

FEATURES

- Double Side Cooling
- High Surge Capability

KEY PARAMETERS

V_{RRM}	5000V
$I_{F(AV)}$	3083A
I_{FSM}	55000A

VOLTAGE RATINGS

Part and Ordering Number	Repetitive Peak Voltages V_{RRM} V	Conditions
DRD3080V50	5000	$V_{RSM} = V_{RRM} + 100V$
DRD3080V48	4800	
DRD3080V46	4600	
DRD3080V44	4400	

Lower voltage grades available.

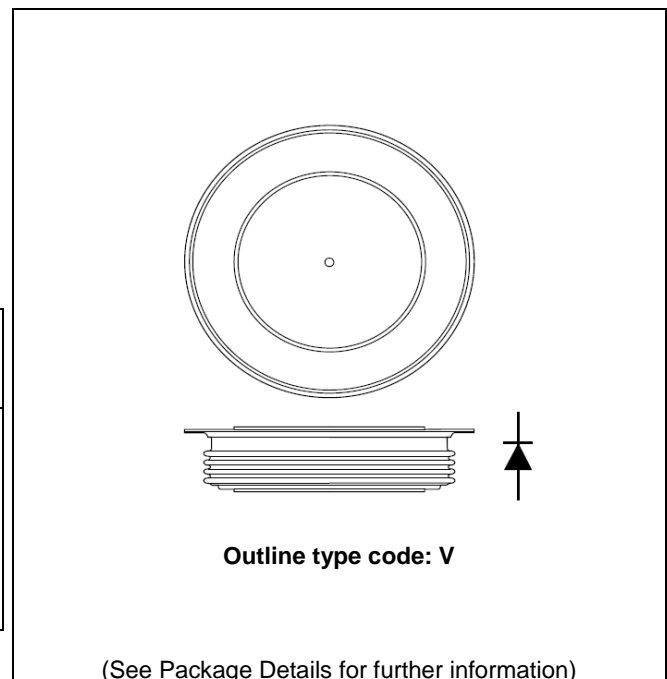


Fig. 1 Package outline

ORDERING INFORMATION

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

For example:

DRD3080V48 for a 4800V device

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

CURRENT RATINGS
T_{case} = 75°C unless stated otherwise

Symbol	Parameter	Test Conditions	Max.	Units
Double Side Cooled				
I _{F(AV)}	Mean forward current	Half wave resistive load	3972	A
I _{F(RMS)}	RMS value	-	6239	A
I _F	Continuous (direct) on-state current	-	5973	A
Single Side Cooled (Anode side)				
I _{F(AV)}	Mean forward current	Half wave resistive load	2926	A
I _{F(RMS)}	RMS value	-	4596	A
I _F	Continuous (direct) on-state current	-	4066	A

T_{case} = 100°C unless stated otherwise

Symbol	Parameter	Test Conditions	Max.	Units
Double Side Cooled				
I _{F(AV)}	Mean forward current	Half wave resistive load	3083	A
I _{F(RMS)}	RMS value	-	4843	A
I _F	Continuous (direct) on-state current	-	4538	A
Single Side Cooled (Anode side)				
I _{F(AV)}	Mean forward current	Half wave resistive load	2033	A
I _{F(RMS)}	RMS value	-	3193	A
I _F	Continuous (direct) on-state current	-	2748	A

SURGE RATINGS

Symbol	Parameter	Test Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 150^{\circ}C$	44	kA
I^2t	I^2t for fusing	$V_R = 50\% V_{RRM} - 1/4$ sine	9.68	MA^2s
I_{FSM}	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 150^{\circ}C$	55	kA
I^2t	I^2t for fusing	$V_R = 0$	15.12	MA^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	-	0.0075	$^{\circ}C/W$
		Single side cooled	Anode DC	-	0.015	$^{\circ}C/W$
			Cathode DC	-	0.015	$^{\circ}C/W$
$R_{th(c-h)}$	Thermal resistance – case to heatsink	Clamping force 43kN	Double side	-	0.002	$^{\circ}C/W$
		(with mounting compound)	Single side	-	0.004	$^{\circ}C/W$
T_{vj}	Virtual junction temperature	On-state (conducting)	-	160	$^{\circ}C$	
		Reverse (blocking)	-	150	$^{\circ}C$	
T_{stg}	Storage temperature range		-55	150	$^{\circ}C$	
F_m	Clamping force		38.0	47.0	kN	

