

FEATURES

- Double Side Cooling
- High Surge Capability

KEY PARAMETERS

V_{RRM}	4000V
$I_{F(AV)}$	1225A
I_{FSM}	25000A

VOLTAGE RATINGS

Part and Ordering Number	Repetitive Peak Voltages V_{RRM} V	Conditions
DRD1230F40 DRD1230F36 DRD1230F30	4000 3600 3000	$V_{RSM} = V_{RRM} + 100V$

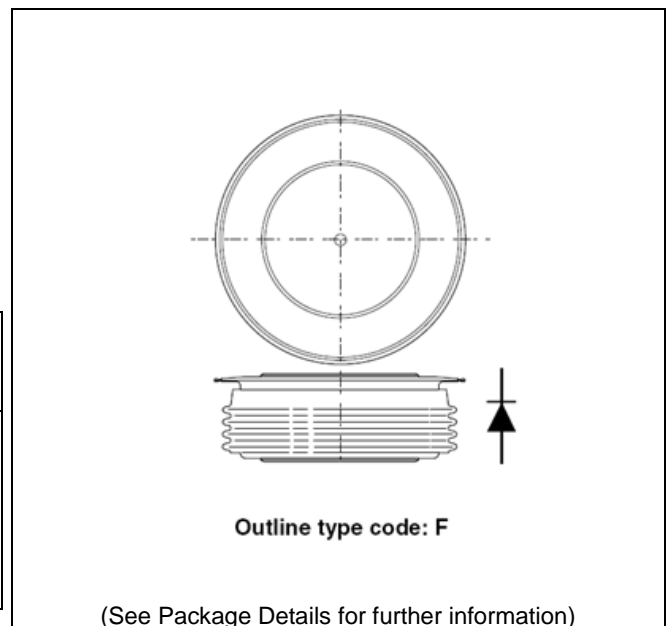


Fig. 1 Package outline

ORDERING INFORMATION

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

For example:

DRD1230F36 for a 3600V device

CURRENT RATINGS

$T_{case} = 75^{\circ}C$ unless stated otherwise

Symbol	Parameter	Test Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	1594	A
$I_{F(RMS)}$	RMS value	-	2504	A
I_F	Continuous (direct) on-state current	-	2295	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	1144	A
$I_{F(RMS)}$	RMS value	-	1797	A
I_F	Continuous (direct) on-state current	-	1553	A

$T_{case} = 100^{\circ}C$ unless stated otherwise

Symbol	Parameter	Test Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	1225	A
$I_{F(RMS)}$	RMS value	-	1923	A
I_F	Continuous (direct) on-state current	-	1720	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	820	A
$I_{F(RMS)}$	RMS value	-	1287	A
I_F	Continuous (direct) on-state current	-	1050	A

SURGE RATINGS

Symbol	Parameter	Test Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 150^{\circ}C$ $V_R = 50\% V_{RRM} - 1/4$ sine	20.0	kA
I^2t	I^2t for fusing		2.0	MA ² s
I_{FSM}	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 150^{\circ}C$ $V_R = 0$	25.0	kA
I^2t	I^2t for fusing		3.125	MA ² 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 _{FM}	Forward voltage	At 3400A peak, T _{case} = 25°C	-	1.6	V
I _{RM}	Peak reverse current	At V _{RRM} , T _{case} = 150°C	-	75	mA
Q _S	Total stored charge	I _F = 2000A, dI _{RR} /dt = 3A/μs	-	3500	μC
I _{rr}	Peak reverse recovery current	T _{case} = 150°C, V _R = 100V	-	110	A
V _{TO}	Threshold voltage	At T _{vj} = 150°C	-	0.82	V
r _T	Slope resistance	At T _{vj} = 150°C	-	0.29	mΩ

