

FEATURES

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

APPLICATIONS

- Antiparallel and FWD for GTO

VOLTAGE RATINGS

Part and Ordering Number	Repetitive Peak Voltages 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.

ORDERING INFORMATION

When ordering, select the required part number shown in the Voltage Ratings selection table.

For example:

DF051 22 for a 2200V device

Note: Please use the complete part number when ordering and quote this number in any future correspondence relating to your order

KEY PARAMETERS

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

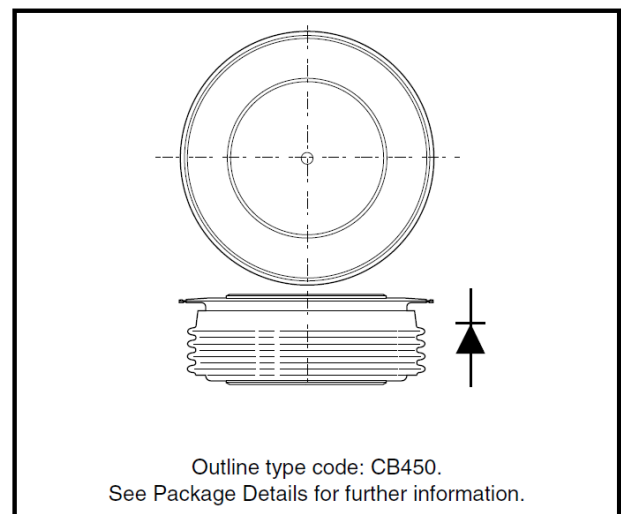


Fig. 1 Package outline

CURRENT RATINGS

Symbol	Parameter	Test 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) on-state 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) on-state current	$T_{case} = 65^{\circ}C$ --	1390	A

SURGE RATINGS

Symbol	Parameter	Test Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 150^{\circ}C$ $V_R = 50\% V_{RRM}$	11.2	kA
I^2t	I^2t for fusing		627	kA^2s
I_{FSM}	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 150^{\circ}C$ $V_R = 0$	14.0	kA
I^2t	I^2t for fusing		980	kA^2s

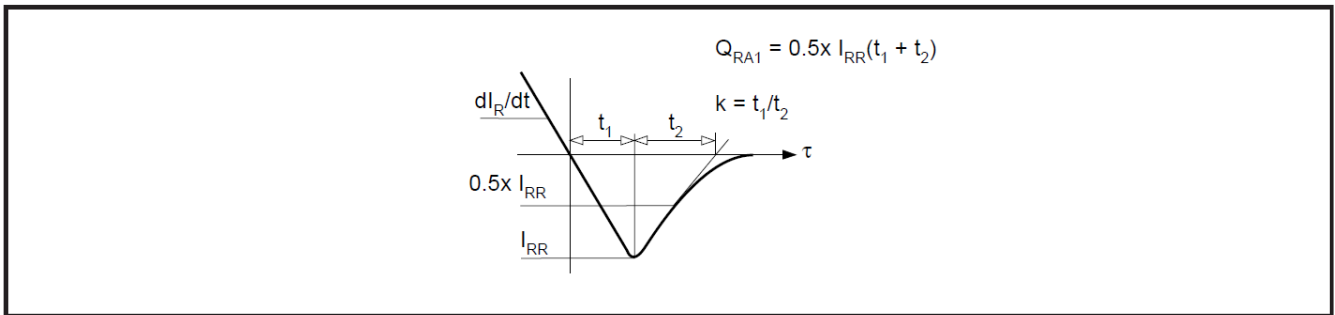
THERMAL AND MECHANICAL RATINGS

Symbol	Parameter	Test Conditions	Min.	Max.	Units	
$R_{th(j-c)}$	Thermal resistance – junction to case	Double side cooled	DC	-	0.018	$^{\circ}C/W$
		Single side cooled	Anode DC	-	0.034	$^{\circ}C/W$
			Cathode DC	-	0.038	$^{\circ}C/W$
$R_{th(c-h)}$	Thermal resistance – case to heatsink	Clamping force 8kN	Double side	-	0.003	$^{\circ}C/W$
		(with mounting compound)	Single side	-	0.006	$^{\circ}C/W$
T_{vj}	Virtual junction temperature	On-state (conducting)	-	150	$^{\circ}C$	
		Reverse (blocking)	-	150	$^{\circ}C$	
T_{stg}	Storage temperature range		-55	150	$^{\circ}C$	
F_m	Clamping force		21.0	25.0	kN	

