



### FEATURES

- Double Side Cooling
- High Surge Capability

### KEY PARAMETERS

$V_{RRM}$	<b>5000V</b>
$I_{F(AV)}$	<b>2691A</b>
$I_{FSM}$	<b>55000A</b>

### VOLTAGE RATINGS

Part and Ordering Number	Repetitive Peak Voltages $V_{RRM}$ V	Conditions
DRD2690Y50	5000	$V_{RSM} = V_{RRM} + 100V$
DRD2690Y48	4800	
DRD2690Y46	4600	
DRD2690Y44	4400	

Lower voltage grades available.

### ORDERING INFORMATION

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

For example:

**DRD2690Y48** for a 4800V device

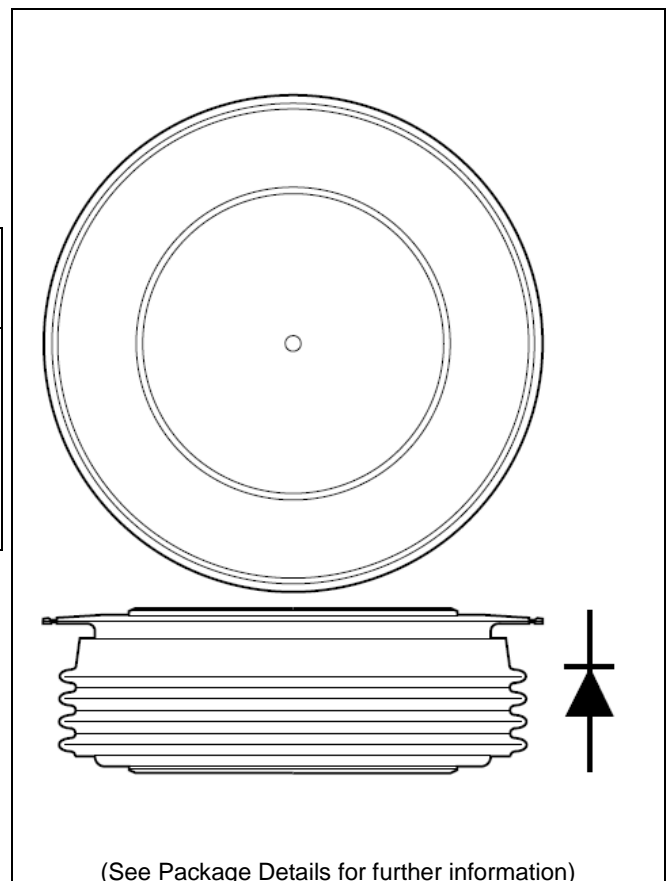


Fig. 1 Package outline

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

## 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	3485	A
I <sub>F(RMS)</sub>	RMS value	-	5474	A
I <sub>F</sub>	Continuous (direct) on-state current	-	5097	A
<b>Single Side Cooled (Anode side)</b>				
I <sub>F(AV)</sub>	Mean forward current	Half wave resistive load	2299	A
I <sub>F(RMS)</sub>	RMS value	-	3611	A
I <sub>F</sub>	Continuous (direct) on-state current	-	3118	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	2691	A
I <sub>F(RMS)</sub>	RMS value	-	4227	A
I <sub>F</sub>	Continuous (direct) on-state current	-	3843	A
<b>Single Side Cooled (Anode side)</b>				
I <sub>F(AV)</sub>	Mean forward current	Half wave resistive load	1742	A
I <sub>F(RMS)</sub>	RMS value	-	2737	A
I <sub>F</sub>	Continuous (direct) on-state current	-	2293	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 <sup>2</sup> s
$I_{FSM}$	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 <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 (with mounting compound)	Double side	-	0.002	$^{\circ}C/W$
			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 <sub>FM</sub>	Forward voltage	At 3000A peak, T <sub>case</sub> = 25°C	-	1.25	V
I <sub>RM</sub>	Peak reverse current	At V <sub>DRM</sub> , T <sub>case</sub> = 150°C	-	100	mA
Q <sub>S</sub>	Total stored charge	I <sub>F</sub> = 2000A, dI <sub>RR</sub> /dt = 4A/μs	-	7500	μC
I <sub>rr</sub>	Peak reverse recovery current	T <sub>case</sub> = 150°C, V <sub>R</sub> = 100V	-	190	A
V <sub>TO</sub>	Threshold voltage	At T <sub>vj</sub> = 150°C	-	0.82	V
r <sub>T</sub>	Slope resistance	At T <sub>vj</sub> = 150°C	-	0.143	mΩ