CURVES

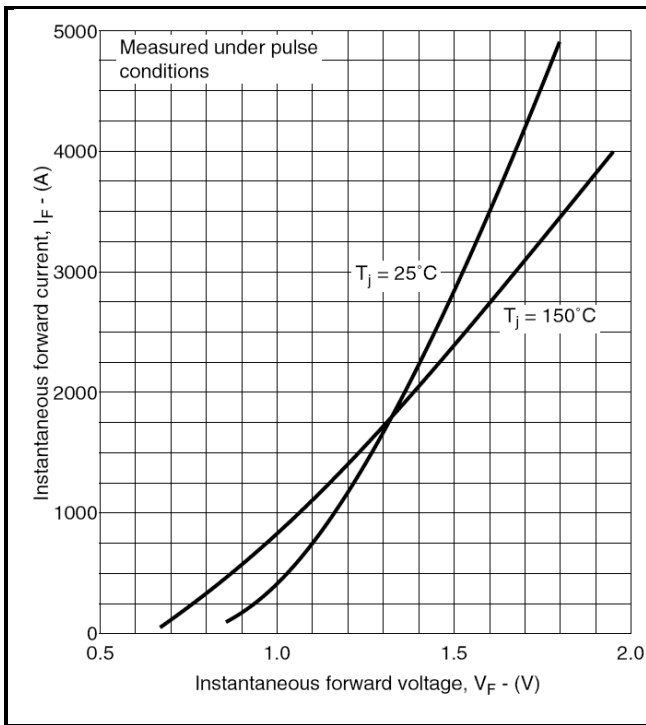


Fig.2 Maximum (limit) on-state characteristics

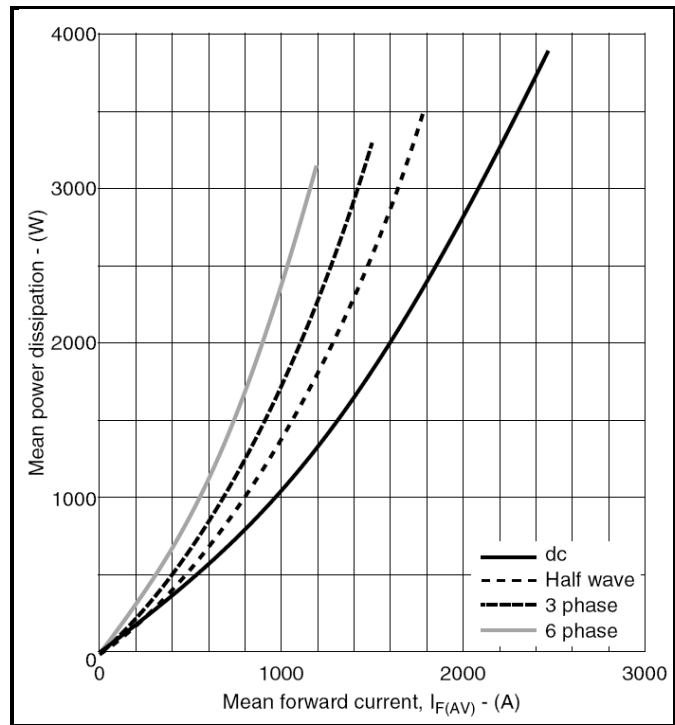


Fig.3 Dissipation curves

V_{TM} EQUATION

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

Where A = 0.658789
 B = -0.01706
 C = 0.000194
 D = 0.010358

