

# DFB54

## FAST RECOVERY DIODE

### APPLICATIONS

- Power Supplies.
- Freewheel Diode.
- Battery Chargers.
- D.C. Motor Control.
- Welding.
- Rectification.

### FEATURES

- Double Side Cooling.
- High Surge Capability.
- Low Recovery Charge.

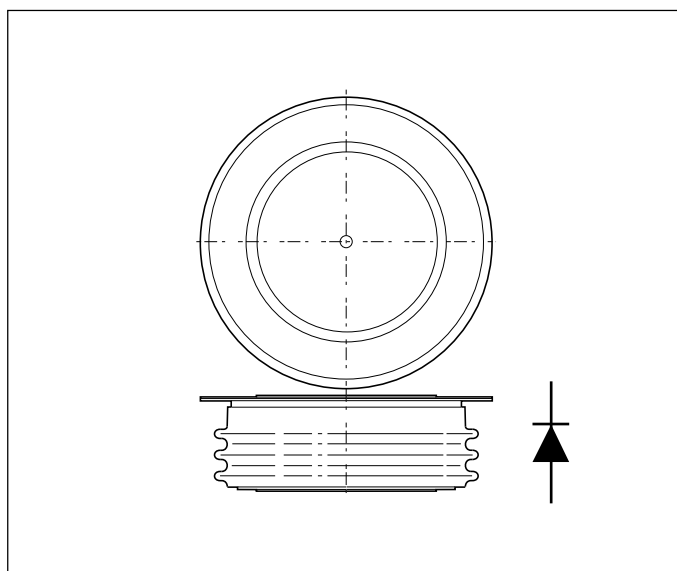
### VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage $V_{RRM}$ V	Conditions
DFB54 35	3500	$V_{RSM} = V_{RRM} + 100V$
DFB54 34	3400	
DFB54 33	3300	
DFB54 32	3200	
DFB54 31	3100	
DFB54 30	3000	

Lower voltage grades available.

### KEY PARAMETERS

$V_{RRM}$	3500V
$I_{F(AV)}$	2135A
$I_{FSM}$	20000A
$Q_r$	1500 $\mu$ C
$t_{rr}$	6.5 $\mu$ s



Outline type code: DO200AD.  
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, $T_{case} = 65^{\circ}C$	2135	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^{\circ}C$	3350	A
$I_F$	Continuous (direct) forward current	$T_{case} = 65^{\circ}C$	3060	A
<b>Single Side Cooled (Anode side)</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 65^{\circ}C$	1320	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^{\circ}C$	2080	A
$I_F$	Continuous (direct) forward current	$T_{case} = 65^{\circ}C$	1810	A

DFB54

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
$I_{FSM}$	Surge (non-repetitive) forward current	10ms half sine; with 0% $V_{RRM}$ , $T_j = 150^{\circ}C$	20.0	kA
$I^2t$	$I^2t$ for fusing		$2000 \times 10^3$	$A^2s$
$I_{FSM}$	Surge (non-repetitive) forward current	10ms half sine; with 50% $V_{RRM}$ , $T_j = 150^{\circ}C$	16	kA
$I^2t$	$I^2t$ for fusing		$1280 \times 10^3$	$A^2s$

