

**FEATURES**

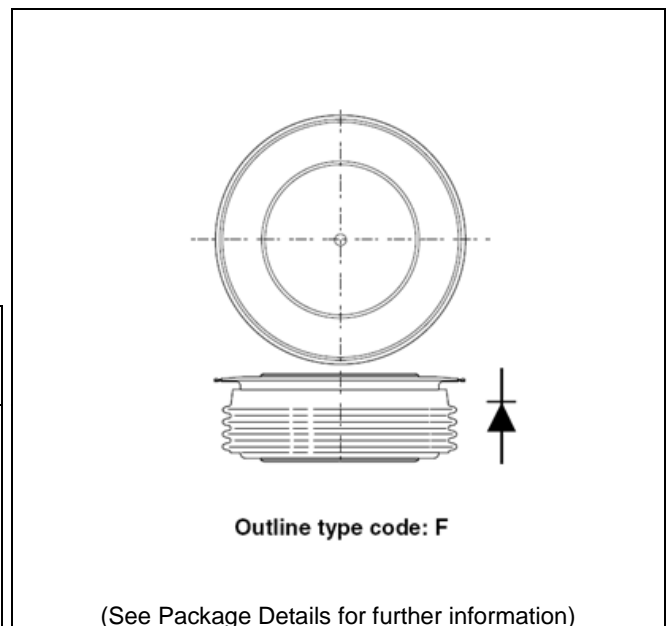
- Double Side Cooling
- High Surge Capability

**KEY PARAMETERS**

$V_{RRM}$	<b>4800V</b>
$I_{F(AV)}$	<b>1105A</b>
$I_{FSM}$	<b>20500A</b>

**VOLTAGE RATINGS**

Part and Ordering Number	Repetitive Peak Voltages $V_{RRM}$ V	Conditions
DRD1100F48	4800	$V_{RSM} = V_{RRM} + 100V$
DRD1100F46	4600	
DRD1100F44	4400	
DRD1100F40	4000	



**Fig. 1 Package outline**

**ORDERING INFORMATION**

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

For example:

**DRD1100F46** for a 4600V device

**CURRENT RATINGS**

T<sub>case</sub> = 75°C unless stated otherwise

Symbol	Parameter	Test Conditions	Max.	Units
<b>Double Side Cooled</b>				
I <sub>F(AV)</sub>	Mean forward current	Half wave resistive load	1428	A
I <sub>F(RMS)</sub>	RMS value	-	2242	A
I <sub>F</sub>	Continuous (direct) on-state current	-	2082	A
<b>Single Side Cooled (Anode side)</b>				
I <sub>F(AV)</sub>	Mean forward current	Half wave resistive load	1033	A
I <sub>F(RMS)</sub>	RMS value	-	1622	A
I <sub>F</sub>	Continuous (direct) on-state current	-	1424	A

T<sub>case</sub> = 100°C unless stated otherwise

Symbol	Parameter	Test Conditions	Max.	Units
<b>Double Side Cooled</b>				
I <sub>F(AV)</sub>	Mean forward current	Half wave resistive load	1105	A
I <sub>F(RMS)</sub>	RMS value	-	1735	A
I <sub>F</sub>	Continuous (direct) on-state current	-	1580	A
<b>Single Side Cooled (Anode side)</b>				
I <sub>F(AV)</sub>	Mean forward current	Half wave resistive load	730	A
I <sub>F(RMS)</sub>	RMS value	-	1145	A
I <sub>F</sub>	Continuous (direct) on-state current	-	960	A

**SURGE RATINGS**

Symbol	Parameter	Test Conditions	Max.	Units
$I_{FSM}$	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 150^{\circ}C$ $V_R = 50\% V_{RRM} - \frac{1}{4}$ sine	16.5	kA
$I^2t$	$I^2t$ for fusing		1.35	MA <sup>2</sup> s
$I_{FSM}$	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 150^{\circ}C$ $V_R = 0$	20.5	kA
$I^2t$	$I^2t$ for fusing		2.125	MA <sup>2</sup> s

