

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 DF051 24 DF051 22 DF051 20	2500 2400 2200 2000	$V_{RSM} = V_{RRM} + 100V$

Lower voltage grades available.

ORDERING INFORMATION

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

DF051 22

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

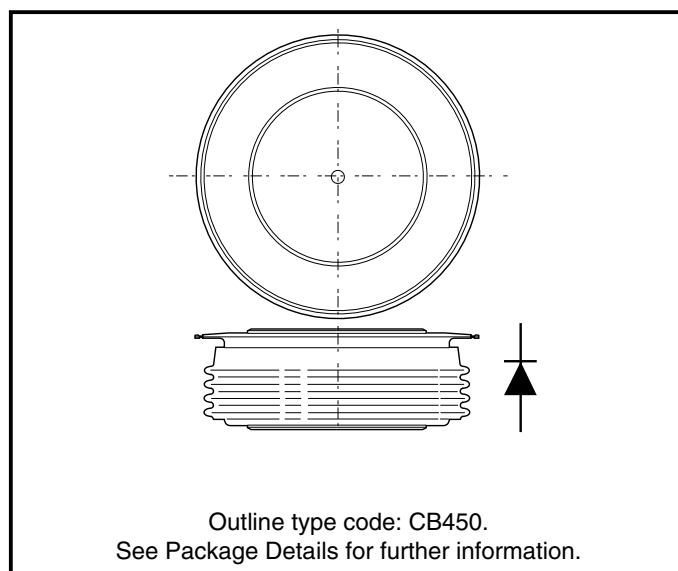


Fig. 1 Package outline

CURRENT RATINGS

Symbol	Parameter	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} , $T_J = 150^{\circ}C$	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} , $T_J = 150^{\circ}C$	11.2	kA
I^2t	I^2t for fusing		627×10^3	A^2s

