

**FEATURES**

- Double Side Cooling
- High Surge Capability

**KEY PARAMETERS**

<b>V<sub>RRM</sub></b>	<b>2000V</b>
<b>I<sub>F(AV)</sub></b>	<b>6654A</b>
<b>I<sub>FSM</sub></b>	<b>100kA</b>

**VOLTAGE RATINGS**

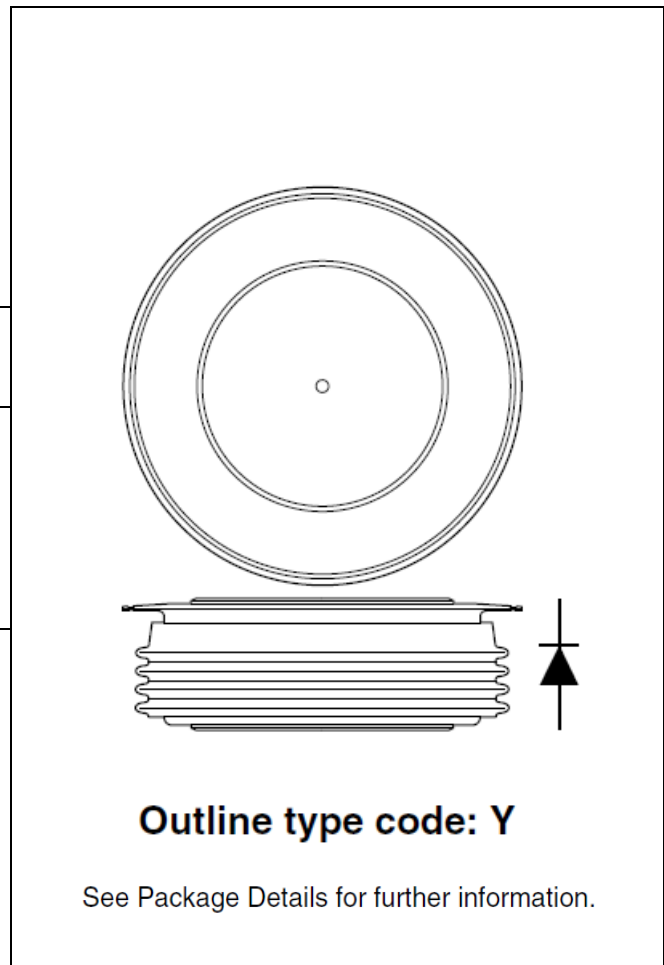
Part and Ordering Number	Repetitive Peak Voltages V <sub>RRM</sub> V	Conditions
DRD5460Y20 DRD5460Y18 DRD5460Y16	2000 1800 1600	V <sub>RSM</sub> = V <sub>RRM</sub> +100V

**ORDERING INFORMATION**

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

For example:

**DRD5460Y18** for a 1800V device



**Fig. 1 Package outline**

**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	6654	A
I <sub>F(RMS)</sub>	RMS value	-	10452	A
I <sub>F</sub>	Continuous (direct) on-state current	-	9275	A
<b>Single Side Cooled (Anode side)</b>				
I <sub>F(AV)</sub>	Mean forward current	Half wave resistive load	4227	A
I <sub>F(RMS)</sub>	RMS value	-	6640	A
I <sub>F</sub>	Continuous (direct) on-state current	-	5403	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	5460	A
I <sub>F(RMS)</sub>	RMS value	-	8575	A
I <sub>F</sub>	Continuous (direct) on-state current	-	7450	A
<b>Single Side Cooled (Anode side)</b>				
I <sub>F(AV)</sub>	Mean forward current	Half wave resistive load	3410	A
I <sub>F(RMS)</sub>	RMS value	-	5356	A
I <sub>F</sub>	Continuous (direct) on-state current	-	4620	A