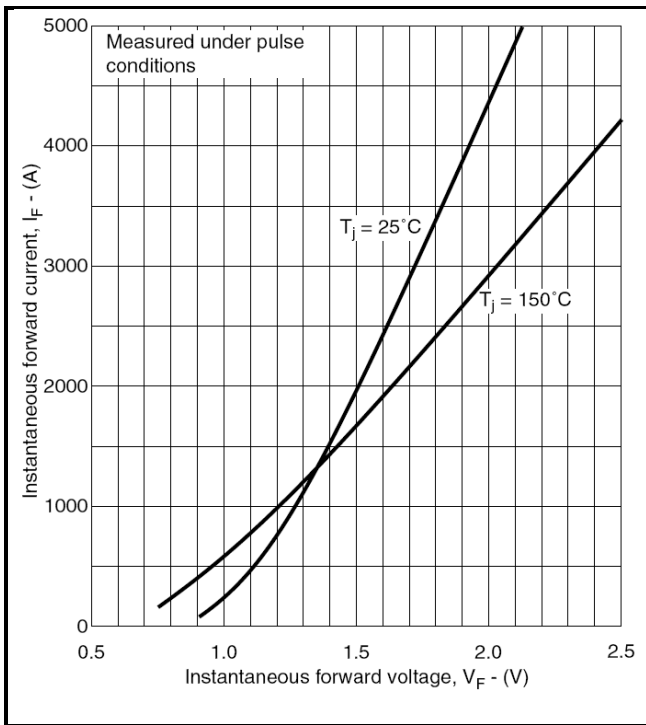
**THERMAL AND MECHANICAL RATINGS**

Symbol	Parameter	Test Conditions	Min.	Max.	Units	
$R_{th(j-c)}$	Thermal resistance – junction to case	Double side cooled	DC	-	0.022	$^{\circ}C/W$
		Single side cooled	Anode DC	-	0.038	$^{\circ}C/W$
			Cathode DC	-	0.052	$^{\circ}C/W$
$R_{th(c-h)}$	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)		-	160	$^{\circ}C$
		Reverse (blocking)		-	150	$^{\circ}C$
$T_{stg}$	Storage temperature range			-55	175	$^{\circ}C$
$F_m$	Clamping force			18	22	kN

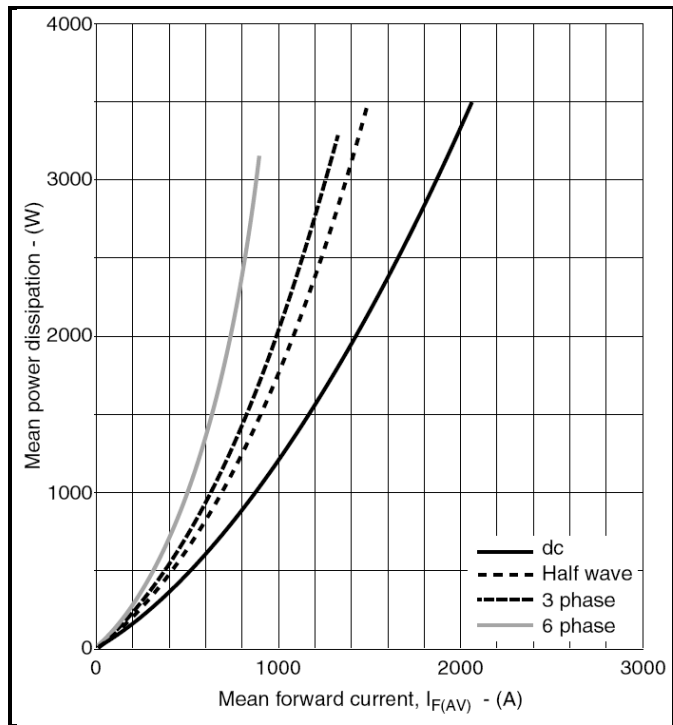
**CHARACTERISTICS**

Symbol	Parameter	Test Conditions	Min.	Max.	Units
V <sub>FM</sub>	Forward voltage	At 3400A peak, T <sub>case</sub> = 25°C	-	1.8	V
I <sub>RM</sub>	Peak reverse current	At V <sub>RRM</sub> , T <sub>case</sub> = 150°C	-	75	mA
Q <sub>S</sub>	Total stored charge	I <sub>F</sub> = 2000A, dI <sub>RR</sub> /dt = 3A/μs	-	4000	μC
I <sub>rr</sub>	Peak reverse recovery current	T <sub>case</sub> = 150°C, V <sub>R</sub> = 100V	-	115	A
V <sub>TO</sub>	Threshold voltage	At T <sub>vj</sub> = 150°C	-	0.84	V
r <sub>T</sub>	Slope resistance	At T <sub>vj</sub> = 150°C	-	0.383	mΩ