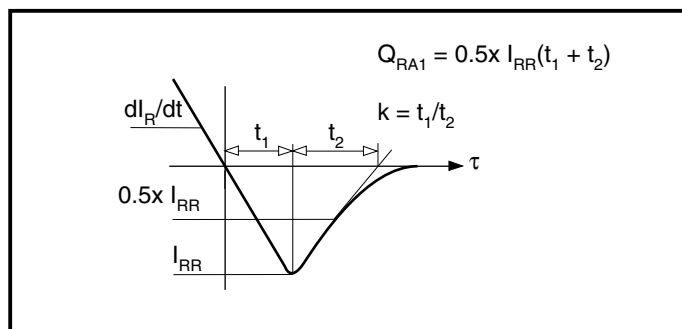
THERMAL AND MECHANICAL DATA

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

CURVES

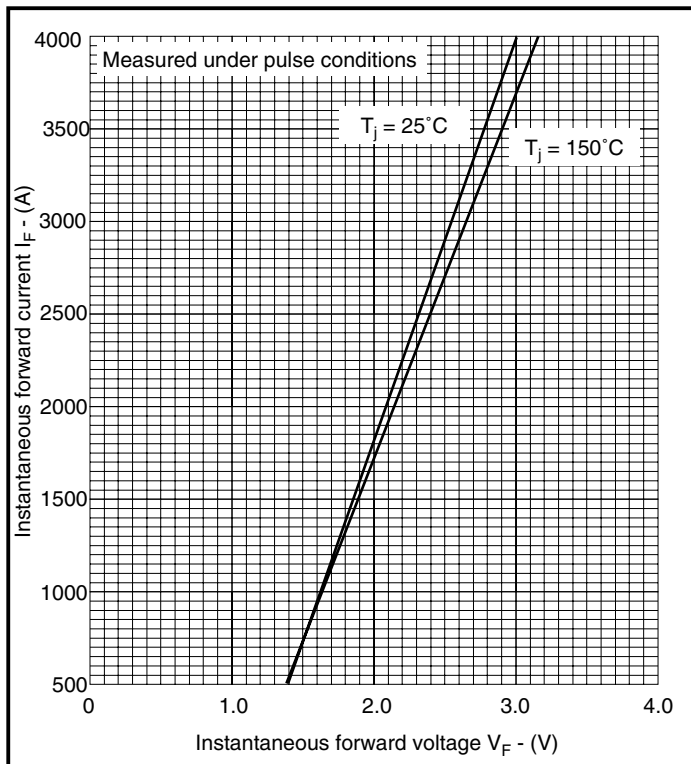


Fig.2 Maximum (limit) forward characteristics

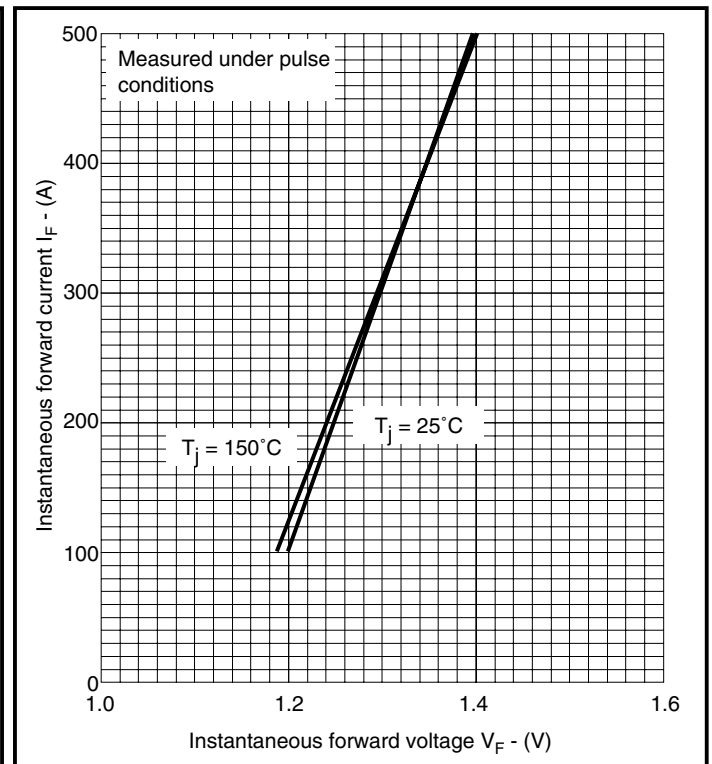


Fig.3 Maximum (limit) forward characteristics

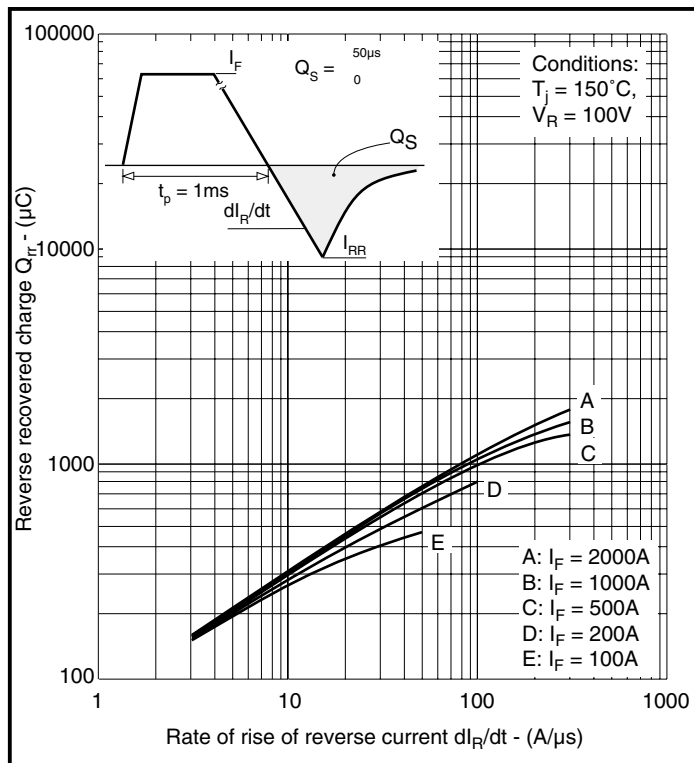


Fig.4 Recovered charge

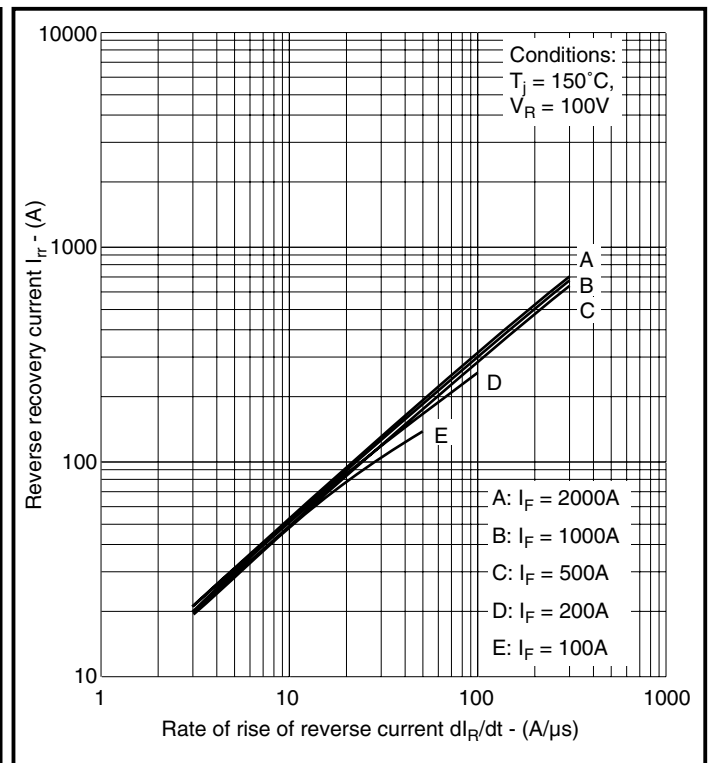