**SURGE RATINGS**

Symbol	Parameter	Test Conditions	Max.	Units
$I_{FSM}$	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 175^{\circ}C$ $V_R = 50\% V_{RRM} - \frac{1}{4}$ sine	80.0	kA
$I^2t$	$I^2t$ for fusing		32	MA <sup>2</sup> s
$I_{FSM}$	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 175^{\circ}C$ $V_R = 0$	100	kA
$I^2t$	$I^2t$ for fusing		50	MA <sup>2</sup> s

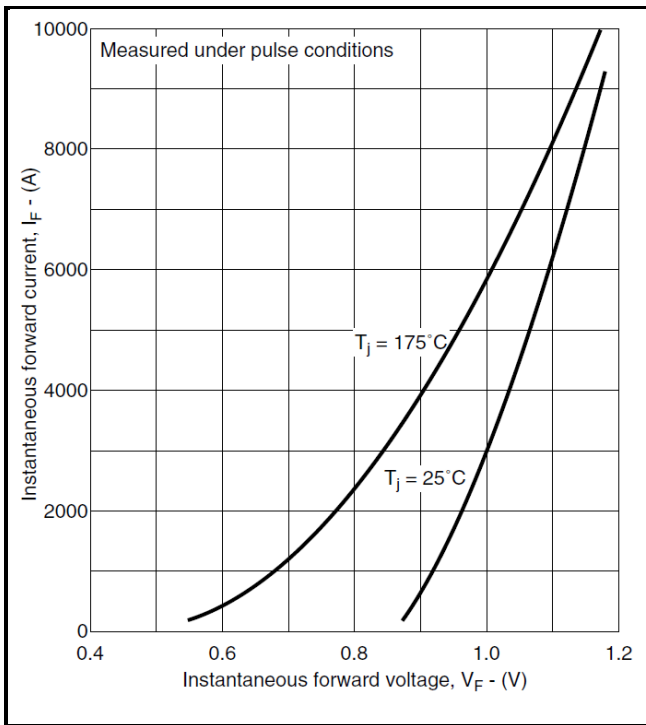
**THERMAL AND MECHANICAL RATINGS**

Symbol	Parameter	Test Conditions	Min.	Max.	Units	
$R_{th(j-c)}$	Thermal resistance – junction to case	Double side cooled	DC	-	0.0095	$^{\circ}C/W$
		Single side cooled	Anode DC	-	0.019	$^{\circ}C/W$
			Cathode DC	-	0.019	$^{\circ}C/W$
$R_{th(c-h)}$	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)	-	185	$^{\circ}C$	
		Reverse (blocking)	-	175	$^{\circ}C$	
$T_{stg}$	Storage temperature range		-55	175	$^{\circ}C$	
$F_m$	Clamping force		38.0	47.0	kN	

