

**FEATURES**

- Double Side Cooling
- High Surge Capability

**KEY PARAMETERS**

$V_{RRM}$	<b>4000V</b>
$I_{F(AV)}$	<b>4346A</b>
$I_{FSM}$	<b>83000A</b>

**APPLICATIONS**

- Rectification
- Free-wheel Diode
- DC Motor Control
- Power Supplies
- Welding
- Battery Chargers

**VOLTAGE RATINGS**

Part and Ordering Number	Repetitive Peak Voltages $V_{DRM}$ and $V_{DRM}$ V	Conditions
DRD4350A40	4000	$V_{RSM} = V_{RRM} + 100V$
DRD4350A39	3900	
DRD4350A38	3800	
DRD4350A37	3700	
DRD4350A36	3600	
DRD4350A35	3500	

Lower voltage grades available.

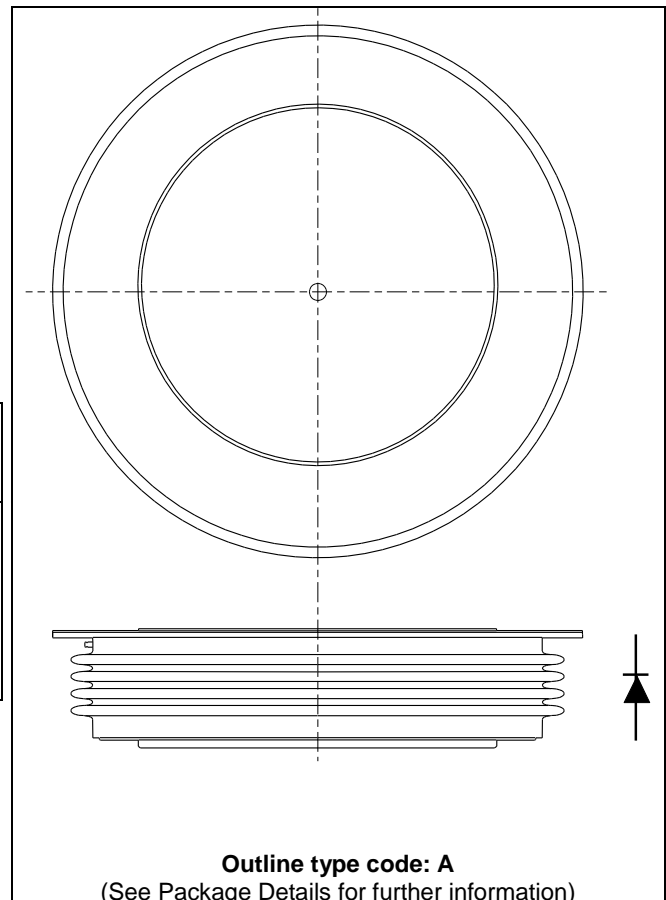
**ORDERING INFORMATION**

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

For example:

**DRD4350A39**

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



**Fig. 1 Package outlines**

**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	5651	A
I <sub>F(RMS)</sub>	RMS value	-	8877	A
I <sub>F</sub>	Continuous (direct) on-state current	-	8208	A
<b>Single Side Cooled (Anode side)</b>				
I <sub>F(AV)</sub>	Mean forward current	Half wave resistive load	3707	A
I <sub>F(RMS)</sub>	RMS value	-	5821	A
I <sub>F</sub>	Continuous (direct) on-state current	-	4976	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	4350	A
I <sub>F(RMS)</sub>	RMS value	-	6830	A
I <sub>F</sub>	Continuous (direct) on-state current	-	6160	A
<b>Single Side Cooled (Anode side)</b>				
I <sub>F(AV)</sub>	Mean forward current	Half wave resistive load	2795	A
I <sub>F(RMS)</sub>	RMS value	-	4390	A
I <sub>F</sub>	Continuous (direct) on-state current	-	3640	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	66.5	kA
$I^2t$	$I^2t$ for fusing		22	MA <sup>2</sup> s
$I_{FSM}$	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 150^{\circ}C$ $V_R = 0$	83	kA
$I^2t$	$I^2t$ for fusing		34.5	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	-	0.0065	$^{\circ}C/W$
		Single side cooled	Anode DC	-	0.013	$^{\circ}C/W$
			Cathode DC	-	0.013	$^{\circ}C/W$
$R_{th(c-h)}$	Thermal resistance – case to heatsink	Clamping force 83.0kN (with mounting compound)	Double side	-	0.001	$^{\circ}C/W$
			Single side	-	0.002	$^{\circ}C/W$
$T_{vj}$	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		75.0	91.0	kN	