these values are valid for T_j = 150°C for I_F 500A to 5000A

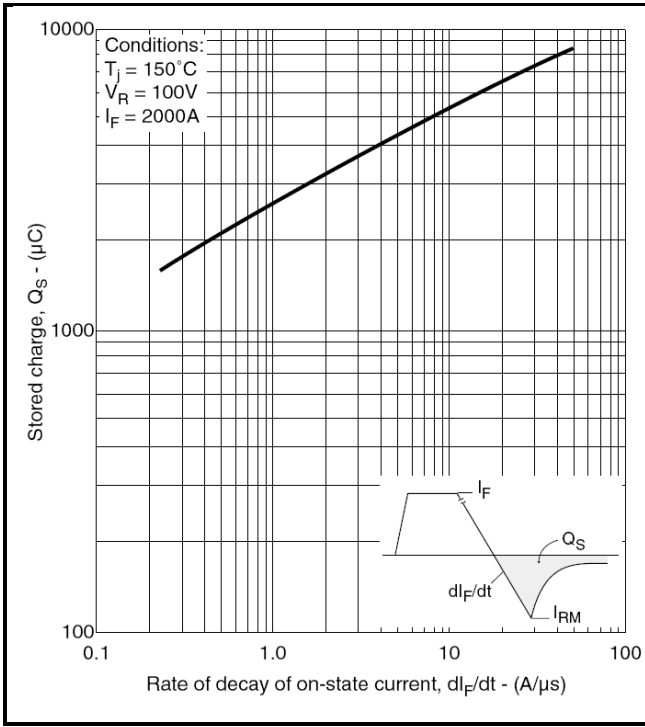


Fig.4 Total stored charge

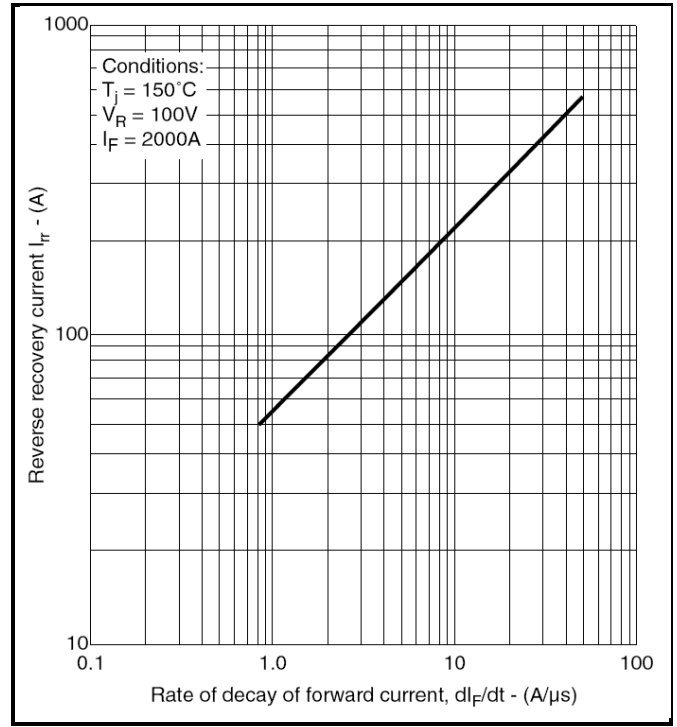


Fig.5 Maximum reverse recovery current

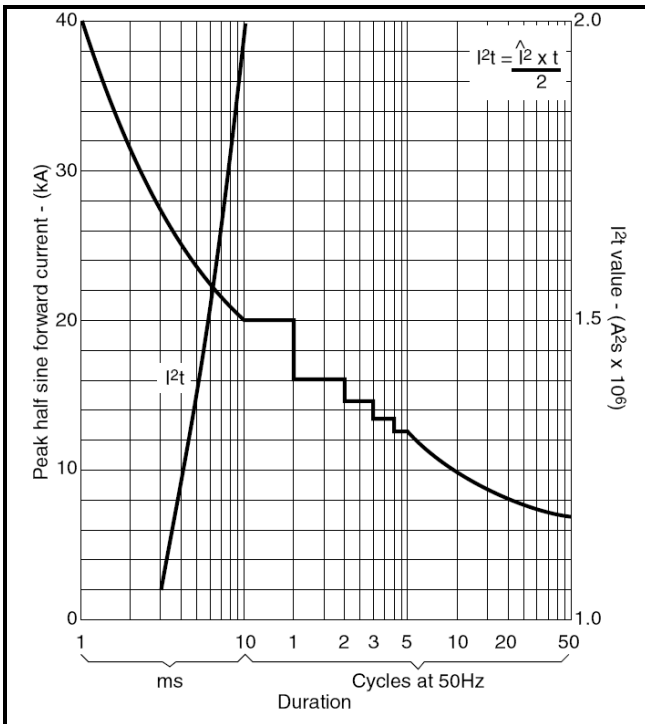


Fig.6 Surge (non-repetitive) forward current vs time (with 50% V_{RRM} at $T_{case} 150^\circ\text{C}$)

