

**FEATURES**

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

**APPLICATIONS**

- Induction Heating
- High Frequency Rectification
- Antiparallel and FWD for GTO

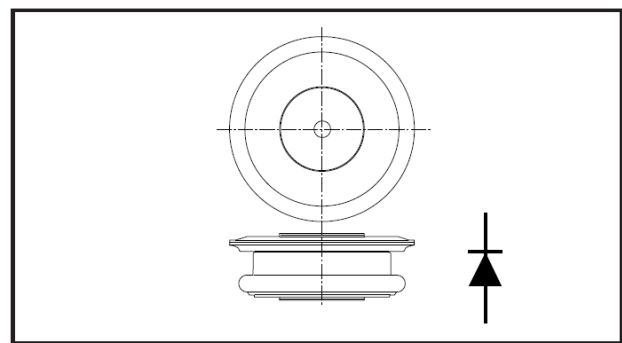
**VOLTAGE RATINGS**

Part and Ordering Number	Repetitive Peak Voltages $V_{RRM}$ V	Conditions
DF451 16	1600	$V_{RSM} = V_{RRM} + 100V$
DF451 14	1400	
DF451 12	1200	
DF451 10	1000	
DF451 08	800	
DF451 06	600	

Lower voltage grades available.

**KEY PARAMETERS**

$V_{RRM}$	<b>1600V</b>
$I_{F(AV)}$	<b>295A</b>
$I_{FSM}$	<b>3500A</b>
$Q_r$	<b>25<math>\mu</math>C</b>
$t_{rr}$	<b>1.22<math>\mu</math>s</b>



Outline type code: M771.  
See Package Details for further information.

**Fig. 1 Package outline**

**ORDERING INFORMATION**

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

For example:

**DF451 12** for a 1200V device

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

**CURRENT RATINGS**

Symbol	Parameter	Test Conditions	Max.	Units
<b>Double Side Cooled</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load $T_{case} = 65^{\circ}C$	295	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^{\circ}C$ -	543	A
$I_F$	Continuous (direct) on-state current	$T_{case} = 65^{\circ}C$ -	391	A
<b>Single Side Cooled (Anode side)</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load $T_{case} = 65^{\circ}C$ -	220	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^{\circ}C$ --	348	A
$I_F$	Continuous (direct) on-state current	$T_{case} = 65^{\circ}C$ --	285	A

**SURGE RATINGS**

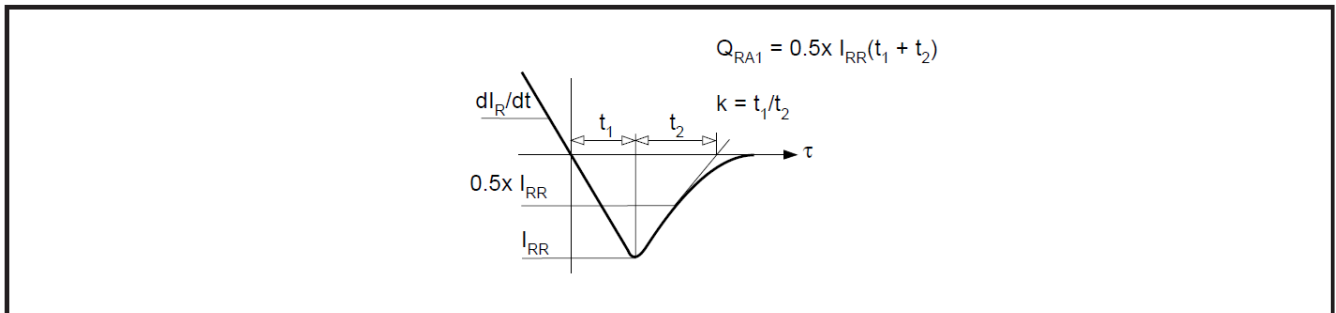
Symbol	Parameter	Test Conditions	Max.	Units
$I_{FSM}$	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 150^{\circ}C$ $V_R = 50\% V_{RRM}$	2.8	kA
$I^2t$	$I^2t$ for fusing		61.25	$kA^2s$
$I_{FSM}$	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 150^{\circ}C$ $V_R = 0$	3.5	kA
$I^2t$	$I^2t$ for fusing		39.2	$kA^2s$