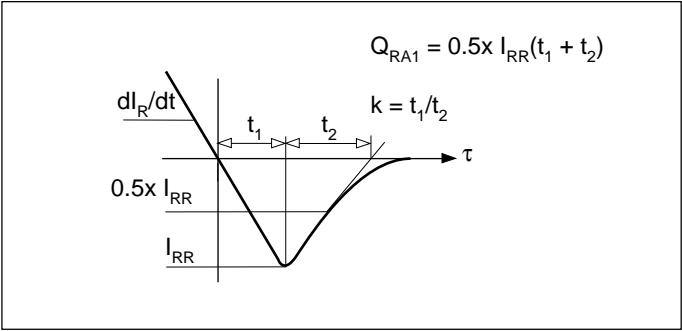
THERMAL AND MECHANICAL DATA

Symbol	Parameter	Conditions		Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance - junction to case	Double side cooled	dc	-	0.013	$^{\circ}C/W$
		Single side cooled	Anode dc	-	0.025	$^{\circ}C/W$
			Cathode dc	-	0.027	$^{\circ}C/W$
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 44kN with mounting compound	Double side	-	0.003	$^{\circ}C/W$
			Single side	-	0.006	$^{\circ}C/W$
$T_{vj}$	Virtual junction temperature	Forward (conducting)		-	150	$^{\circ}C$
$T_{stg}$	Storage temperature range			-55	150	$^{\circ}C$
-	Clamping force			39.6	48.4	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	$I_F = 1000A$ , $di_{RR}/dt = 100A/\mu s$ $T_{case} = 150^{\circ}C$ , $V_R = 100V$	-	6.5	$\mu s$
$Q_{RA1}$	Recovered charge (50% chord)		-	1500	$\mu C$
$I_{RM}$	Reverse recovery current		-	450	A
K	Soft factor		-	-	-
$V_{TO}$	Threshold voltage	At $T_{vj} = 150^{\circ}C$	-	1.15	V
$r_T$	Slope resistance	At $T_{vj} = 150^{\circ}C$	-	0.32	$m\Omega$
$V_{FRM}$	Forward recovery voltage	$di/dt = 1000A/\mu s$ , $T_j = 125^{\circ}C$	-	-	V