CHARACTERISTICS

Symbol	Parameter	Test Conditions	Typ.	Max.	Units
V_{FM}	Forward voltage	At 1500A peak, $T_{case} = 25^{\circ}C$	-	1.85	V
I_{RM}	Peak reverse current	At V_{DRM} , $T_{case} = 150^{\circ}C$	-	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_S	Total stored charge		-	800	μC
I_{rr}	Peak reverse recovery current			250	A
K	Softness 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}



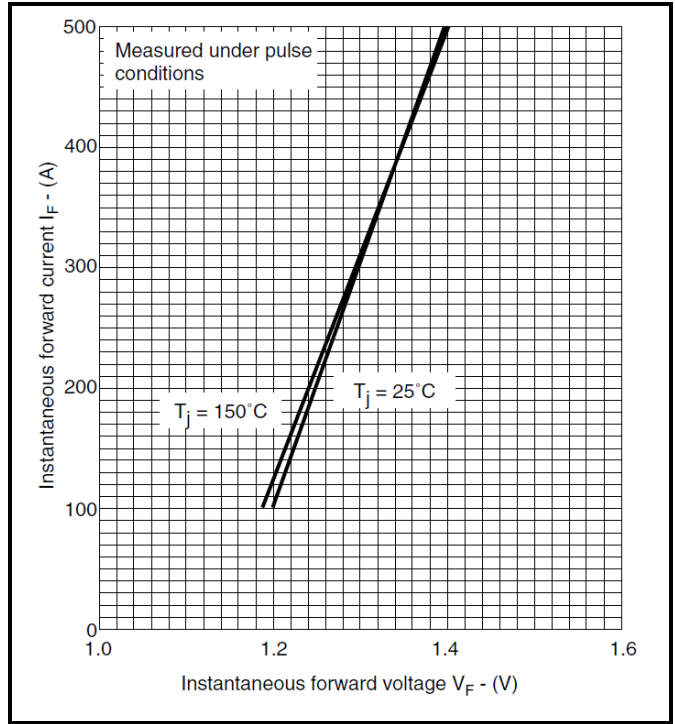
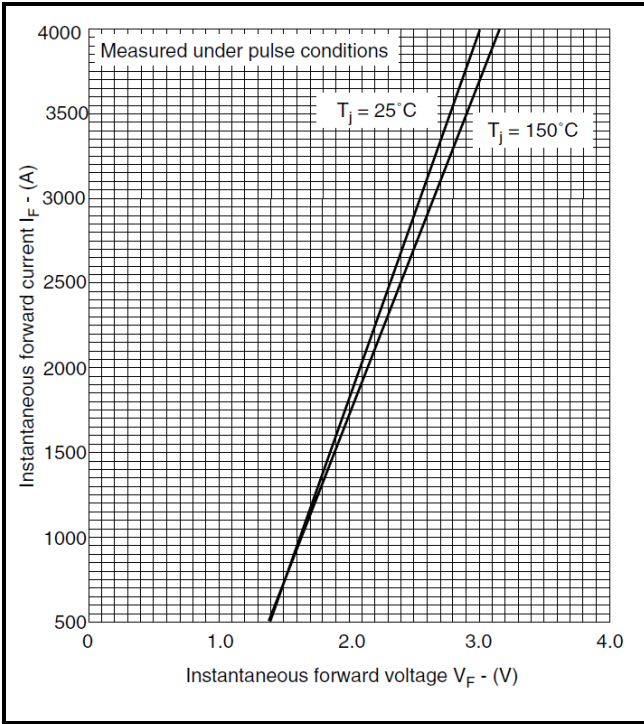