**THERMAL AND MECHANICAL RATINGS**

Symbol	Parameter	Test Conditions	Min.	Max.	Units	
$R_{th(j-c)}$	Thermal resistance – junction to case	Double side cooled	DC	-	0.07	$^{\circ}C/W$
		Single side cooled	Anode DC	-	0.133	$^{\circ}C/W$
			Cathode DC	-	0.147	$^{\circ}C/W$
$R_{th(c-h)}$	Thermal resistance – case to heatsink	Clamping force 5kN	Double side	-	0.02	$^{\circ}C/W$
		(with mounting compound)	Single side	-	0.04	$^{\circ}C/W$
$T_{vj}$	Virtual junction temperature	On-state (conducting)	-	150	$^{\circ}C$	
		Reverse (blocking)	-	150	$^{\circ}C$	
$T_{stg}$	Storage temperature range		-55	175	$^{\circ}C$	
$F_m$	Clamping force		4.5	5.5	kN	

**CHARACTERISTICS**

Symbol	Parameter	Test Conditions	Typ.	Max.	Units
$V_{FM}$	Forward voltage	At 600A peak, $T_{case} = 25^{\circ}C$	-	2.65	V
$I_{RM}$	Peak reverse current	At $V_{DRM}$ , $T_{case} = 125^{\circ}C$	-	100	mA
$t_{rr}$	Reverse recovery time	$I_F = 500A$ , $dI_{RR}/dt = 80A/\mu s$ $T_{case} = 125^{\circ}C$ , $V_R = 100V$	1.22		
$Q_S$	Total stored charge		-	25	$\mu C$
$I_{rr}$	Peak reverse recovery current		-	40	A
K	Softness Factor		1.7	-	-
$V_{TO}$	Threshold voltage	At $T_{vj} = 125^{\circ}C$	-	1.6	V
$r_T$	Slope resistance	At $T_{vj} = 125^{\circ}C$	-	1.5	$m\Omega$
$V_{FRM}$	Forward recovery voltage	$Di/dt = 1000A/\mu s$ , $T_j = 125^{\circ}C$		40	V

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


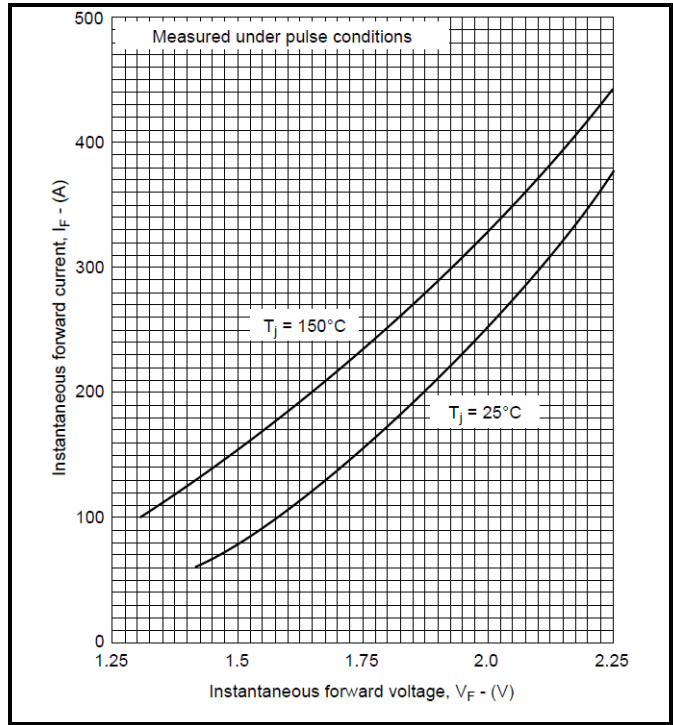
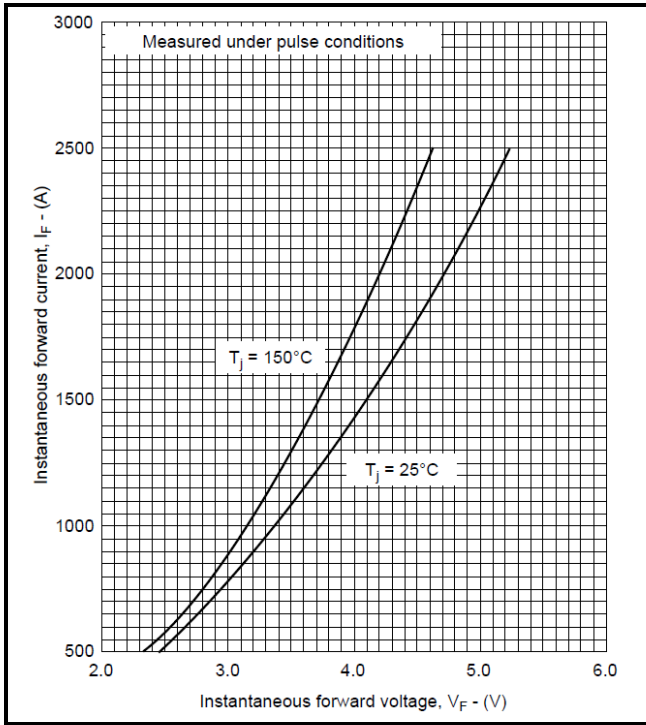