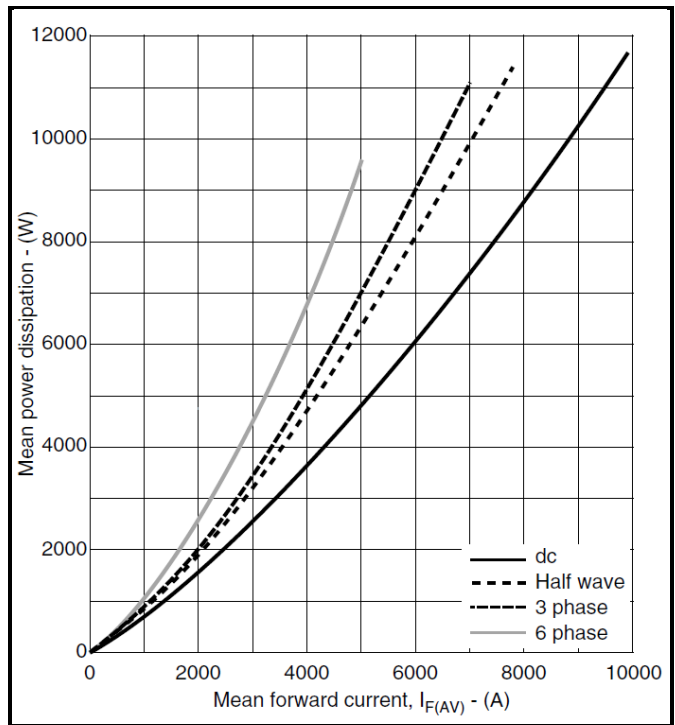
**CHARACTERISTICS**

Symbol	Parameter	Test Conditions	Min.	Max.	Units
V <sub>FM</sub>	Forward voltage	At 3000A peak, T <sub>case</sub> = 25°C	-	1.0	V
I <sub>RM</sub>	Peak reverse current	At V <sub>RRM</sub> , T <sub>case</sub> = 175°C	-	100	mA
Q <sub>S</sub>	Total stored charge	I <sub>F</sub> = 2000A, dI <sub>RR</sub> /dt = 3A/μs	-	2600	μC
I <sub>rr</sub>	Peak reverse recovery current	T <sub>case</sub> = 175°C, V <sub>R</sub> = 100V	-	120	A
V <sub>TO</sub>	Threshold voltage	At T <sub>vj</sub> = 175°C	-	0.75	V
r <sub>T</sub>	Slope resistance	At T <sub>vj</sub> = 175°C	-	0.0415	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 = 0.402091  
 B = 0.011718  
 C = 6.48 x 10<sup>-5</sup>  
 D = 0.005977

these values are valid for T<sub>j</sub> = 175°C for I<sub>F</sub> 500A to 10000A