**CURVES**



**Fig.2 Maximum & minimum on-state characteristics**



**Fig.3 Dissipation curves**

**V<sub>TM</sub> EQUATION**

$$V_{TM} = A + B \ln(I_T) + C \cdot I_T + D \cdot \sqrt{I_T}$$

Where A = 0.290476  
 B = 0.06449  
 C = 0.000335  
 D = 0.00408

these values are valid for T<sub>j</sub> = 150°C for I<sub>F</sub> 500A to 5000A

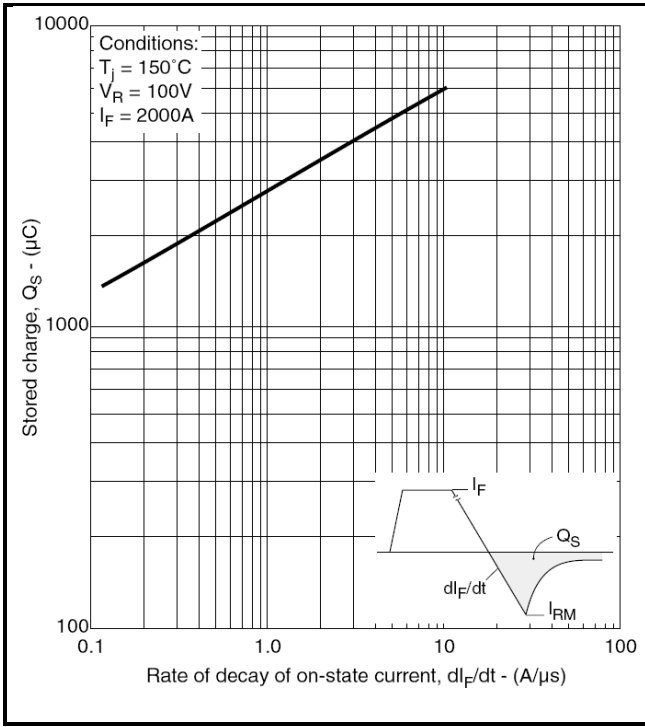


Fig.4 Total stored charge

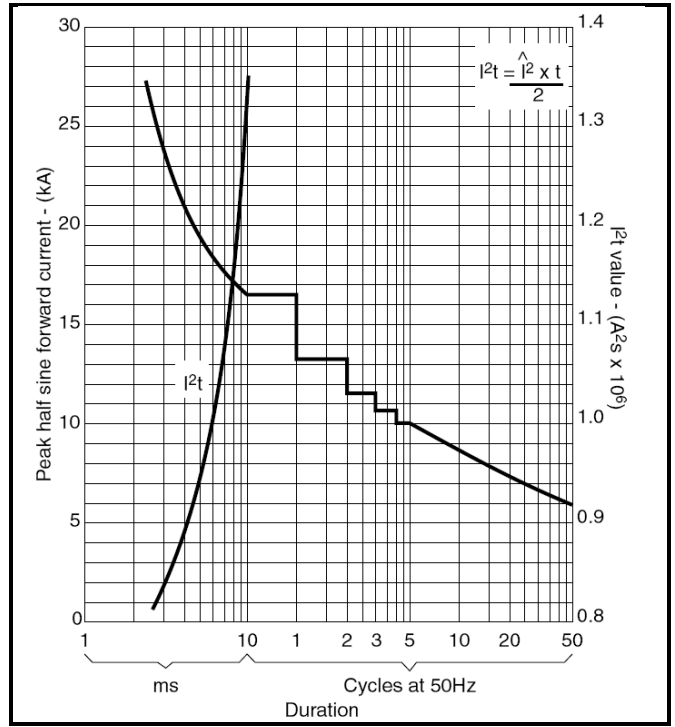


Fig.5 Surge (non-repetitive) forward current vs time (with 50%  $V_{RRM}$  at  $T_{case} 150^\circ\text{C}$ )