Fig.2 Maximum (limit) on-state characteristics

Fig.3 Maximum (limit) on-state characteristics

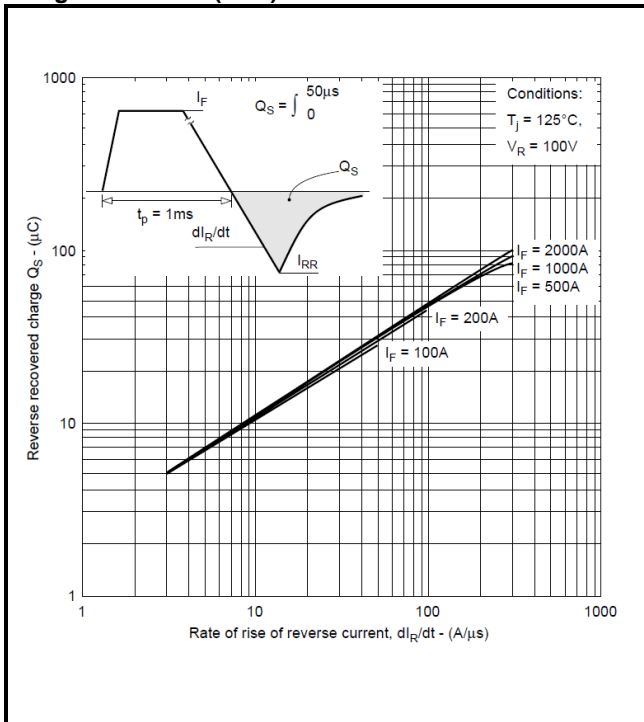


Fig.4 Recovered charge

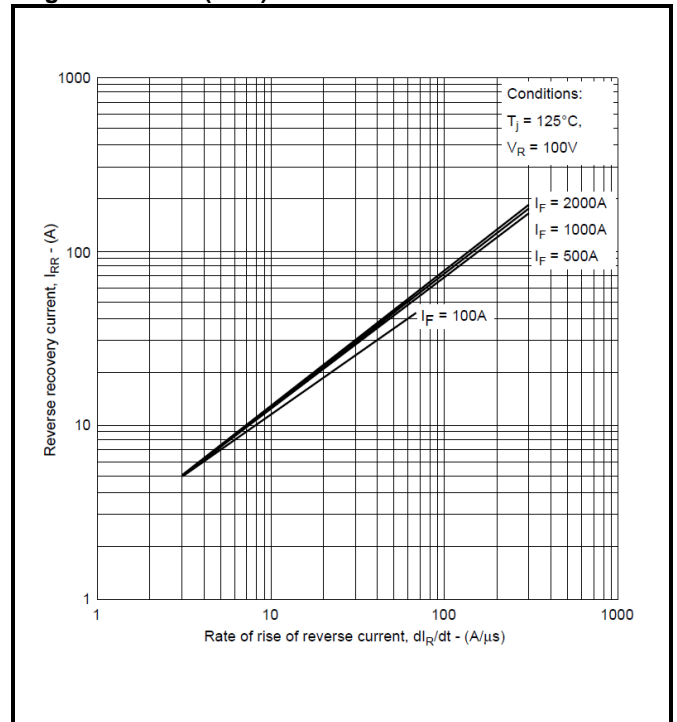
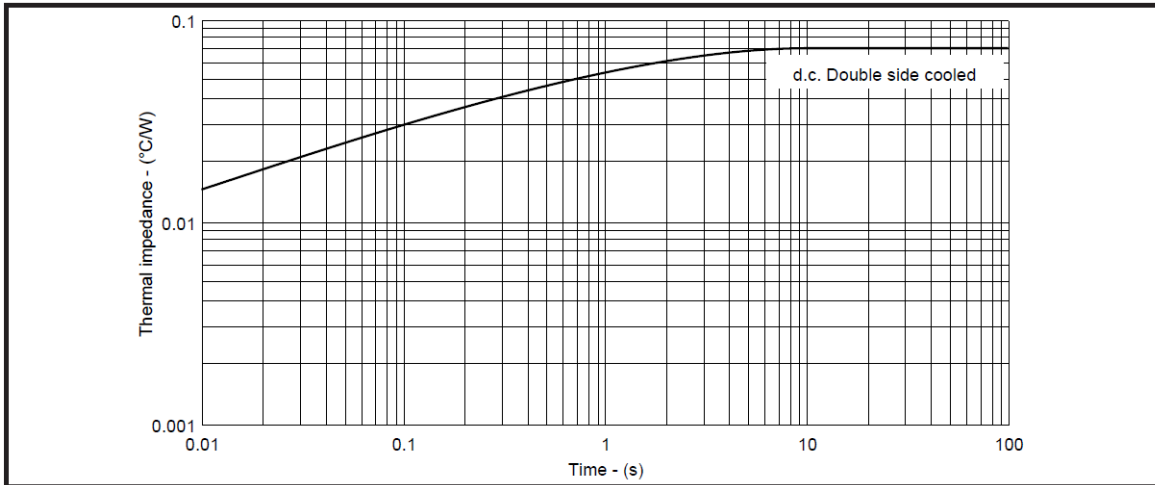