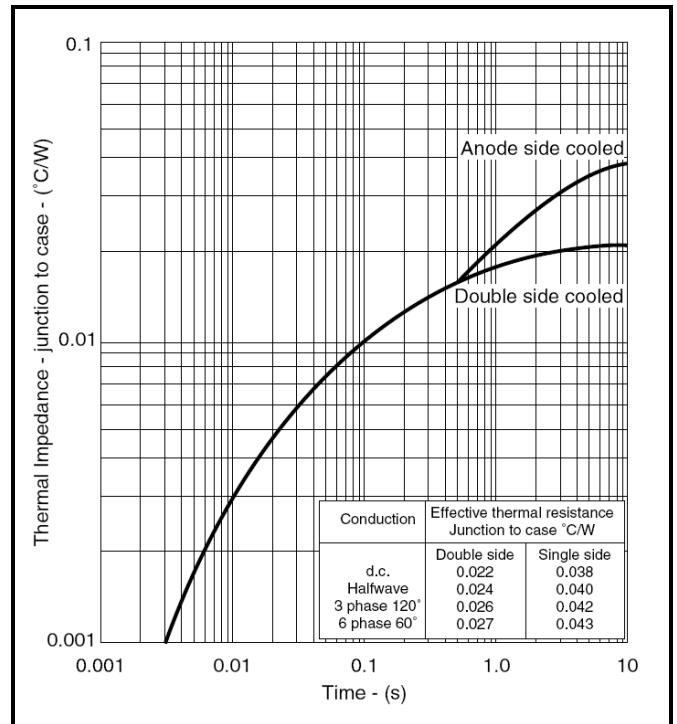
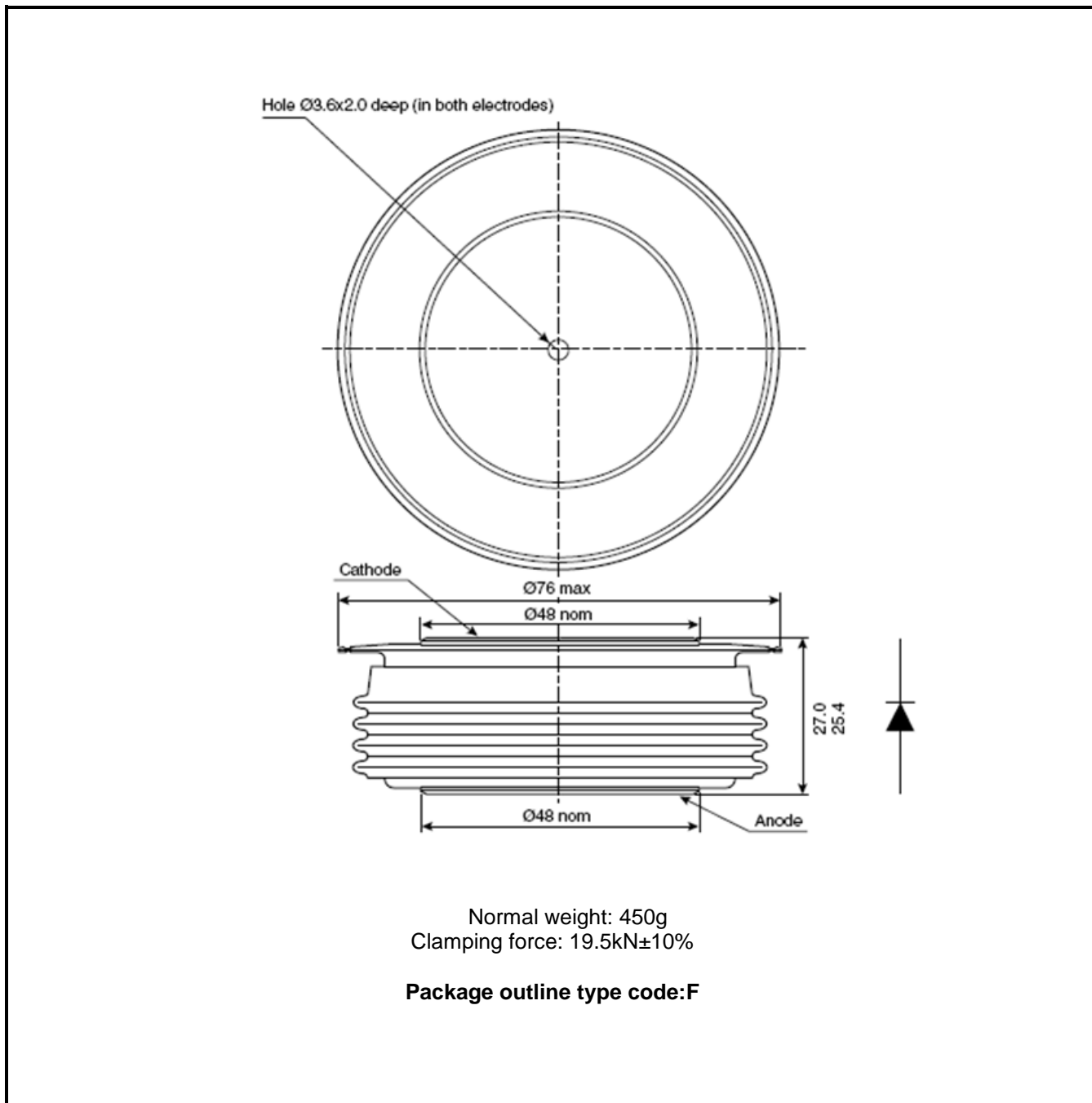


Fig.7 Maximum (limit) transient thermal impedance-junction to case

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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