**CHARACTERISTICS**

Symbol	Parameter	Test Conditions	Min.	Max.	Units
$V_{FM}$	Forward voltage	At 3000A peak, $T_{case} = 25^{\circ}C$	-	1.06	V
$I_{RM}$	Peak reverse current	At $V_{DRM}$ , $T_{case} = 150^{\circ}C$	-	400	mA
$V_{TO}$	Threshold voltage	At $T_{vj} = 150^{\circ}C$	-	0.78	V
$r_T$	Slope resistance	At $T_{vj} = 150^{\circ}C$	-	0.0763	m $\Omega$

CURVES

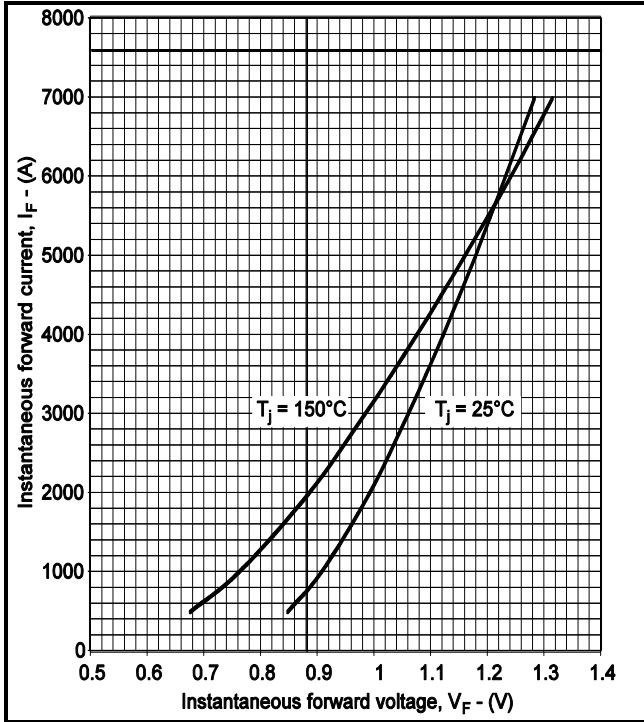


Fig.2 Maximum (limit) forward characteristics

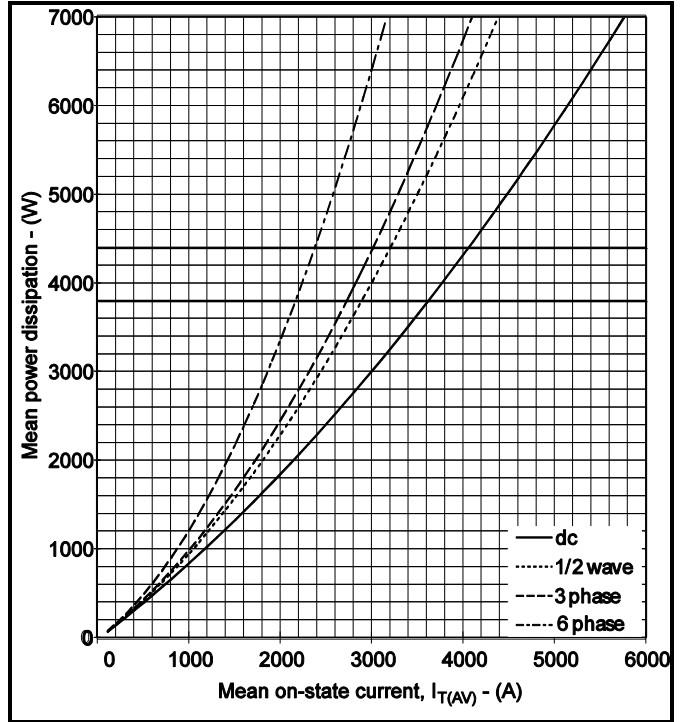


Fig.3 Power loss curves

$V_{TM}$  EQUATION

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

Where  $A = -0.01591$   
 $B = 0.113682$   
 $C = 8.04 \times 10^{-5}$   
 $D = -0.00284$