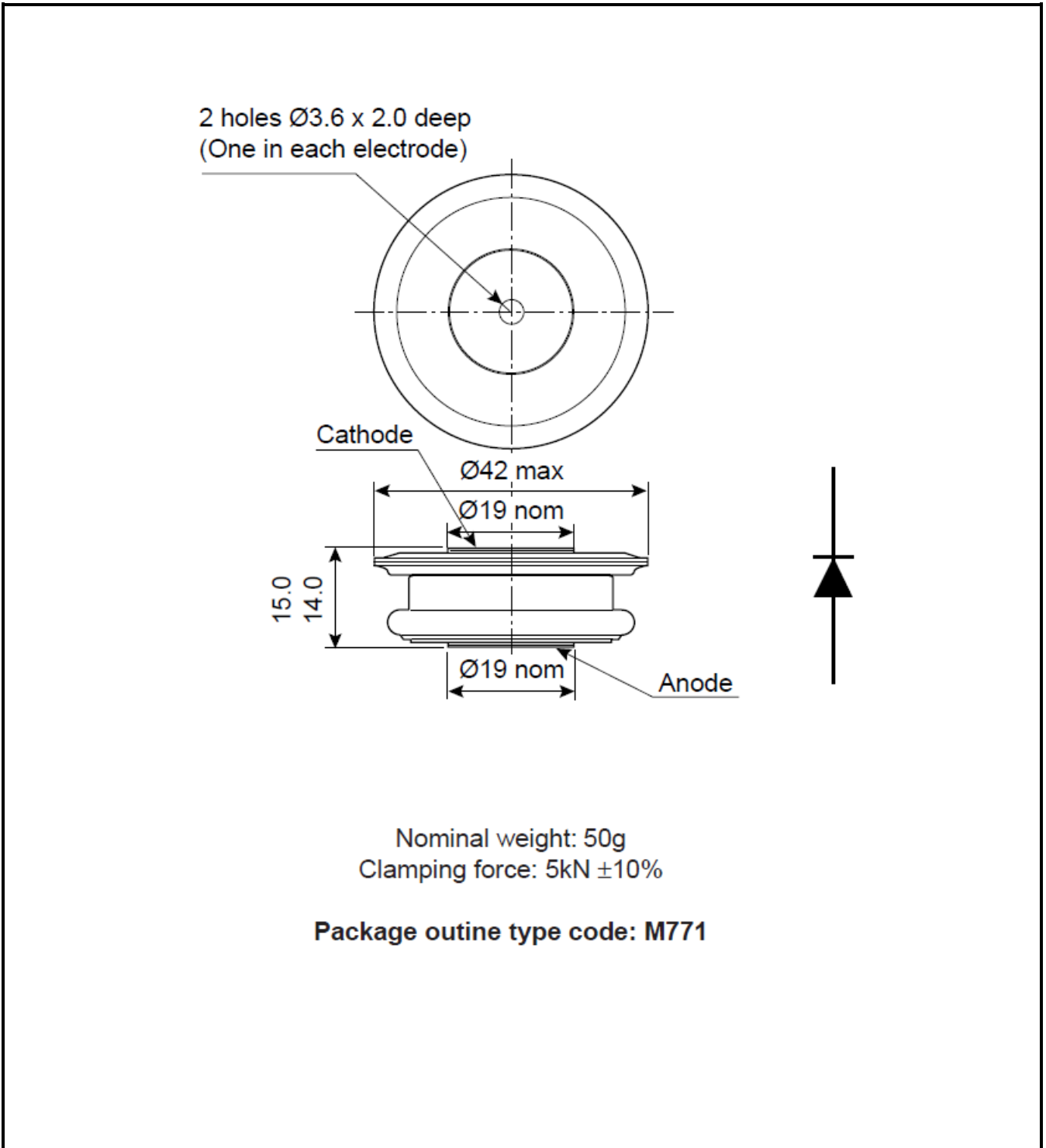
Fig.5 Typical reverse recovery current



**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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