**CURVES**

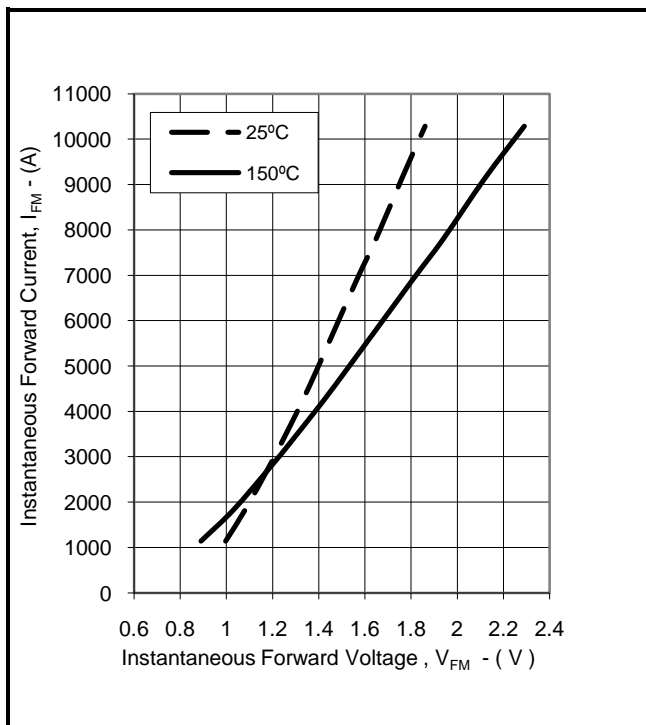


Fig.2 Maximum (limit) on-state characteristics

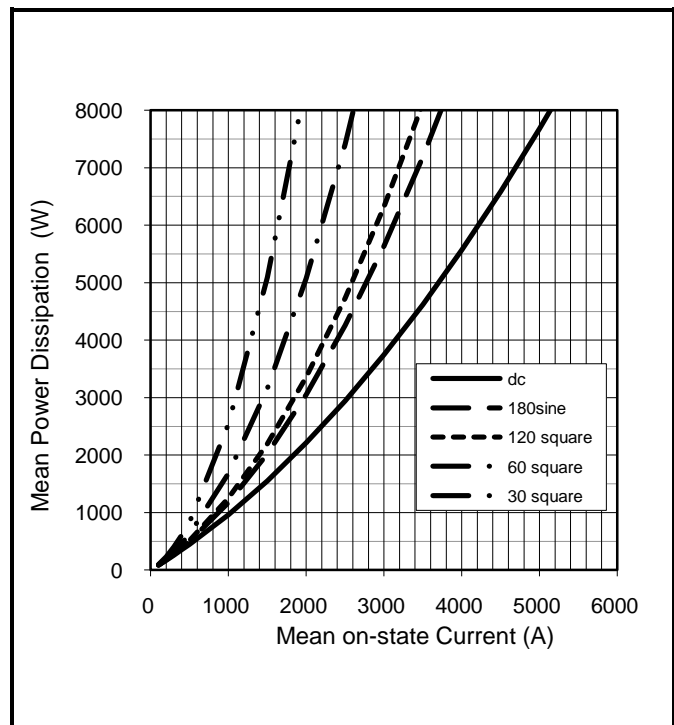


Fig.3 Dissipation curves

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

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

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

these values are valid for T<sub>j</sub> = 150°C for I<sub>F</sub> 1000A to 11000A

