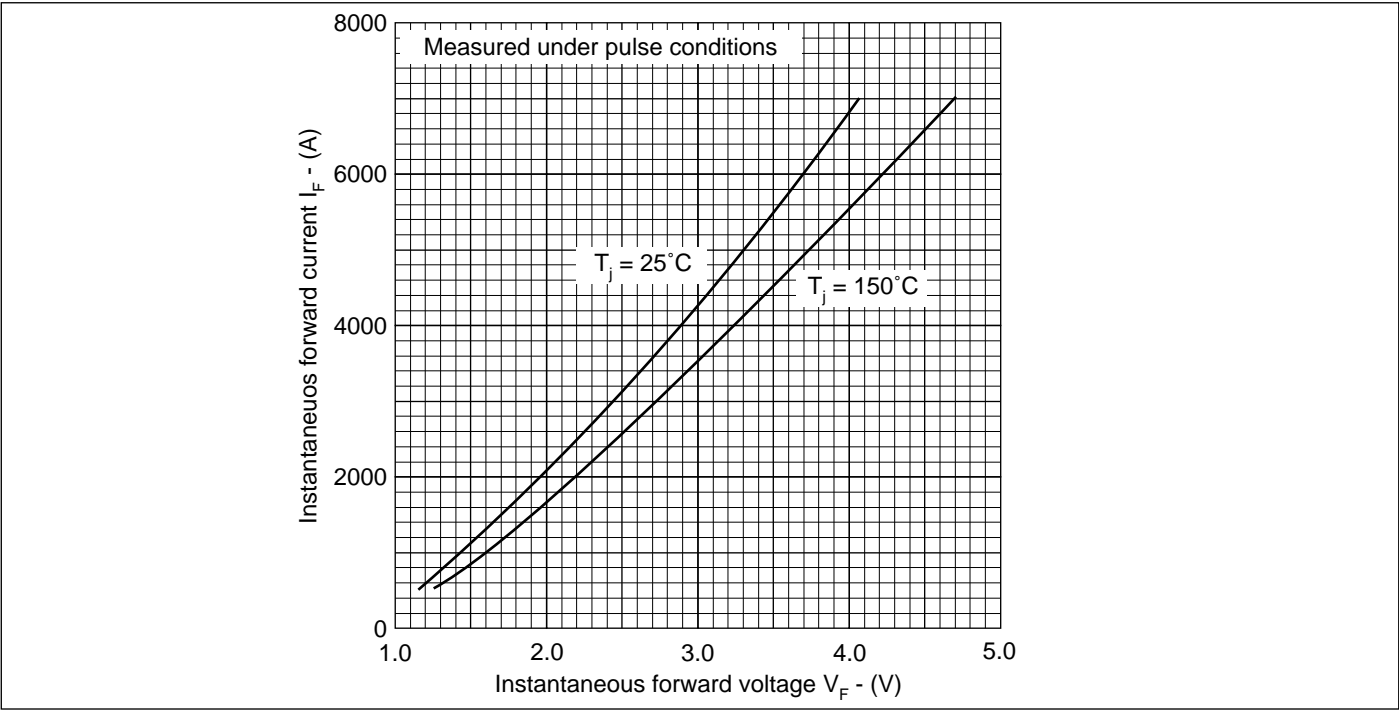


Fig.1 Maximum (limit) forward characteristics

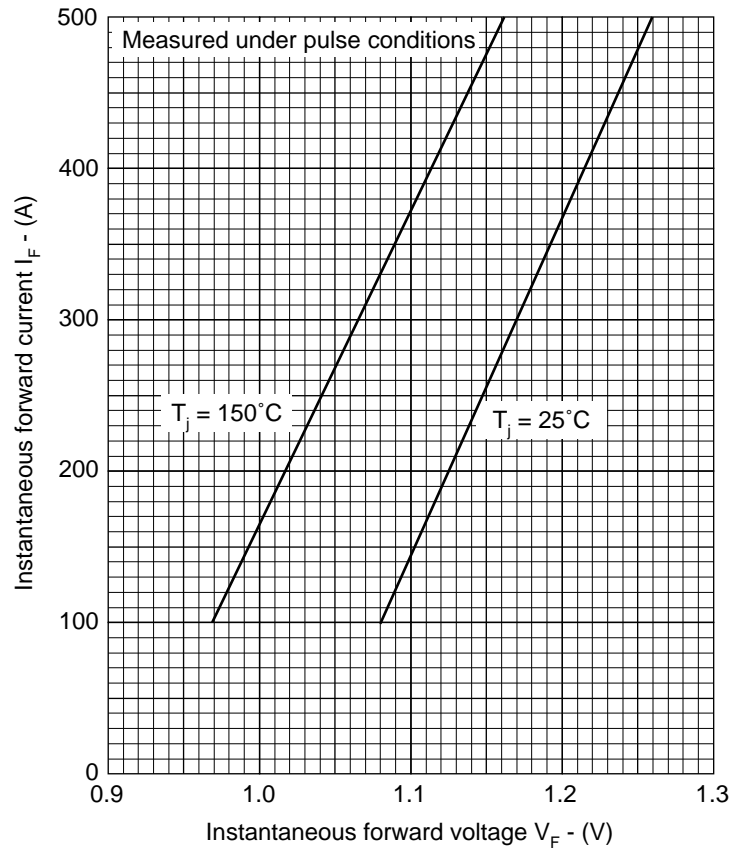


Fig.2 Maximum (limit) forward characteristics