these values are valid for  $T_j = 150^\circ\text{C}$  for  $I_F$  500A to 7000A

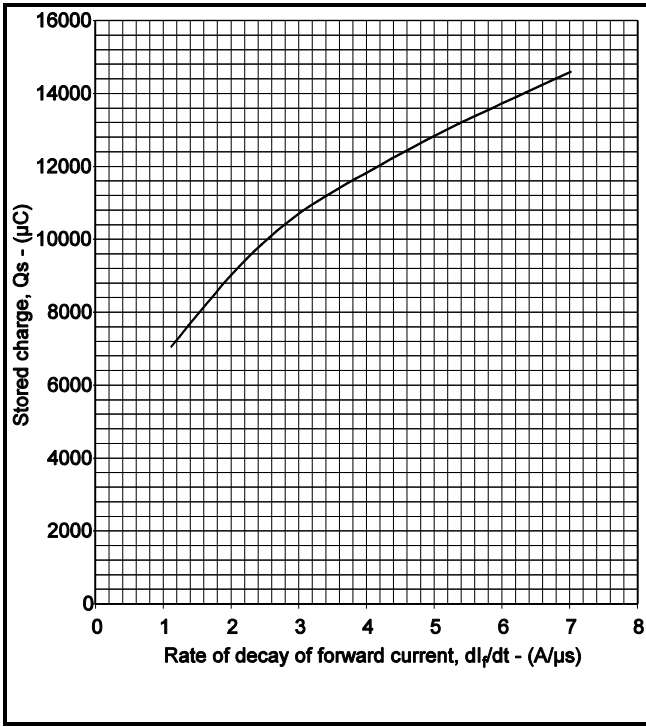


Fig.4 Stored charge

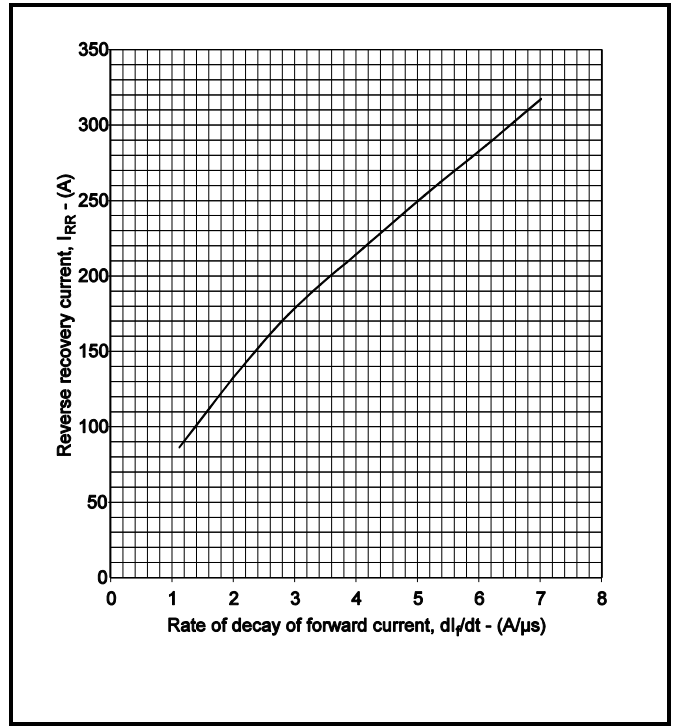


Fig.5 Reverse recovery current