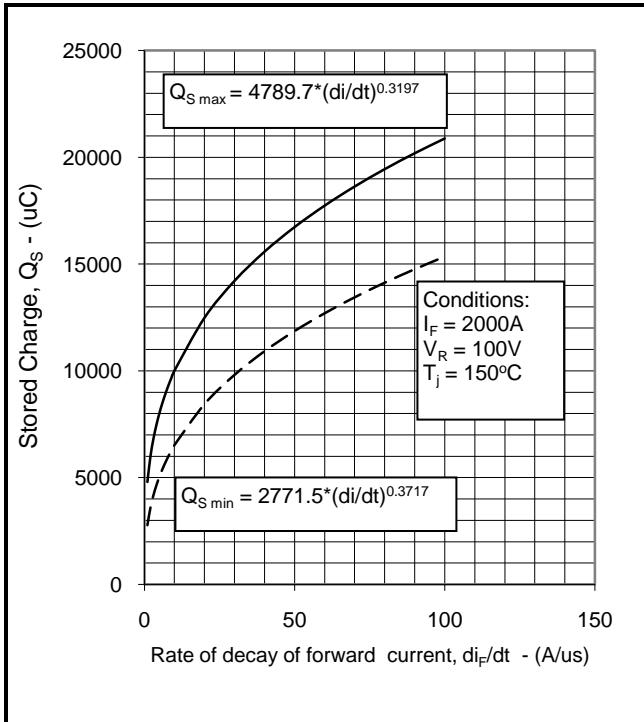


Fig.4 Total stored charge

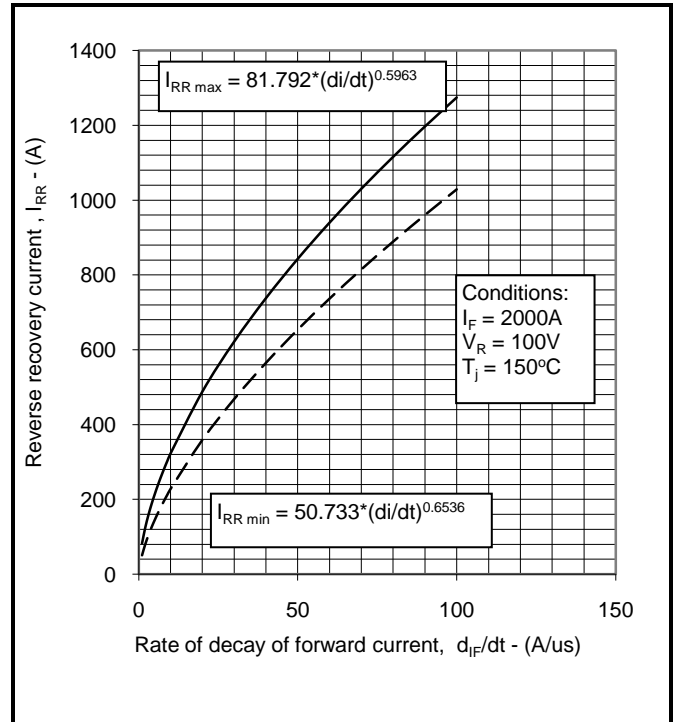


Fig.5 Maximum reverse recovery current

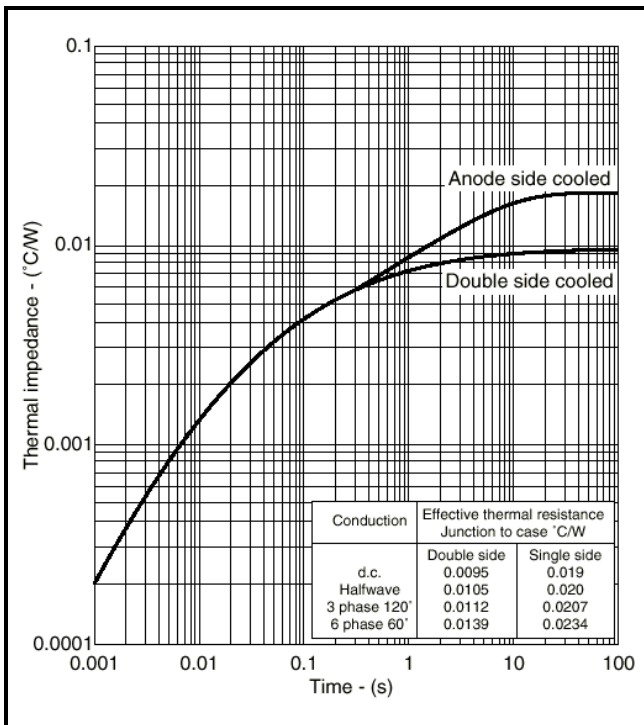