DEFINITION OF K FACTOR AND  $Q_{RA1}$



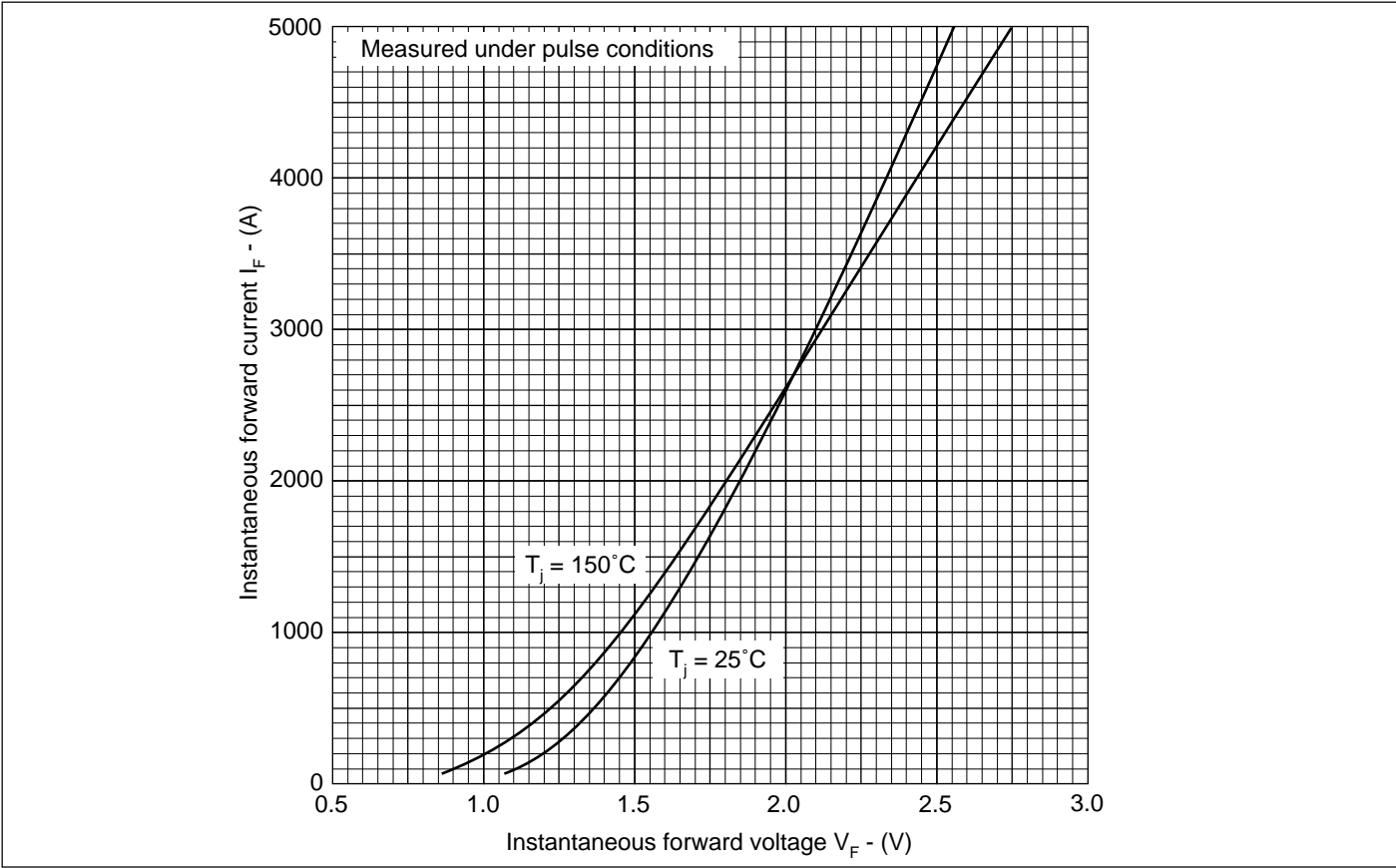


Fig.1 Maximum (limit) forward characteristics