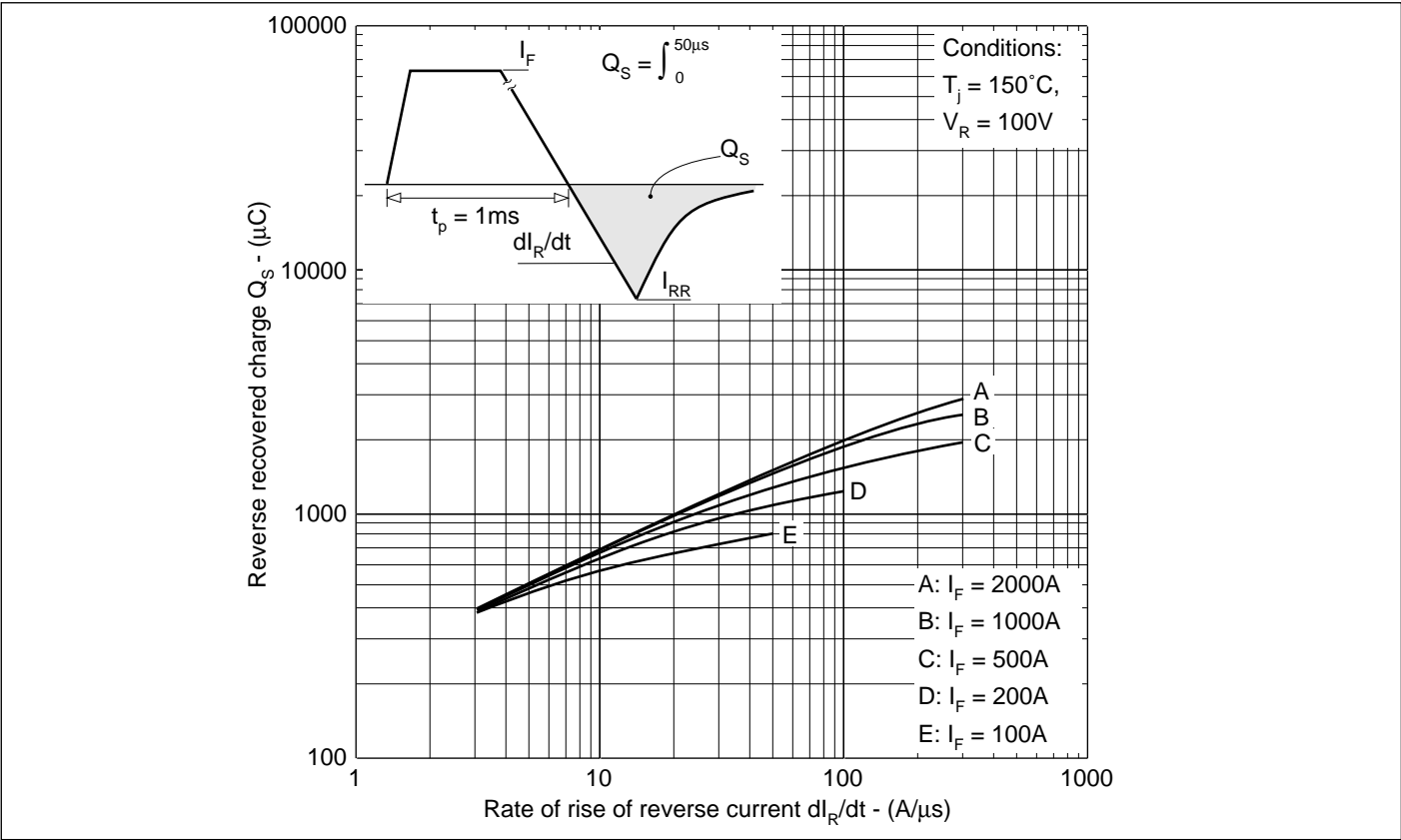


Fig.3 Recovered charge

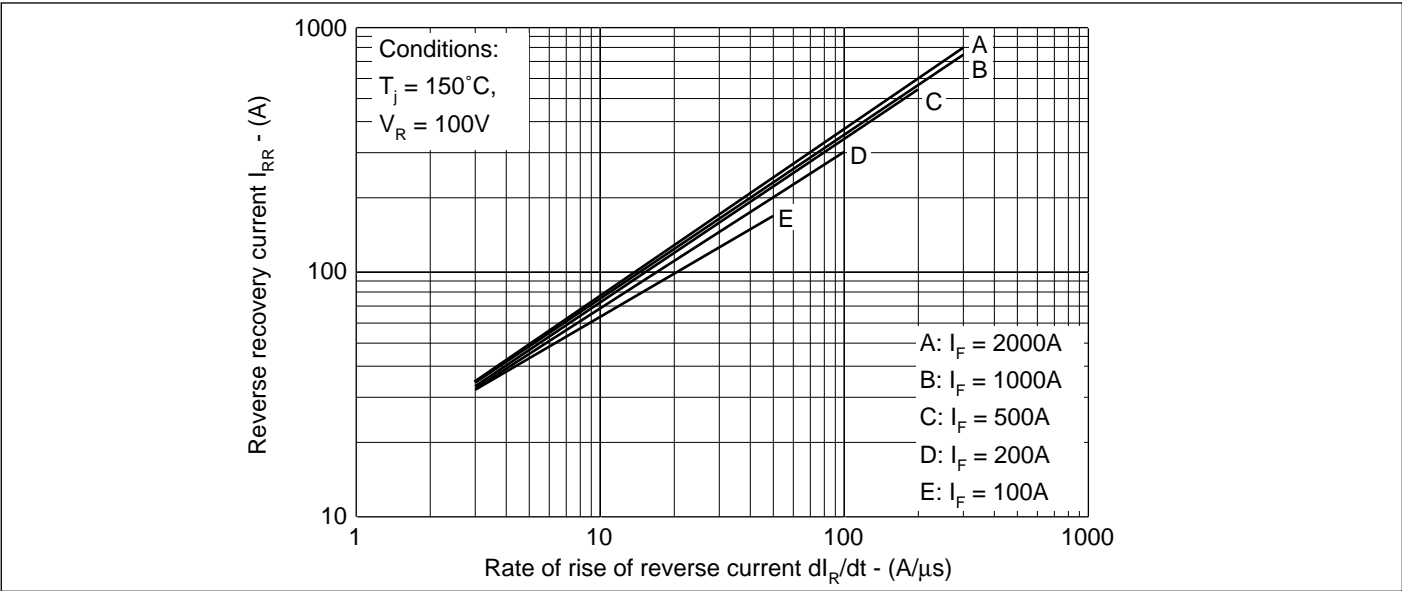


Fig.4 Typical reverse recovery current