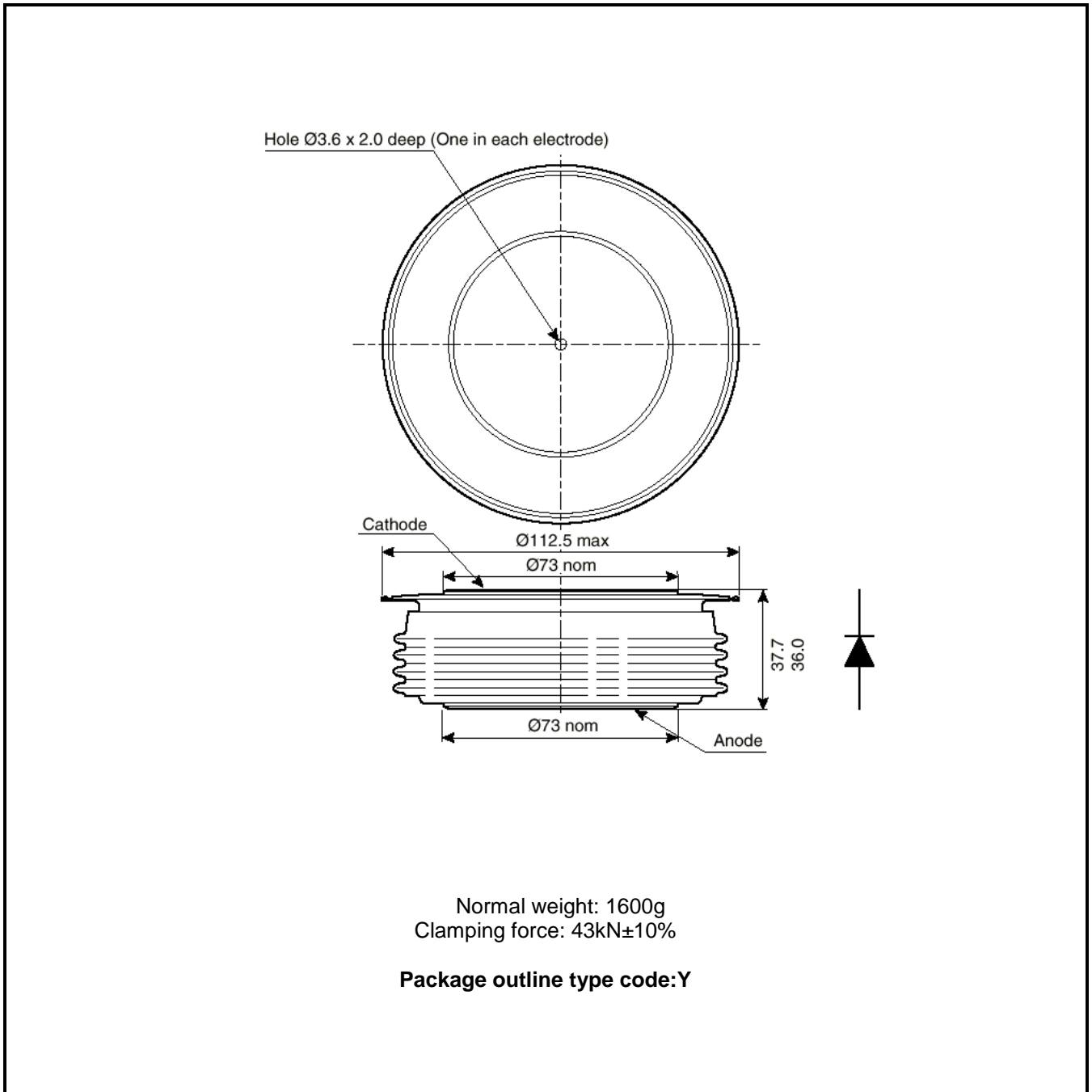


Fig.6 Maximum (limit) transient thermal impedance-junction to case

**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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