

# DSF20060SF

## FAST RECOVERY DIODE

### APPLICATIONS

- Inverters.
- Choppers.
- Inverse Parallel Diode.
- Freewheel Diode.

### KEY PARAMETERS

$V_{RRM}$	6000V
$I_{F(AV)}$	780A
$I_{FSM}$	7800A
$Q_r$	1400 $\mu$ C
$t_{rr}$	6.5 $\mu$ s

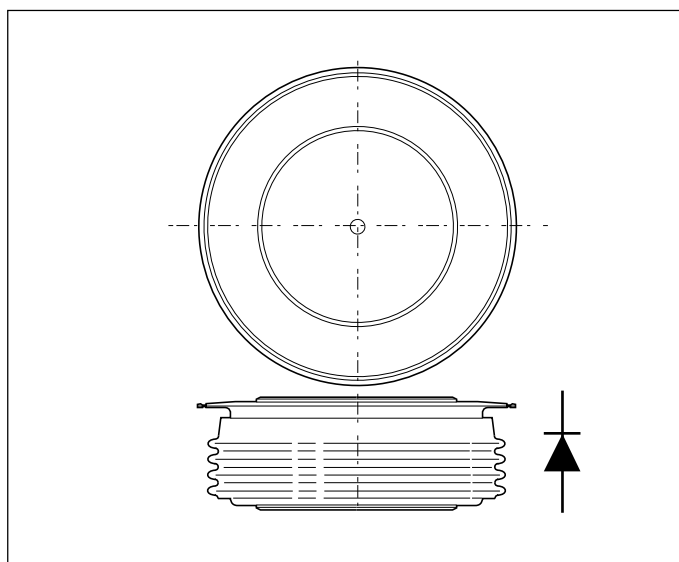
### FEATURES

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

### VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage $V_{RRM}$ V	Conditions
DSF20060SF60 DSF20060SF58 DSF20060SF56 DSF20060SF55	6000 5800 5600 5500	$V_{RSM} = V_{RRM} + 100V$

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, $T_{case} = 65^{\circ}C$	620	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^{\circ}C$	960	A
$I_F$	Continuous (direct) forward current	$T_{case} = 65^{\circ}C$	840	A
<b>Single Side Cooled (Anode side)</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 65^{\circ}C$	412	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^{\circ}C$	645	A
$I_F$	Continuous (direct) forward current	$T_{case} = 65^{\circ}C$	535	A

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SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
$I_{FSM}$	Surge (non-repetitive) forward current	10ms half sine; with 0% $V_{RRM}$ , $T_j = 125^{\circ}C$	7.8	kA
$I^2t$	$I^2t$ for fusing		$300 \times 10^3$	$A^2s$
$I_{FSM}$	Surge (non-repetitive) forward current	10ms half sine; with 50% $V_{RRM}$ , $T_j = 125^{\circ}C$	6.4	kA
$I^2t$	$I^2t$ for fusing		$205 \times 10^3$	$A^2s$

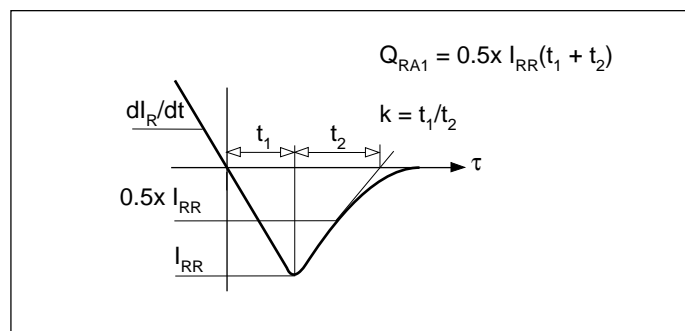
THERMAL AND MECHANICAL DATA

Symbol	Parameter	Conditions		Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance - junction to case	Double side cooled	dc	-	0.022	$^{\circ}C/W$
		Single side cooled	Anode dc	-	0.039	$^{\circ}C/W$
			Cathode dc	-	0.050	$^{\circ}C/W$
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 19.5kN with mounting compound	Double side	-	0.004	$^{\circ}C/W$
			Single side	-	0.008	$^{\circ}C/W$
$T_{vj}$	Virtual junction temperature	On-state (conducting)		-	125	$^{\circ}C$
$T_{stg}$	Storage temperature range			-55	150	$^{\circ}C$
-	Clamping force			18.0	22.0	kN

