



FEATURES

- Double Side Cooling
- High Surge Capability

KEY PARAMETERS

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

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

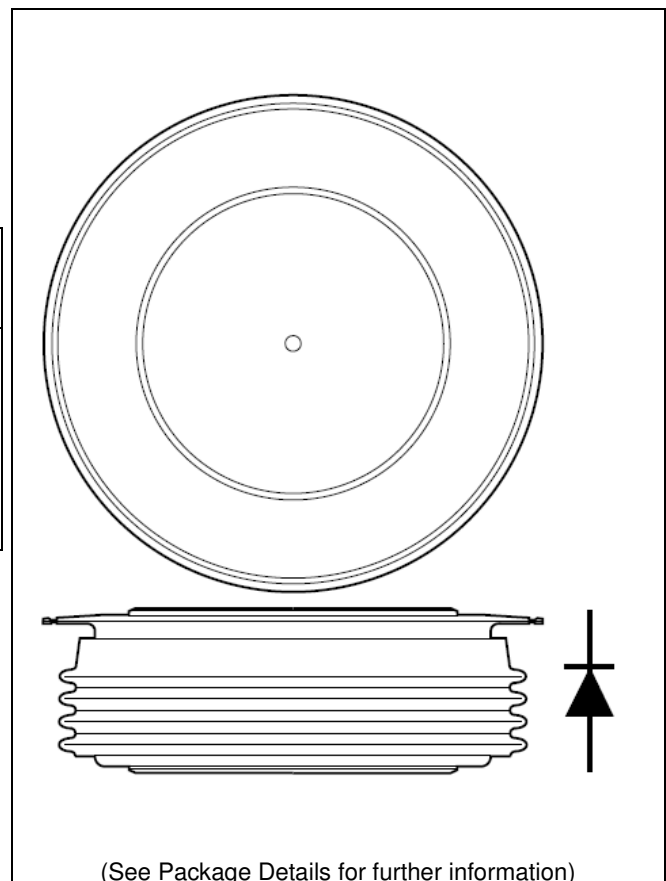


Fig. 1 Package outline

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

CURRENT RATINGS
T_{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	3485	A
I _{F(RMS)}	RMS value	-	5474	A
I _F	Continuous (direct) on-state current	-	5097	A
Single Side Cooled (Anode side)				
I _{F(AV)}	Mean forward current	Half wave resistive load	2299	A
I _{F(RMS)}	RMS value	-	3611	A
I _F	Continuous (direct) on-state current	-	3118	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	2691	A
I _{F(RMS)}	RMS value	-	4227	A
I _F	Continuous (direct) on-state current	-	3843	A
Single Side Cooled (Anode side)				
I _{F(AV)}	Mean forward current	Half wave resistive load	1742	A
I _{F(RMS)}	RMS value	-	2737	A
I _F	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 ² 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 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	-	0.0095	°C/W
		Single side cooled	Anode DC	-	0.019	°C/W
			Cathode DC	-	0.019	°C/W
$R_{th(c-h)}$	Thermal resistance – case to heatsink	Clamping force 43kN (with mounting compound)	Double side	-	0.002	°C/W
			Single side	-	0.004	°C/W
T_{vj}	Virtual junction temperature	On-state (conducting)	-	160	°C	
		Reverse (blocking)	-	150	°C	
T_{stg}	Storage temperature range		-55	150	°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 °C	-	1.25	V
I _{RM}	Peak reverse current	At V _{DRM} , T _{case} = 150 °C	-	100	mA
Q _S	Total stored charge	I _F = 2000A, dI _{RR} /dt = 4A/μs	-	7500	μC
I _{rr}	Peak reverse recovery current	T _{case} = 150 °C, V _R = 100V	-	190	A
V _{TO}	Threshold voltage	At T _{vj} = 150 °C	-	0.82	V
r _T	Slope resistance	At T _{vj} = 150 °C	-	0.143	mΩ