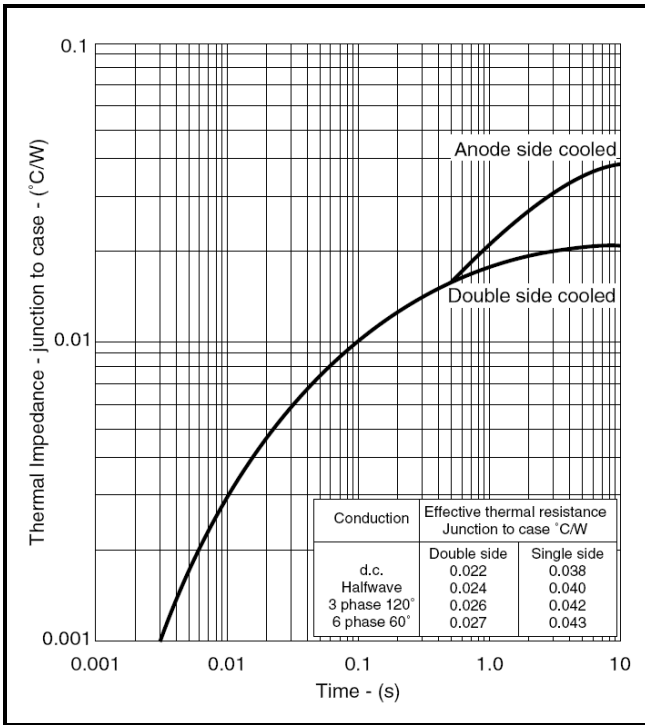
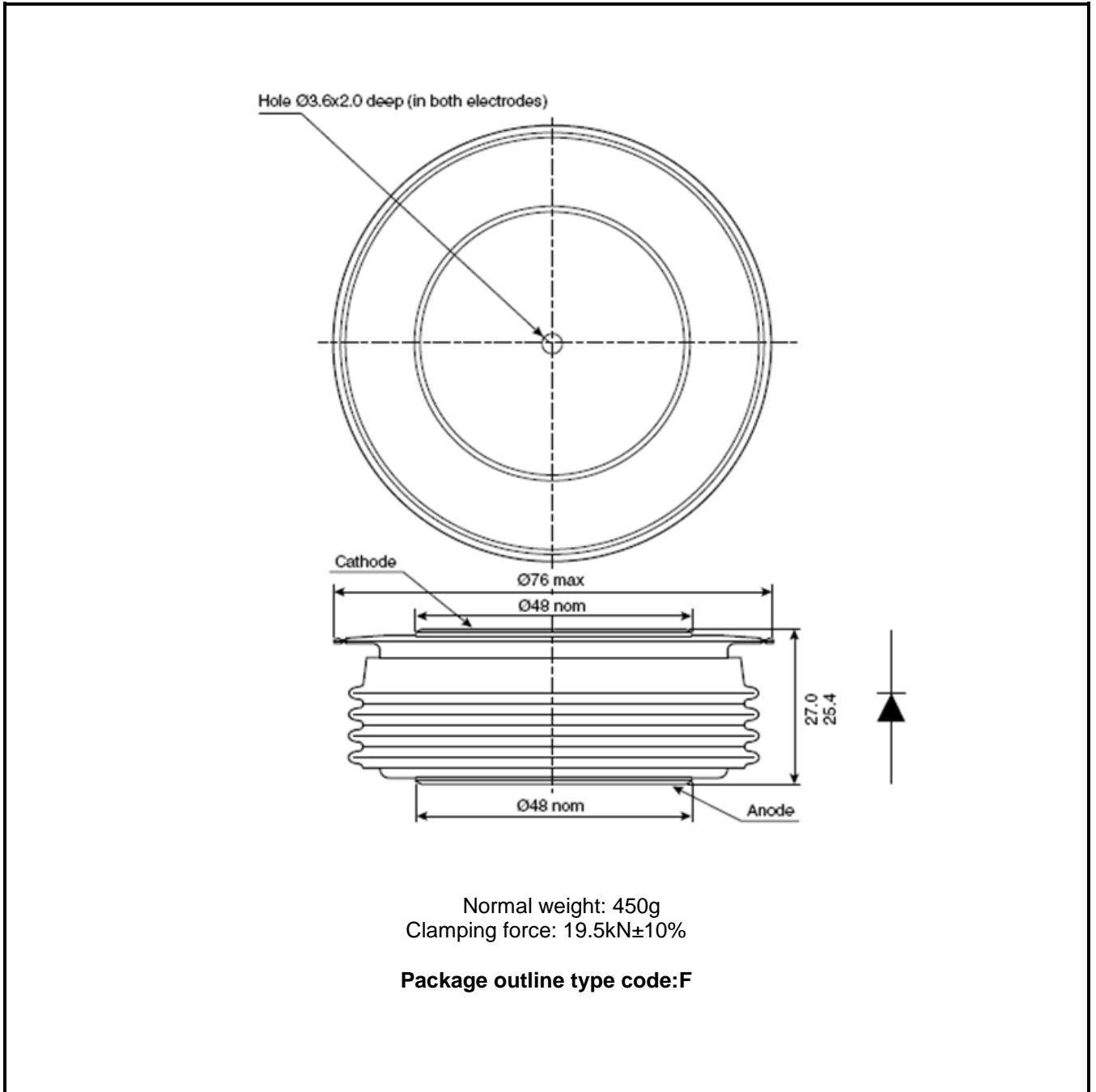


Fig.6 Maximum (limit) transient thermal impedance-junction to case

**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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