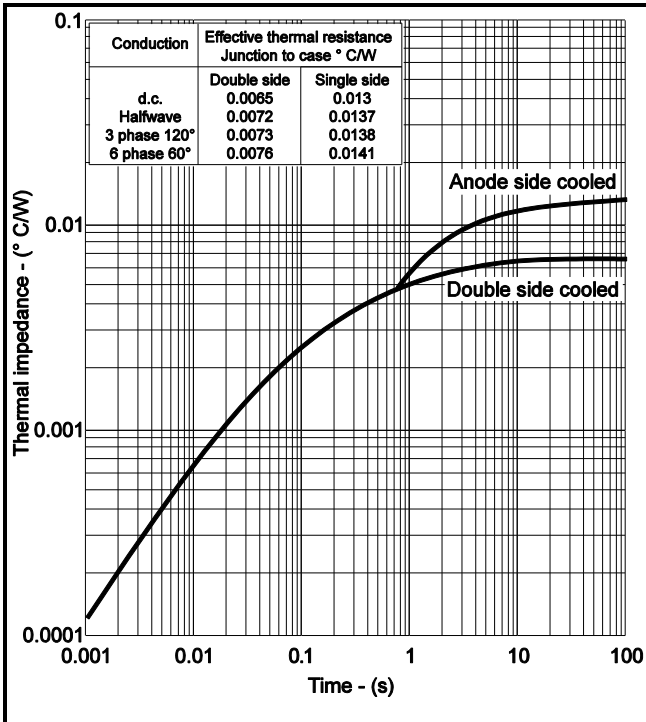


Fig.6 Maximum (limit) transient thermal impedance – junction to case

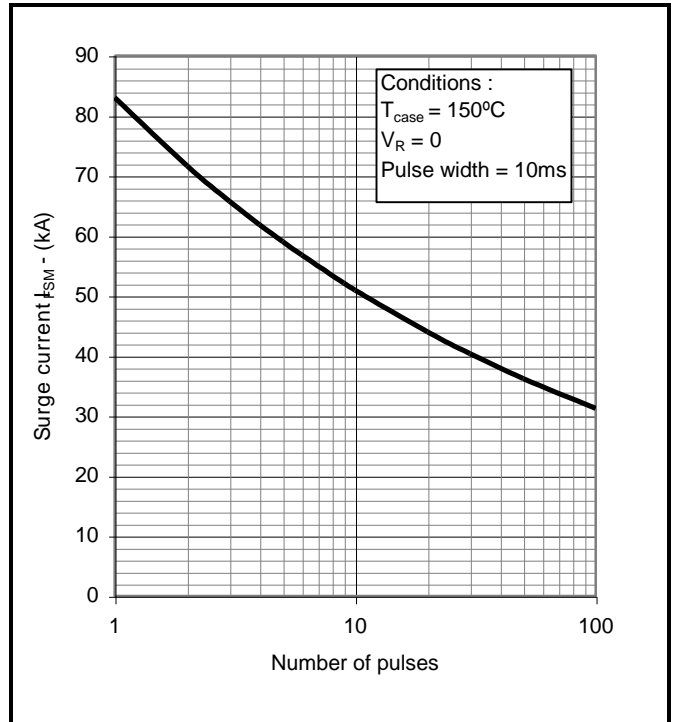


Fig.7 Multi-cycle surge current

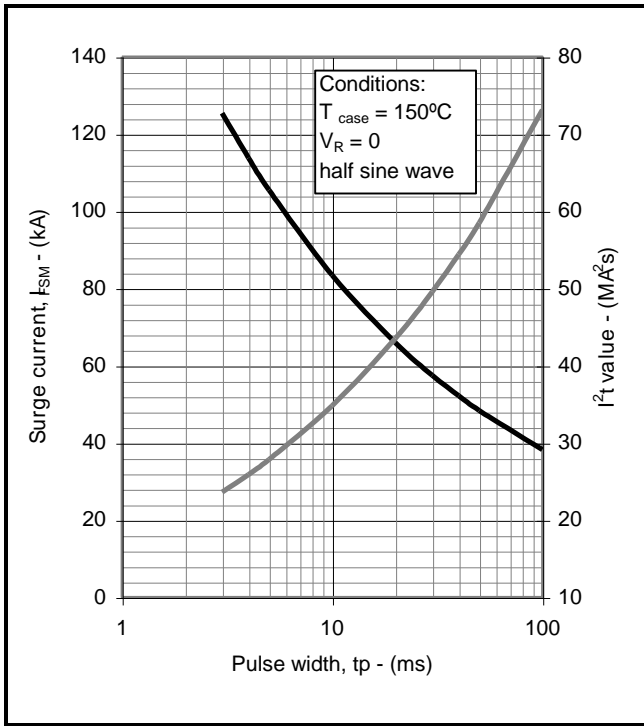