CHARACTERISTICS

Symbol	Parameter	Test Conditions	Min.	Max.	Units
V_{FM}	Forward voltage	At 3000A peak, $T_{case} = 25^{\circ}C$	-	1.25	V
I_{RM}	Peak reverse current	At V_{DRM} , $T_{case} = 150^{\circ}C$	-	100	mA
Q_S	Total stored charge	$I_F = 2000A$, $dI_{RR}/dt = 4A/\mu s$	-	7500	μC
I_{rr}	Peak reverse recovery current	$T_{case} = 150^{\circ}C$, $V_R = 100V$	-	190	A
V_{TO}	Threshold voltage	At $T_{vj} = 150^{\circ}C$	-	0.82	V
r_T	Slope resistance	At $T_{vj} = 150^{\circ}C$	-	0.143	$m\Omega$

CURVES

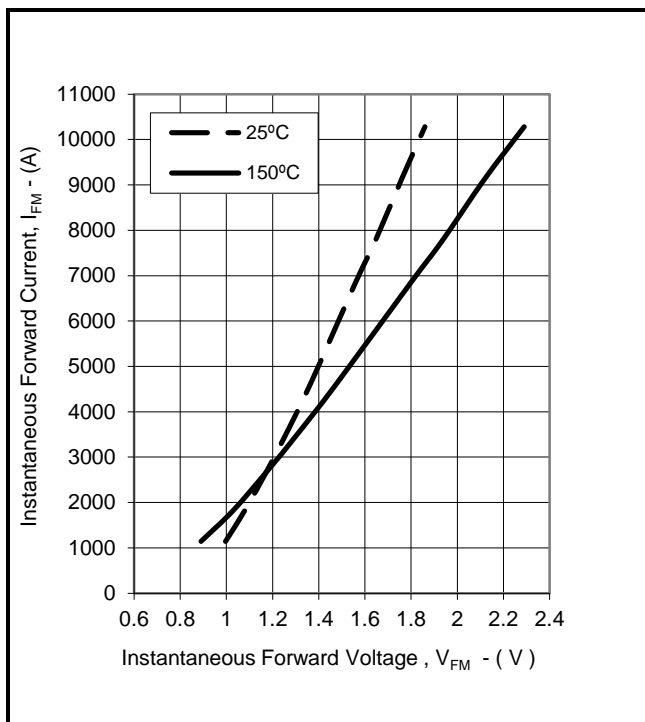


Fig.2 Maximum (limit) on-state characteristics

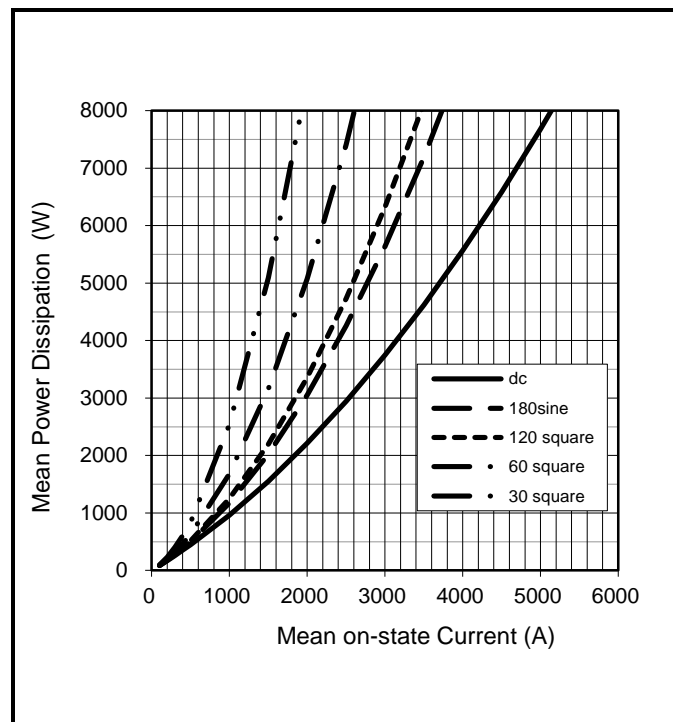


Fig.3 Dissipation curves

V_{TM} EQUATION

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

Where $A = -0.630059$
 $B = 0.2338835$
 $C = 0.000166$
 $D = -0.009367$

these values are valid for $T_j = 150^{\circ}C$ for I_F 1000A to 11000A