vs rate of rise of reverse current

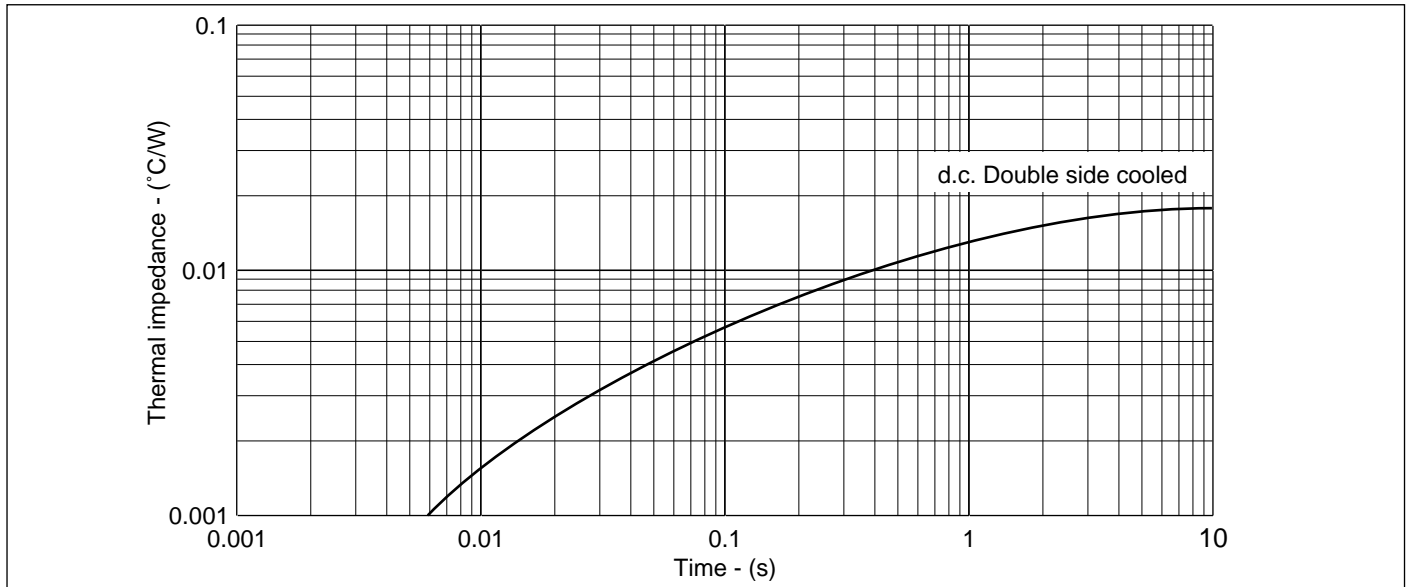
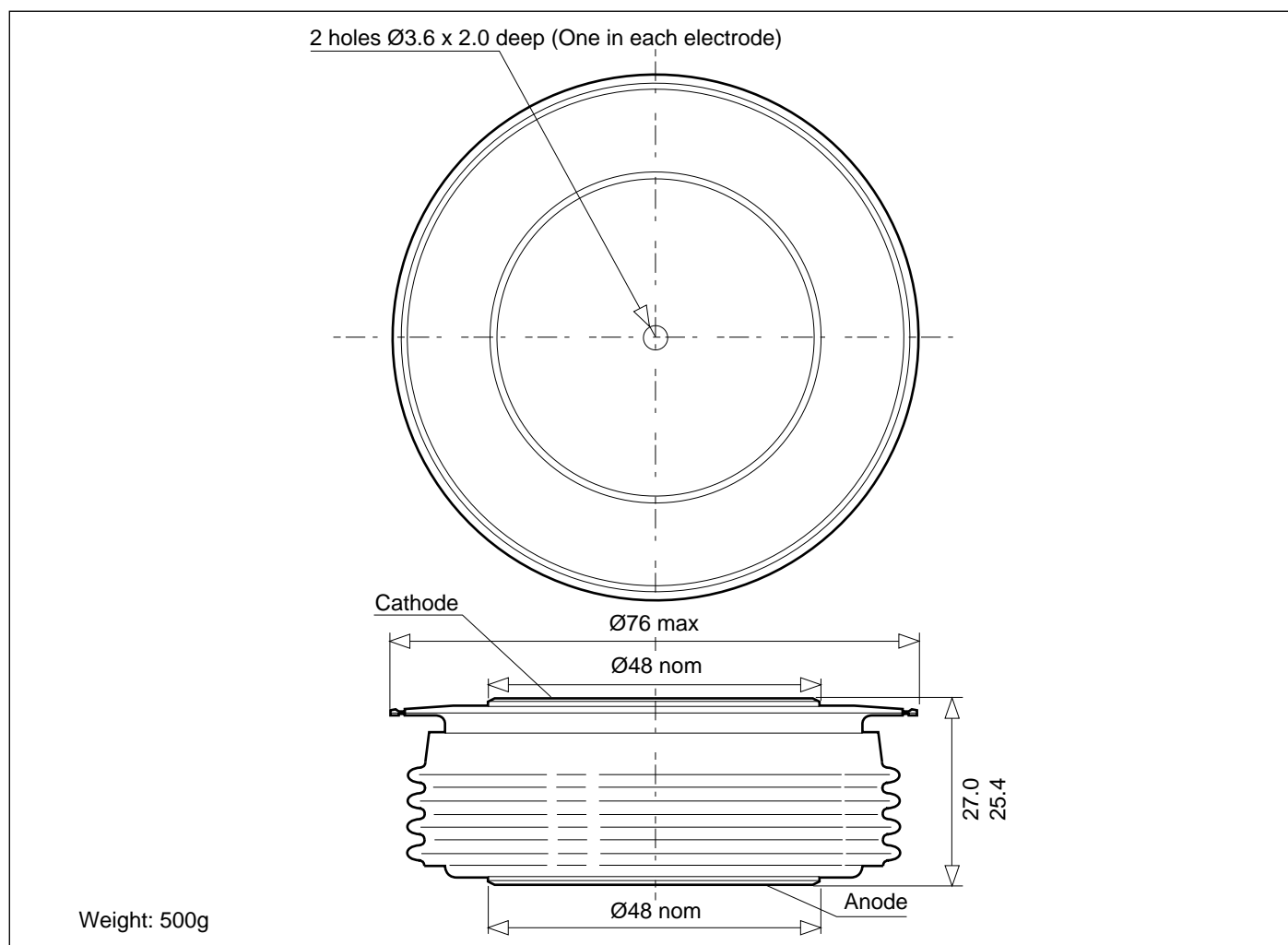


Fig.5 Maximum (limit) transient thermal impedance - junction to case - ( $^{\circ}\text{C/W}$ )

**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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