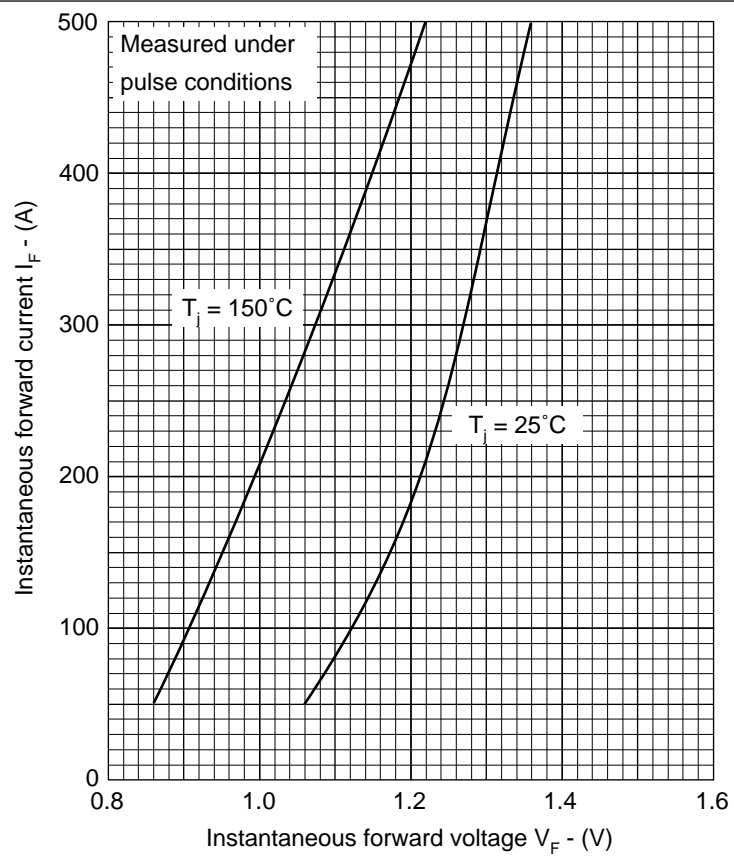


Fig.2 Maximum (limit) forward characteristics

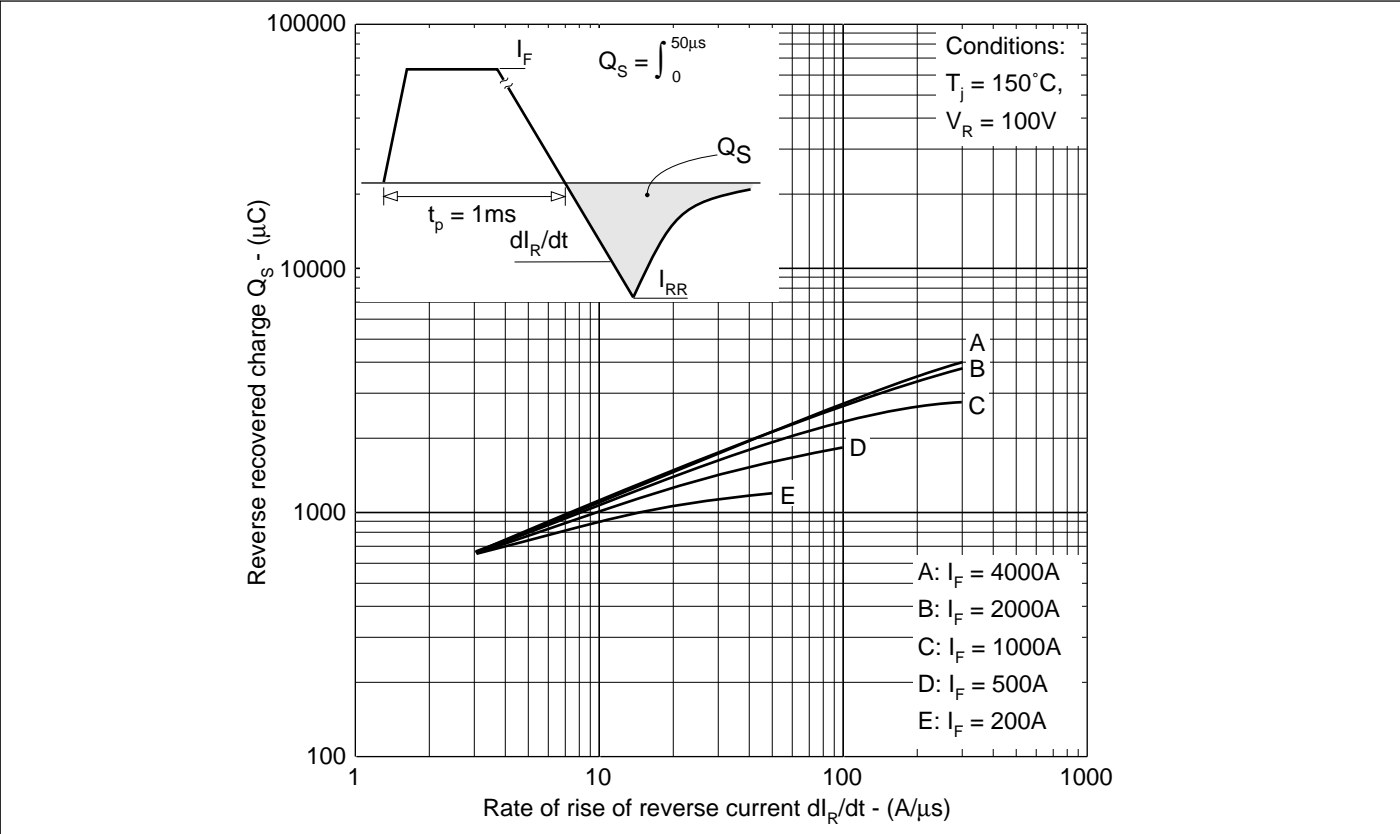


Fig.3 Recovered charge