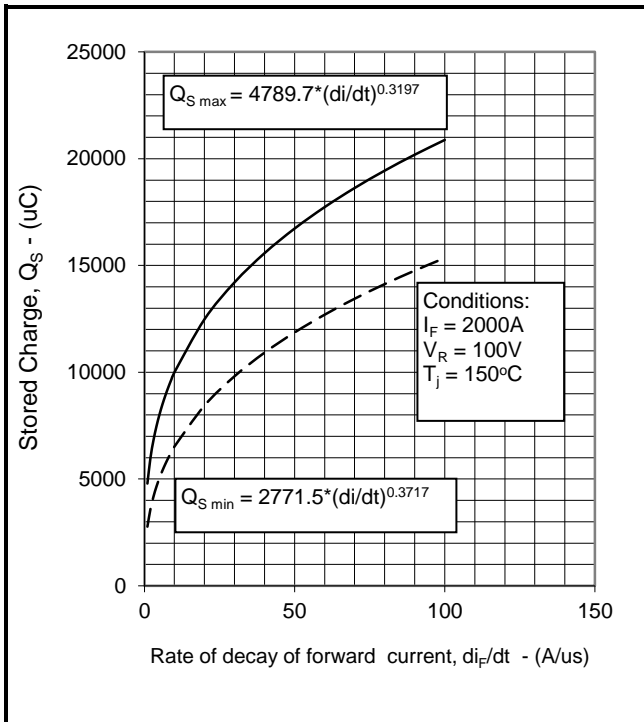


Fig.4 Total stored charge

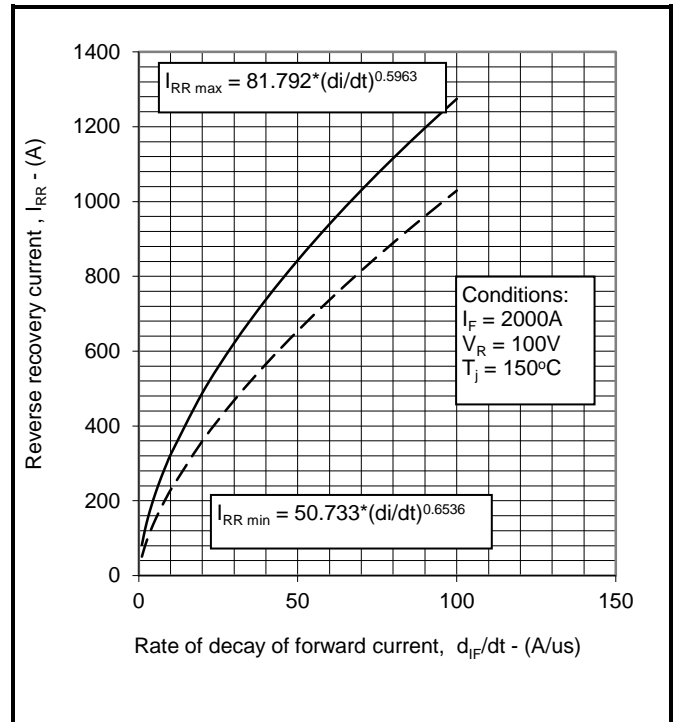


Fig.5 Maximum reverse recovery current

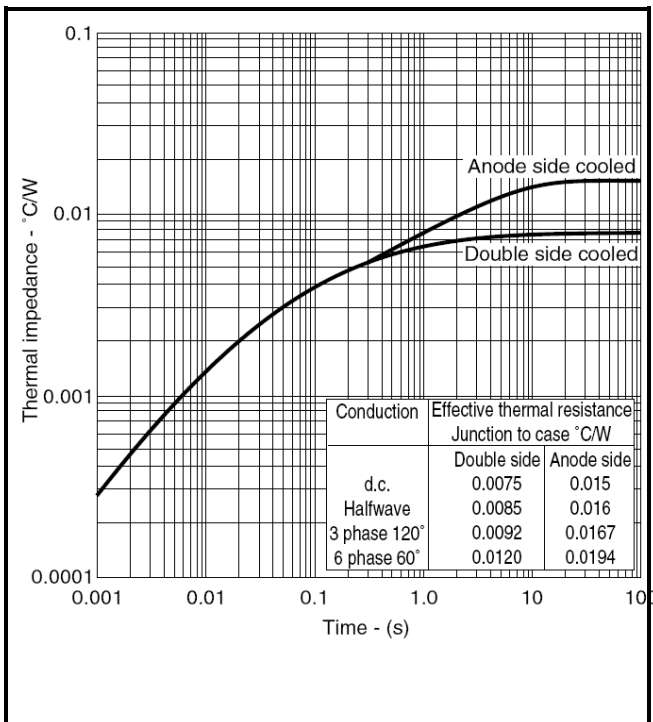
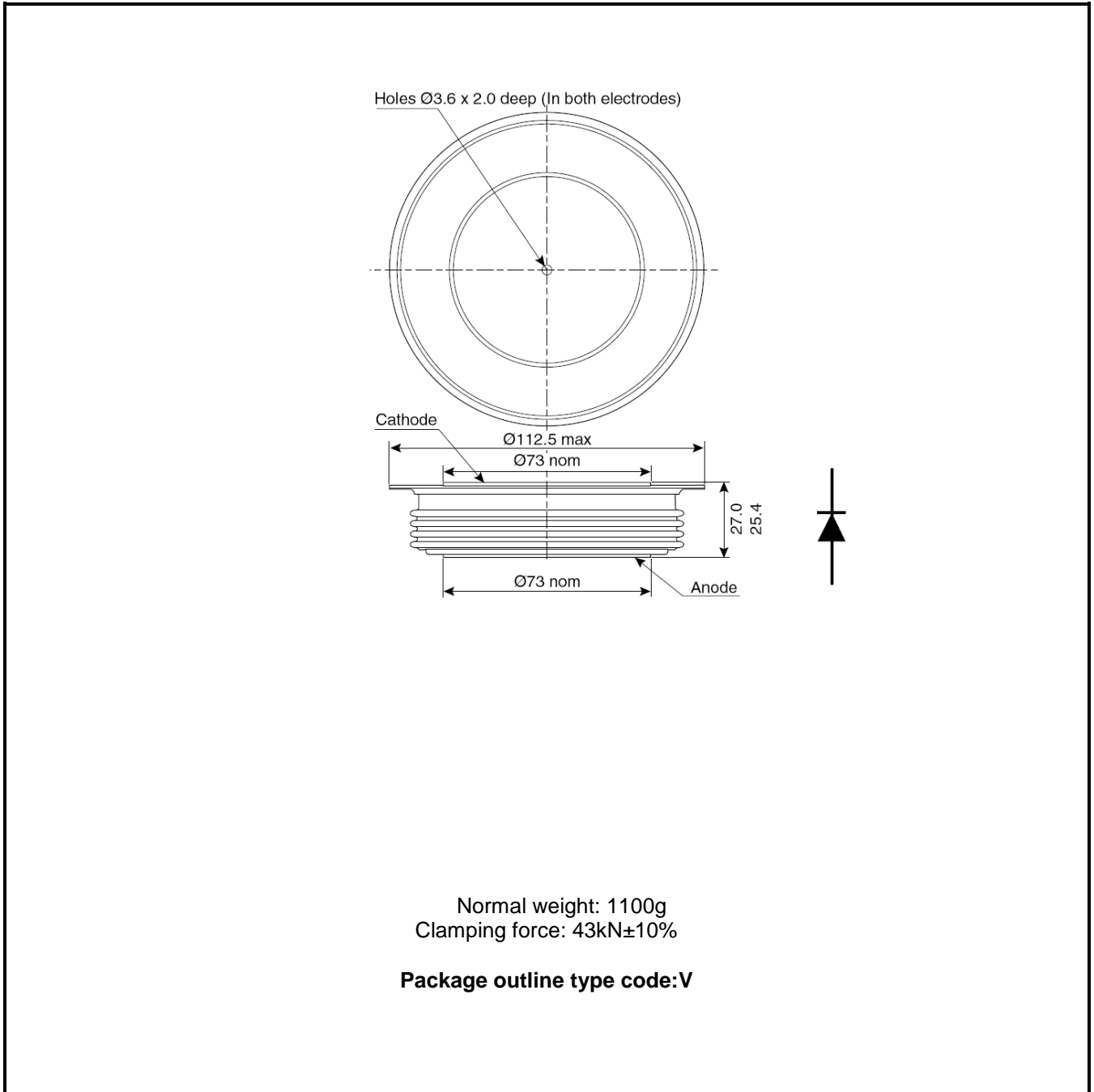


Fig.6 Maximum (limit) transient thermal impedance-junction to case

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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