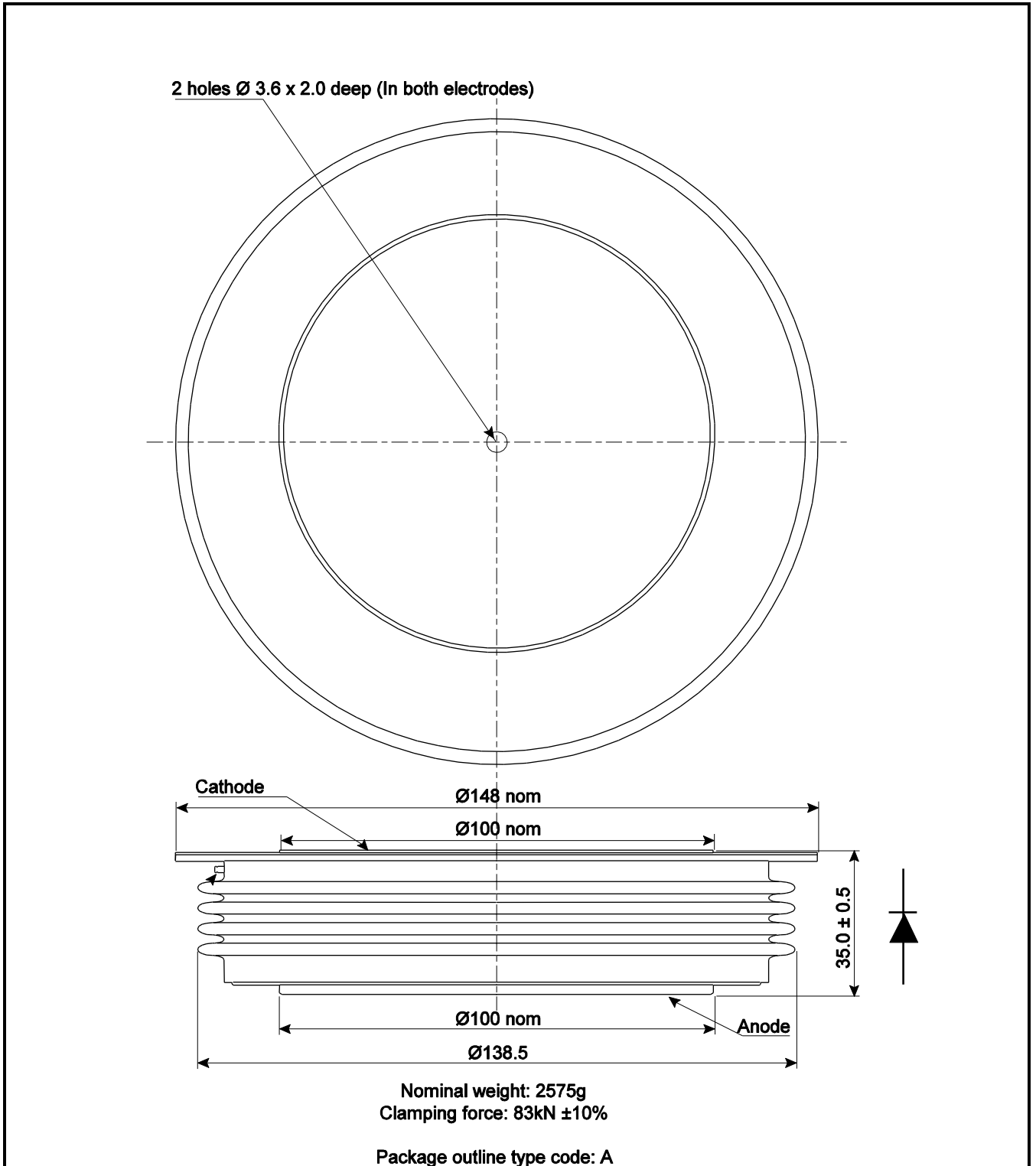


Fig.8 Sub-cycle surge current

PACKAGE DETAILS

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



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