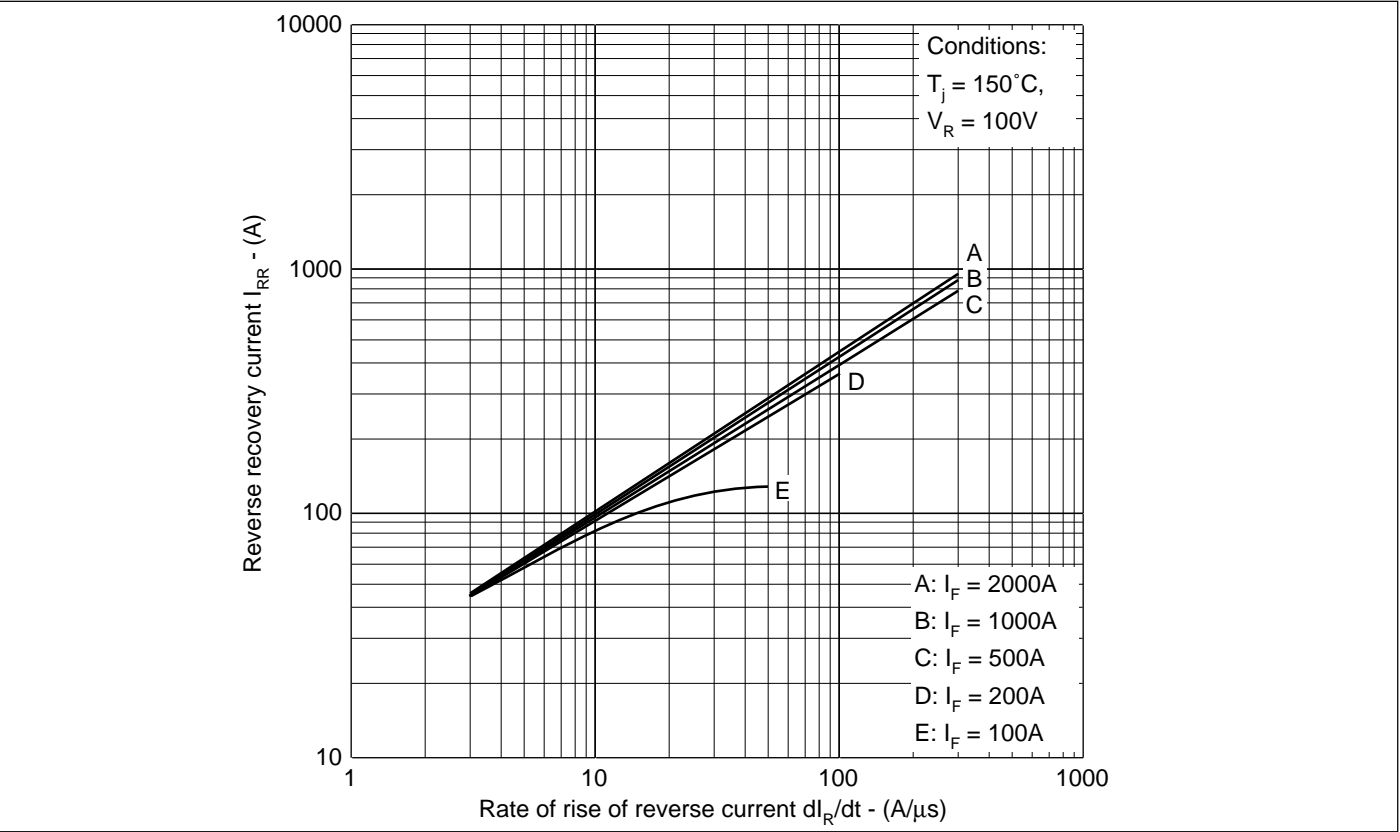


Fig.4 Typical reverse recovery current vs rate of rise of reverse current

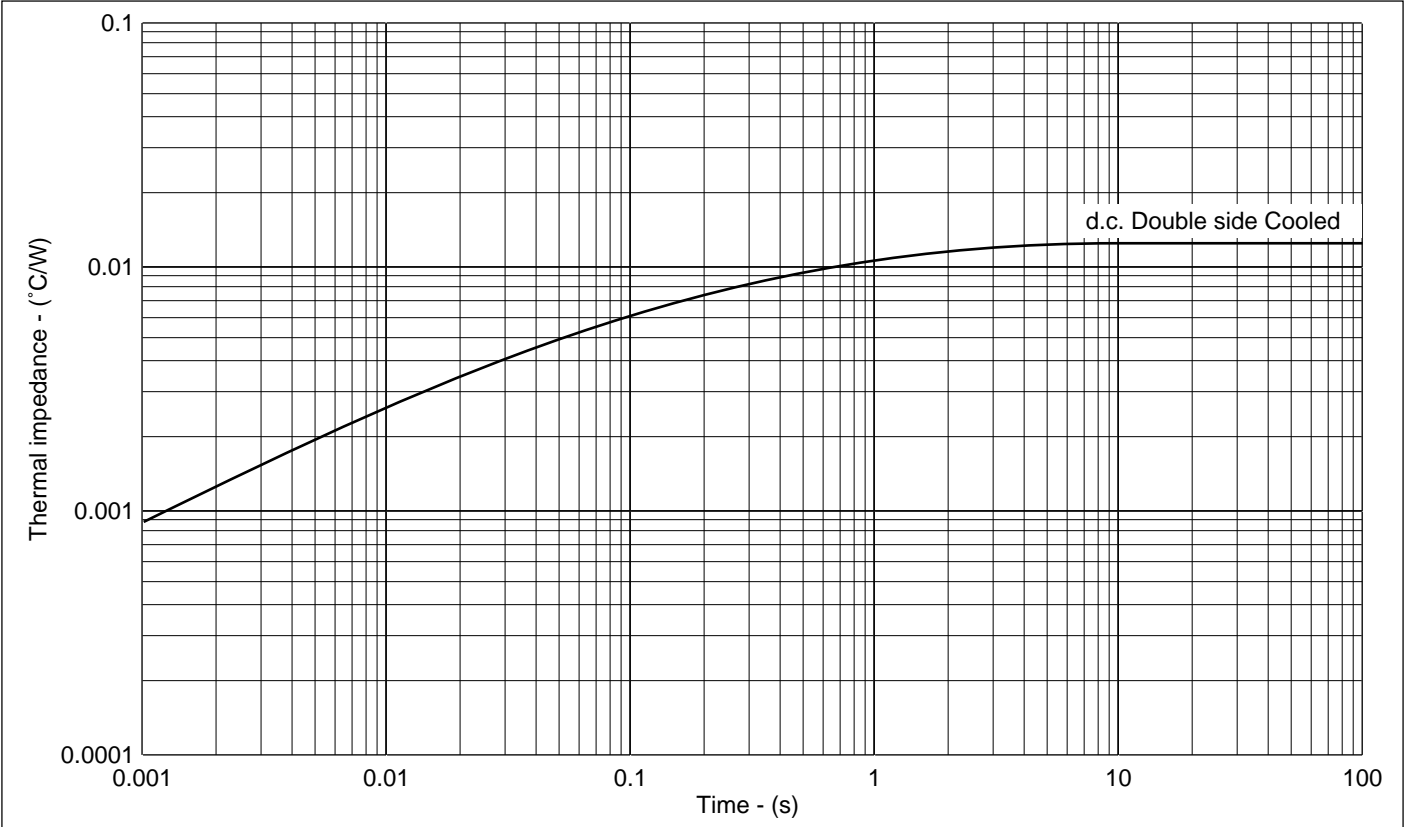