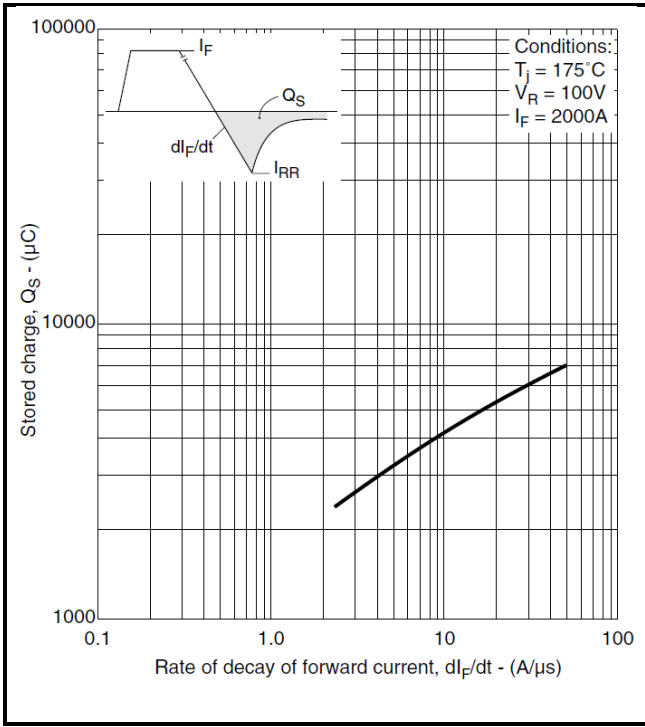


Fig.4 Total stored charge

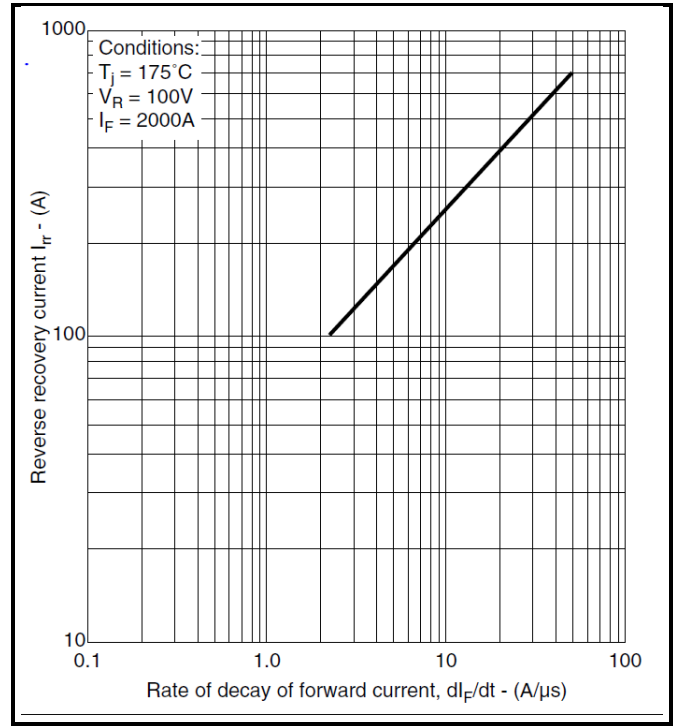


Fig.5 Maximum reverse recovery current

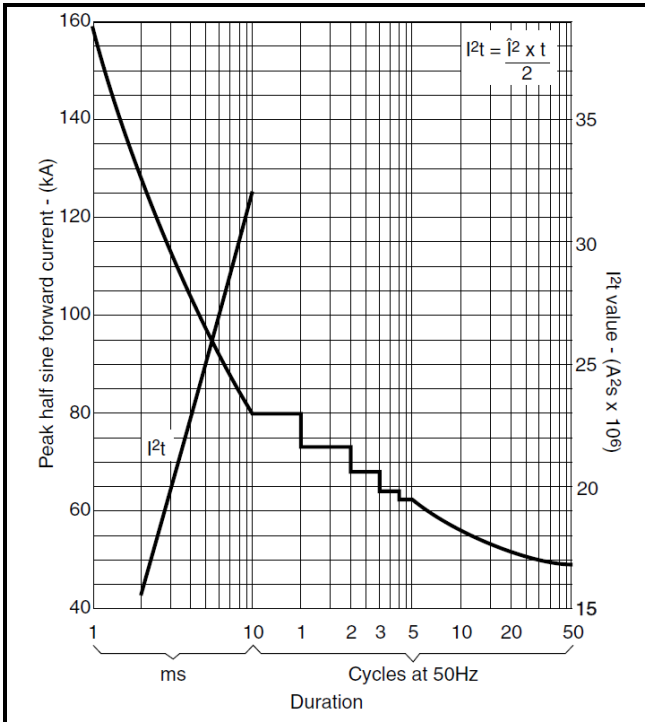


Fig.5 Surge (Non-Repetitive) Forward current vs time