Fig.2 Maximum (limit) on-state characteristics

Fig.3 Maximum (limit) on-state characteristics

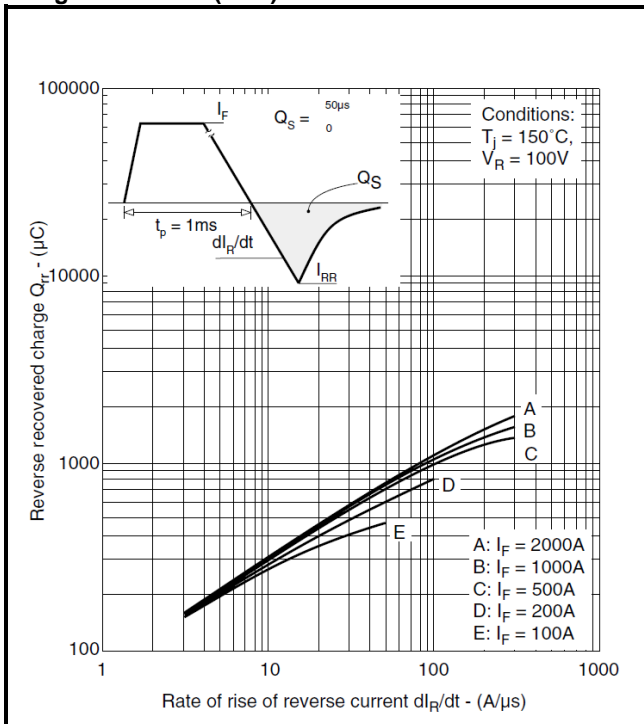


Fig.4 Recovered charge

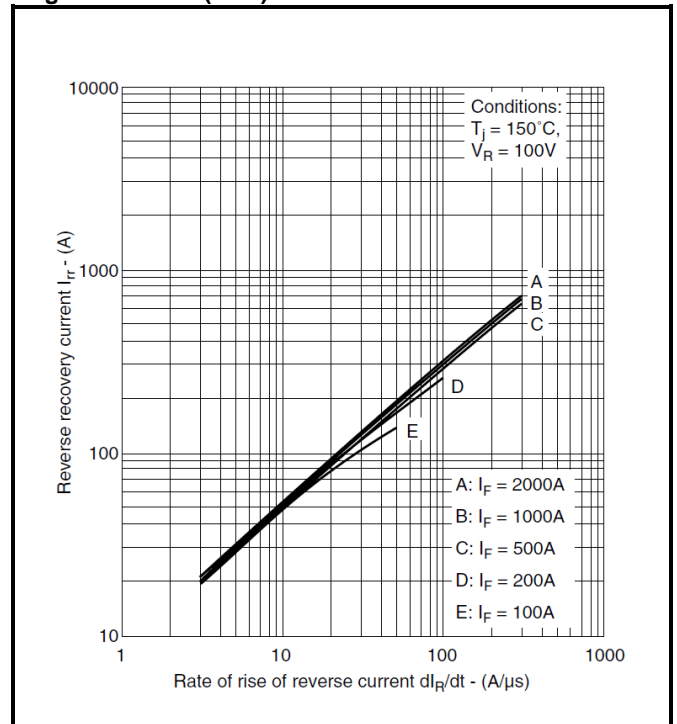


Fig.5 Typical reverse recovery current

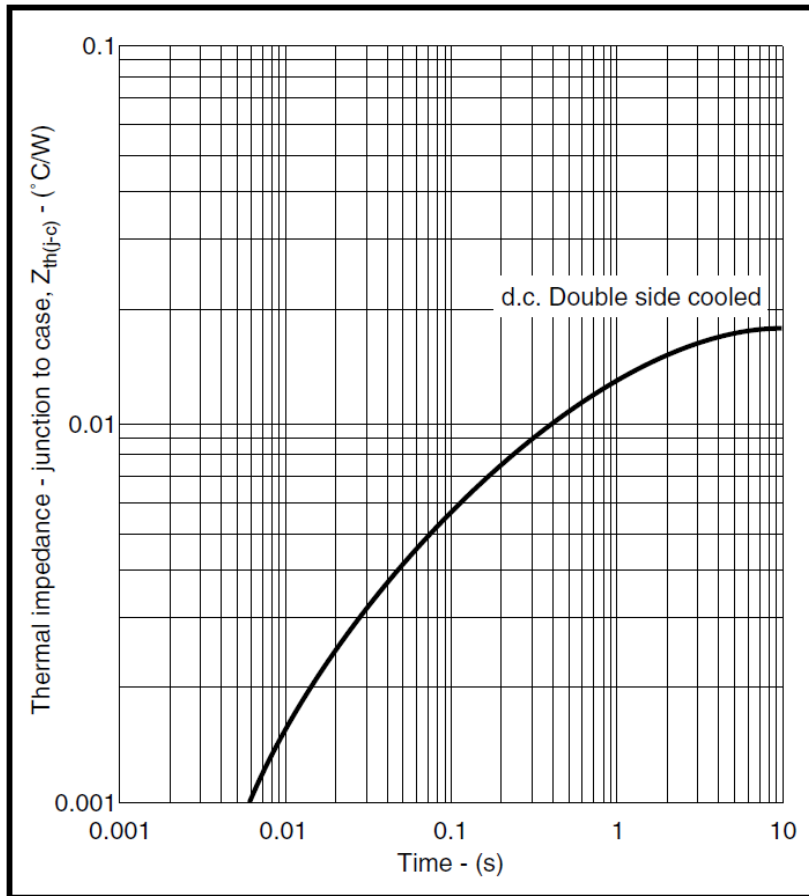
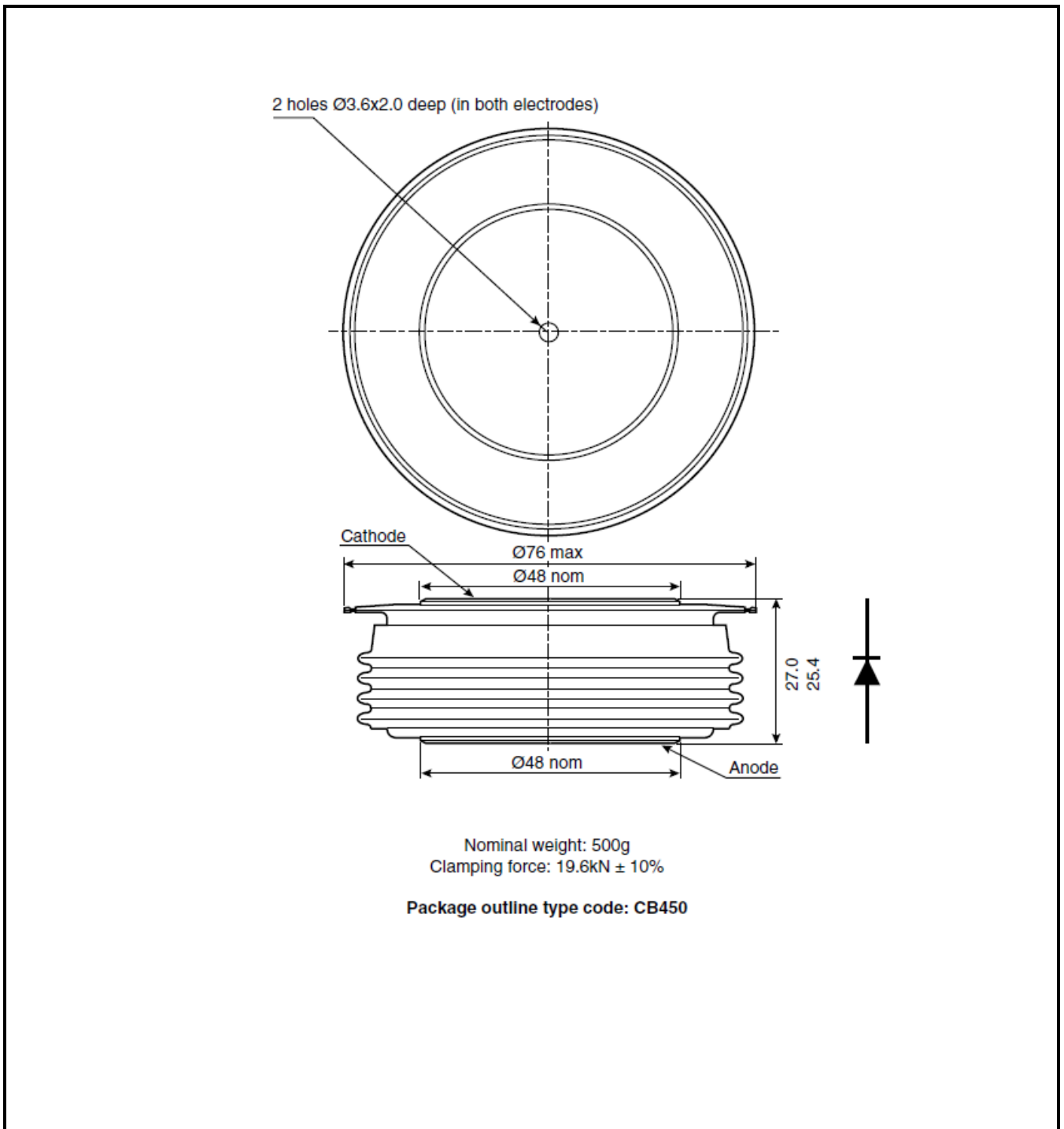


Fig.6 Maximum (limit) transient thermal impedance- junction to case

PACKAGE DETAILS

For further package information, please contact Customer Services. All dimensions in mm, unless stated otherwise. DO NOT SCALE.



Note: Some packages may be supplied with gate and or tags.

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