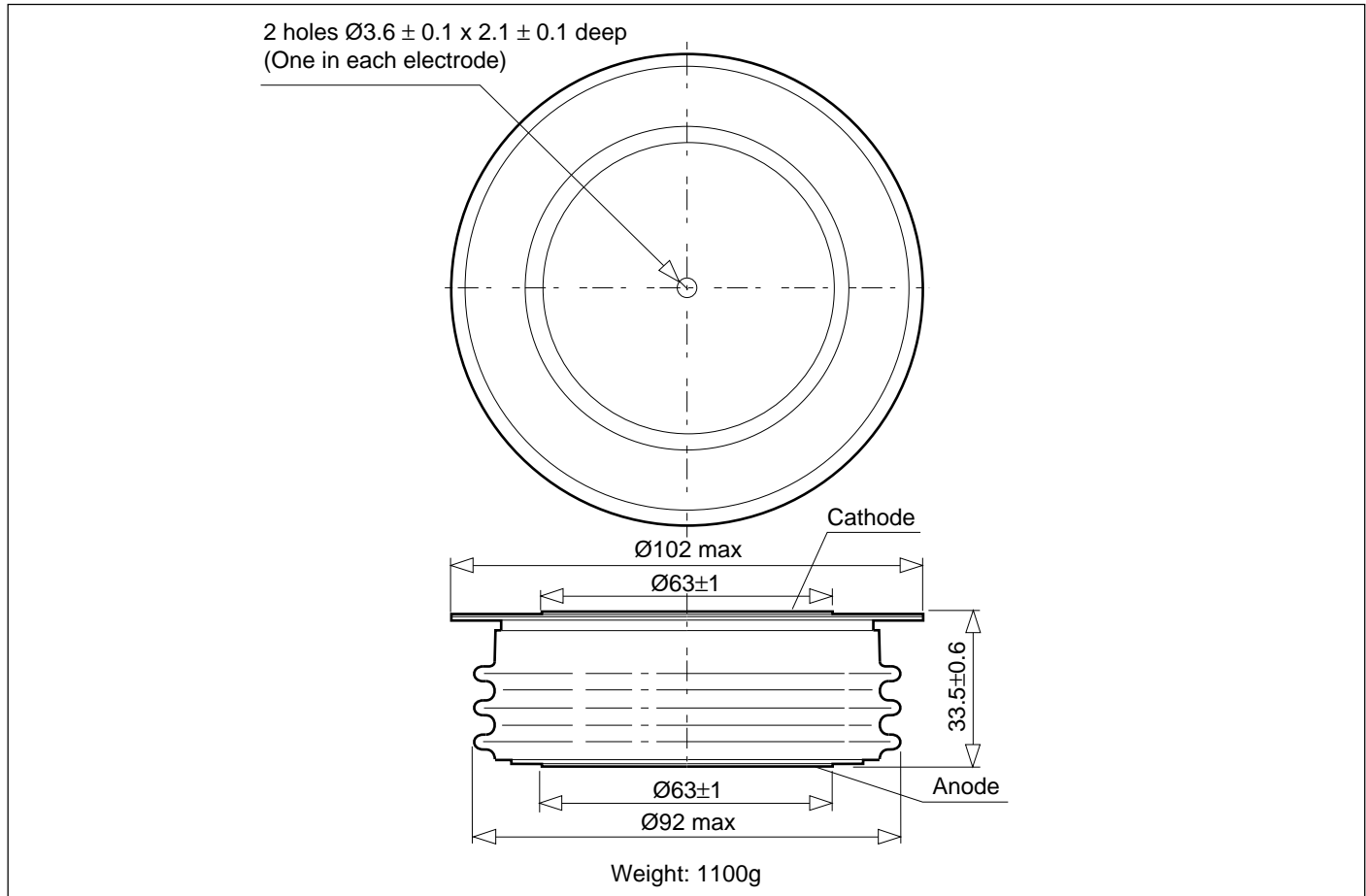


Fig.5 Maximum (limit) transient thermal impedance - junction to case - ( $^{\circ}\text{C/W}$ )

# PACKAGE DETAILS - DO200AD

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



## HEADQUARTERS OPERATIONS

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