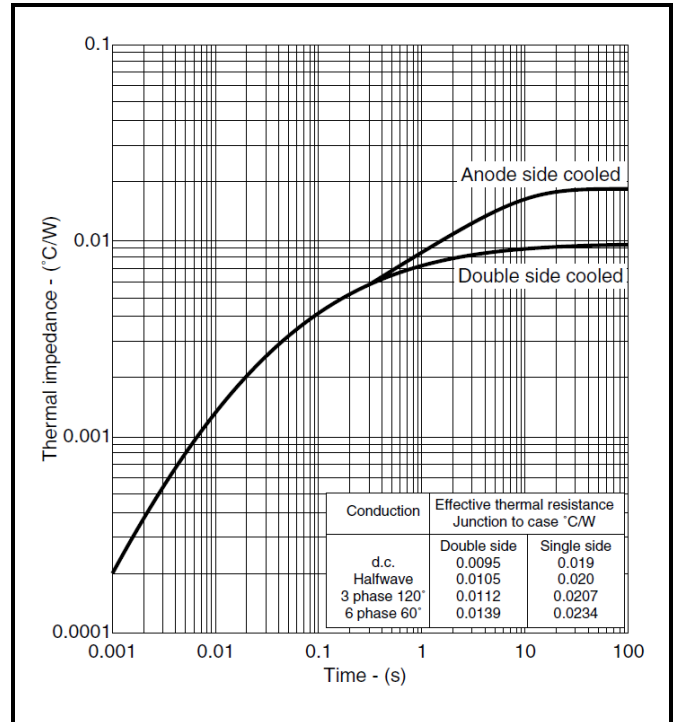
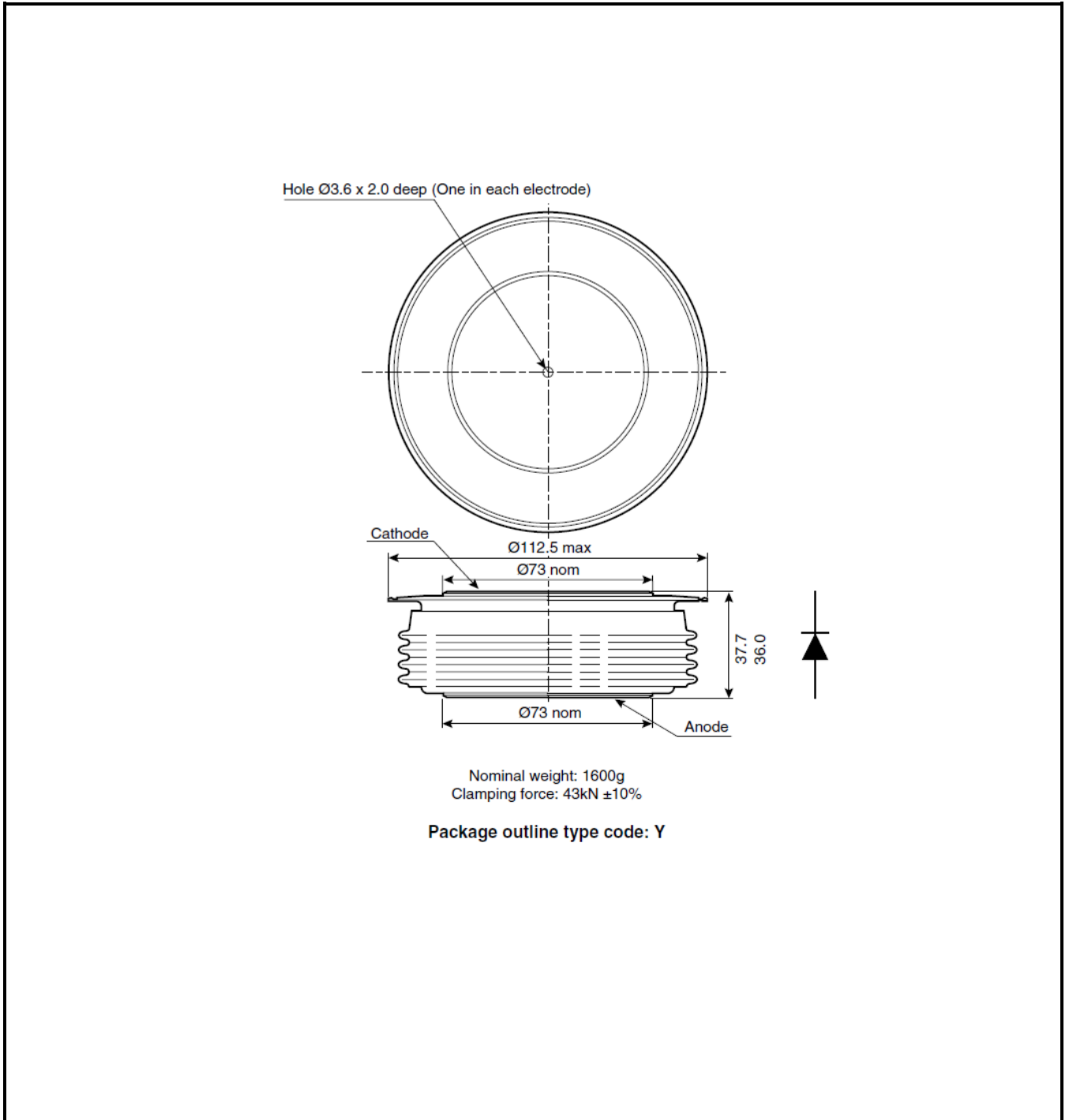


Fig.7 Maximum (limit) transient thermal impedance-junction to case

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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