Fig.5 Typical reverse recovery current vs rate of rise of forward current

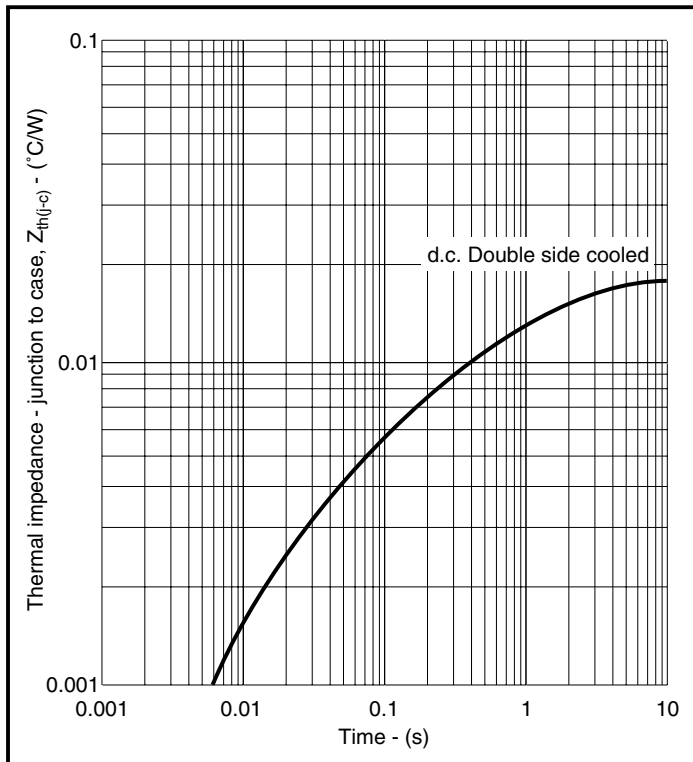
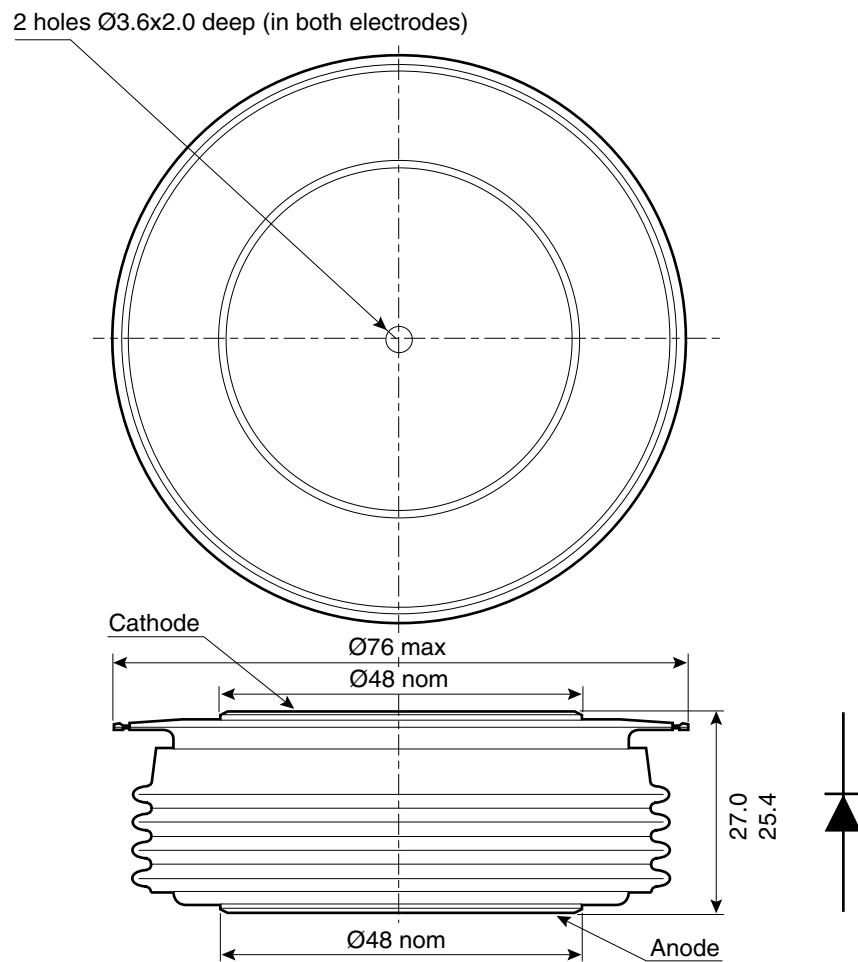


Fig.6 Maximum (limit) transient thermal impedance - junction to case - (°C/W)

PACKAGE DETAILS

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



Nominal weight: 500g
Clamping force: $19.6\text{kN} \pm 10\%$

Package outline type code: CB450



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