## CHARACTERISTICS

Symbol	Parameter	Conditions	Typ.	Max.	Units
$V_{FM}$	Forward voltage	At 1500A peak, $T_{case} = 25^{\circ}C$	-	3.9	V
$I_{RRM}$	Peak reverse current	At $V_{RRM}$ , $T_{case} = 125^{\circ}C$	-	75	mA
$t_{rr}$	Reverse recovery time	$I_F = 1000A$ , $di_{RR}/dt = 100A/\mu s$ $T_{case} = 125^{\circ}C$ , $V_R = 100V$	-	6.5	$\mu s$
$Q_{RA1}$	Recovered charge (50% chord)		-	1400	$\mu C$
$I_{RM}$	Reverse recovery current		-	450	A
K	Soft factor		1.8	-	-
$V_{TO}$	Threshold voltage	At $T_{vj} = 125^{\circ}C$	-	2.2	V
$r_T$	Slope resistance	At $T_{vj} = 125^{\circ}C$	-	1.24	$m\Omega$
$V_{FRM}$	Forward recovery voltage	$di/dt = 1000A/\mu s$ , $T_j = 100^{\circ}C$	-	260	V

## DEFINITION OF K FACTOR AND $Q_{RA1}$



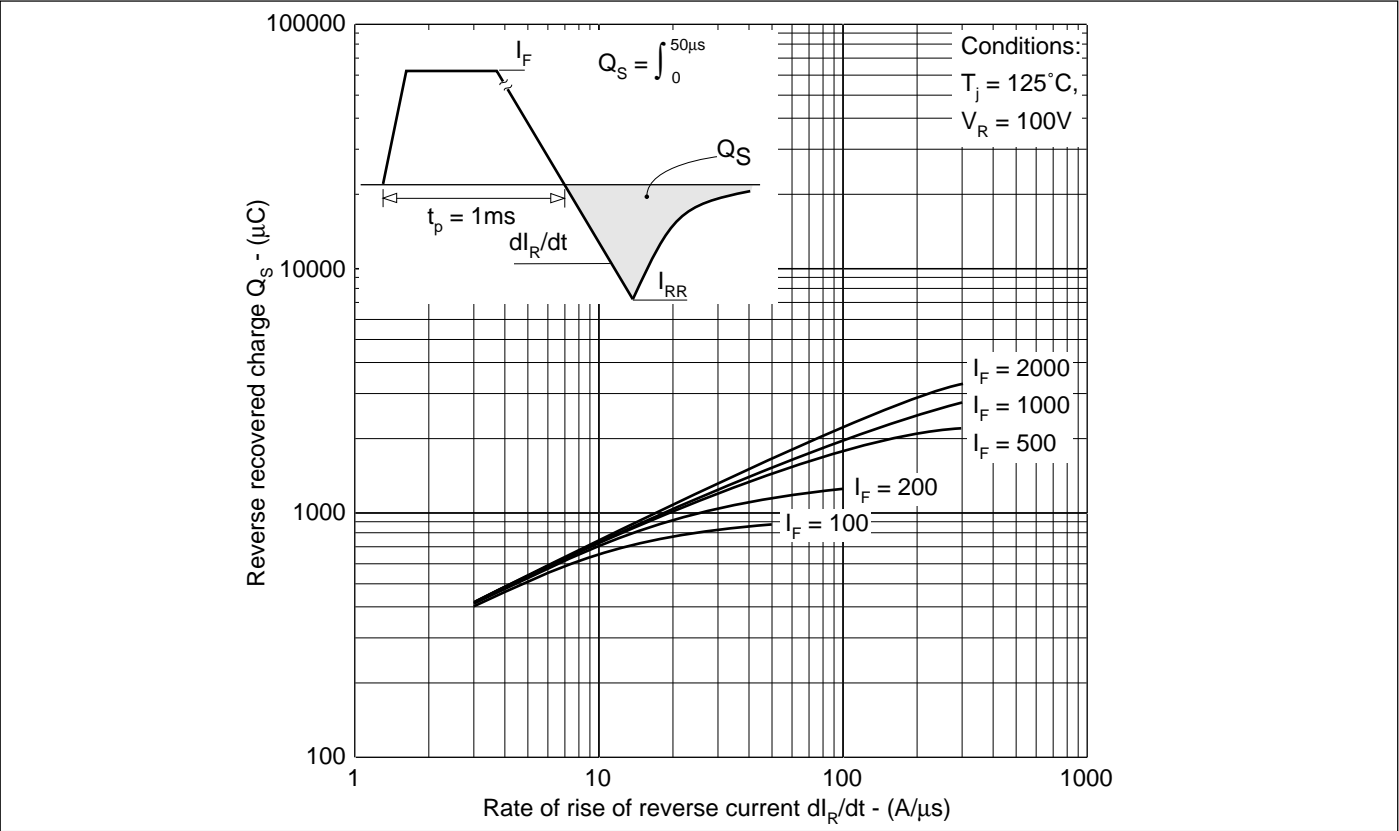


Fig.1 Recovered charge

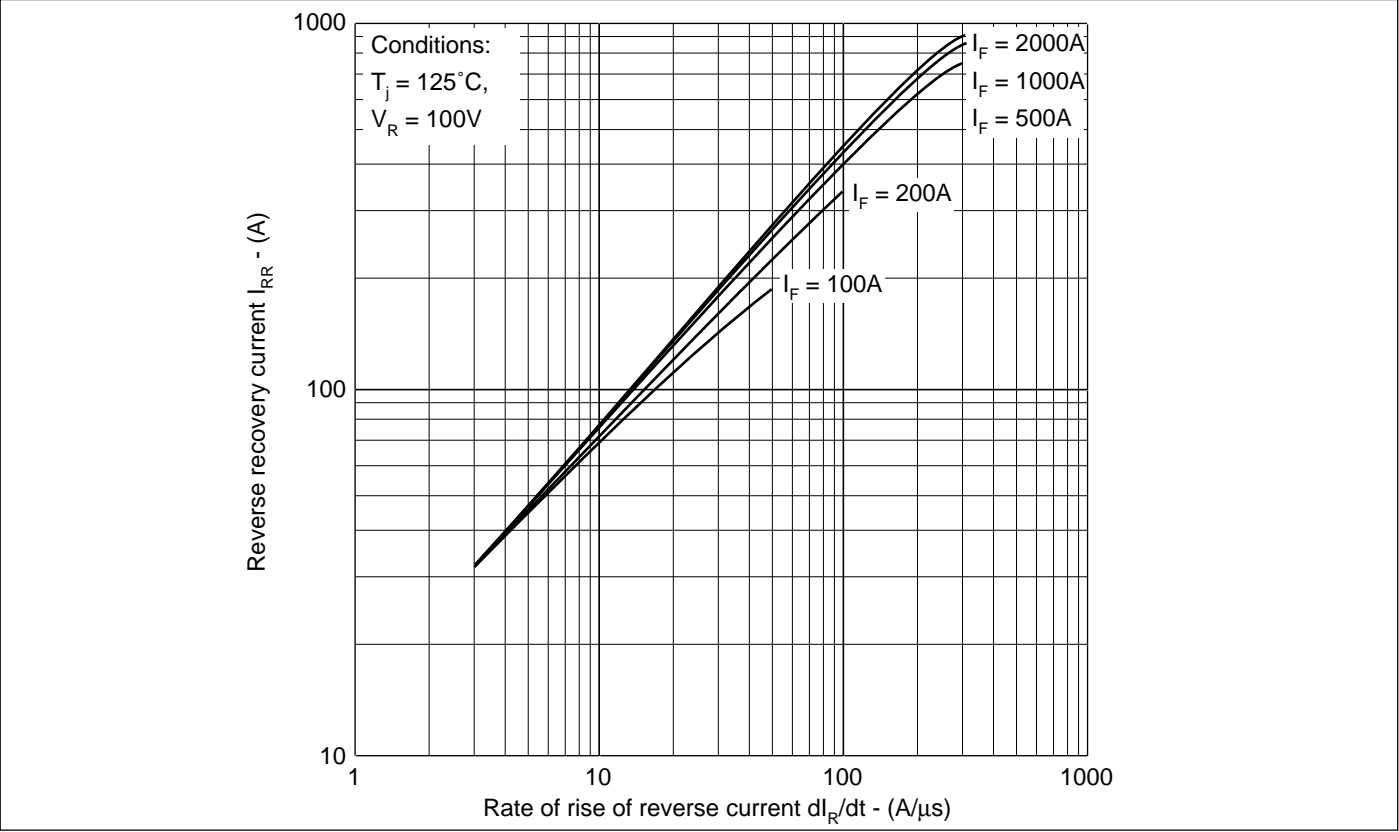


Fig.2 Typical reverse recovery current vs rate of rise of reverse current

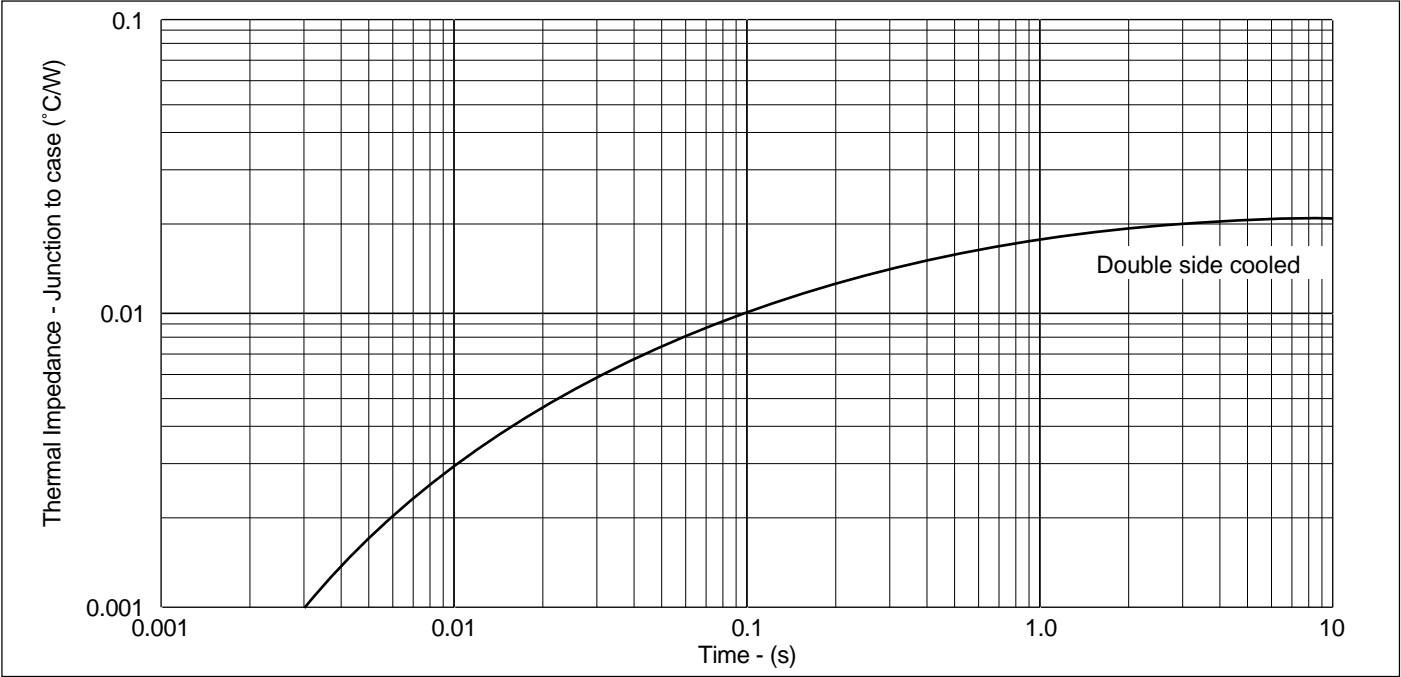
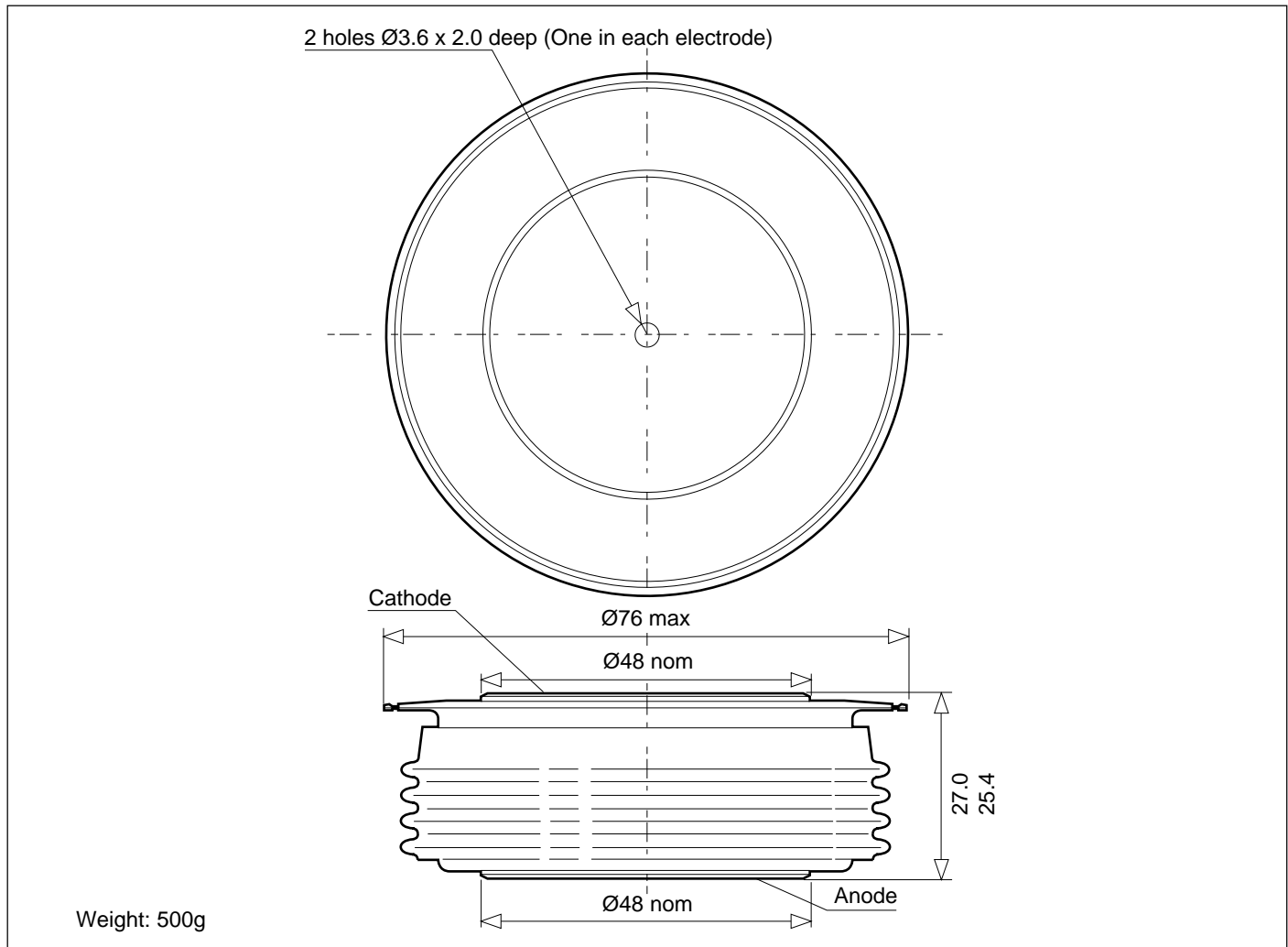


Fig.3 Maximum (limit) transient thermal impedance - junction to case - ( $^{\circ}\text{C/W}$ )

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### PACKAGE DETAILS - CB450 (alternative outline F includes gate connection, all other details are the same as 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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