CURVES

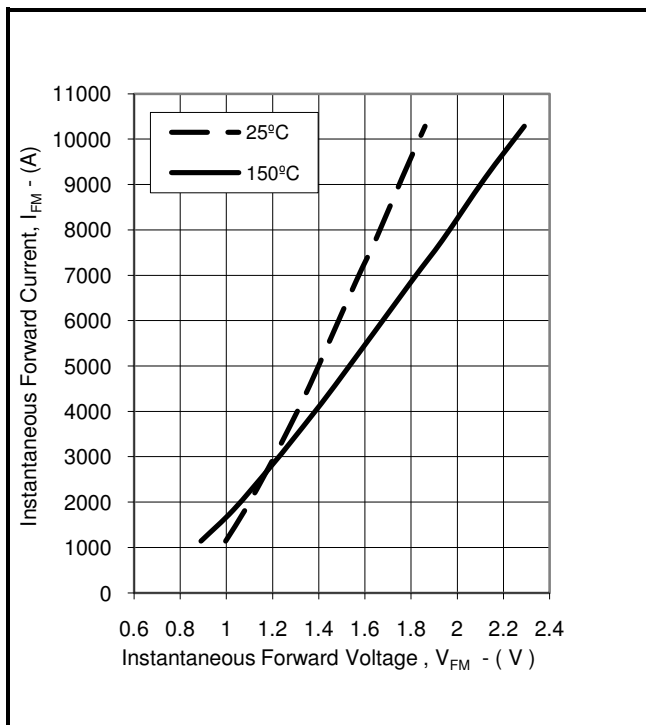


Fig.2 Maximum (limit) on-state characteristics

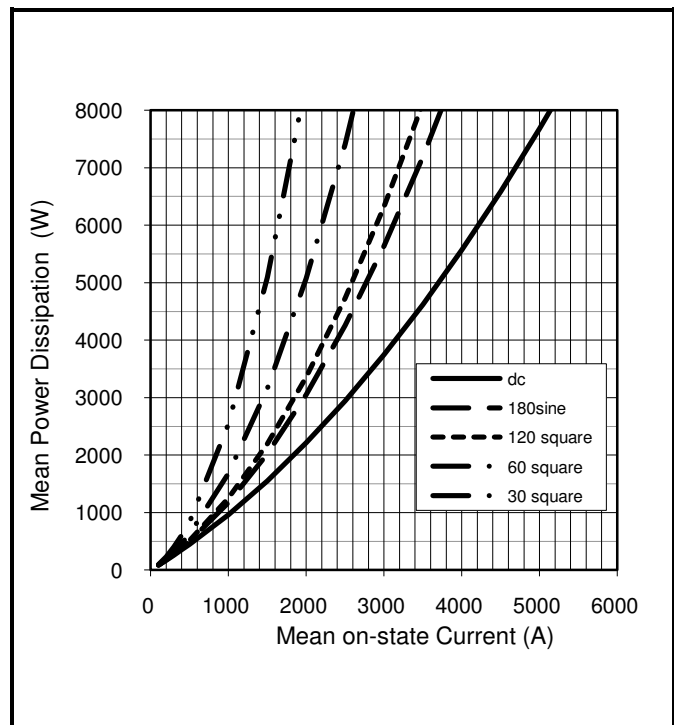


Fig.3 Dissipation curves

V_{TM} EQUATION

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

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

these values are valid for T_j = 150 °C for I_F 1000A to 11000A

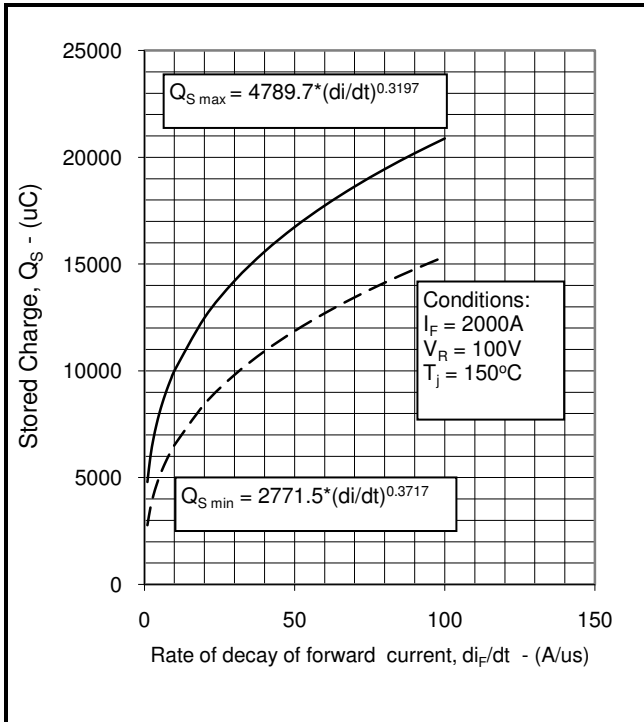


Fig.4 Total stored charge

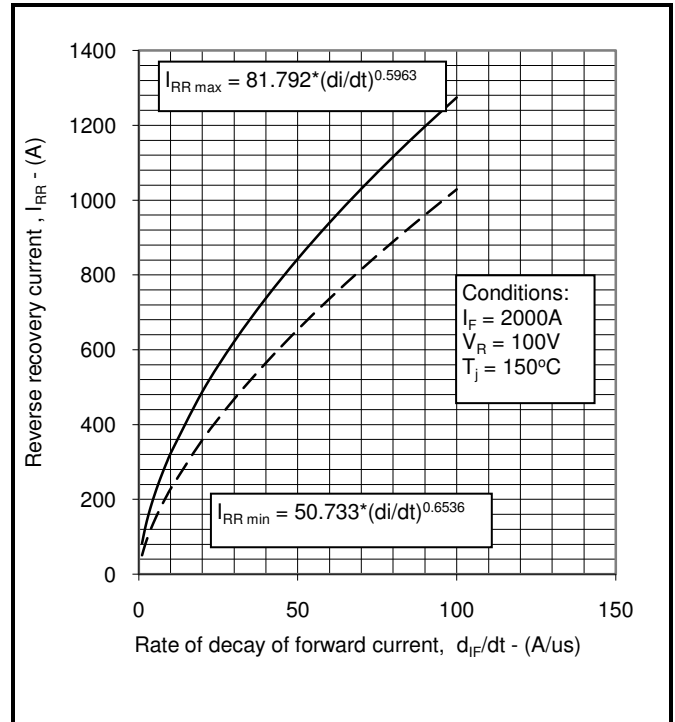


Fig.5 Maximum reverse recovery current

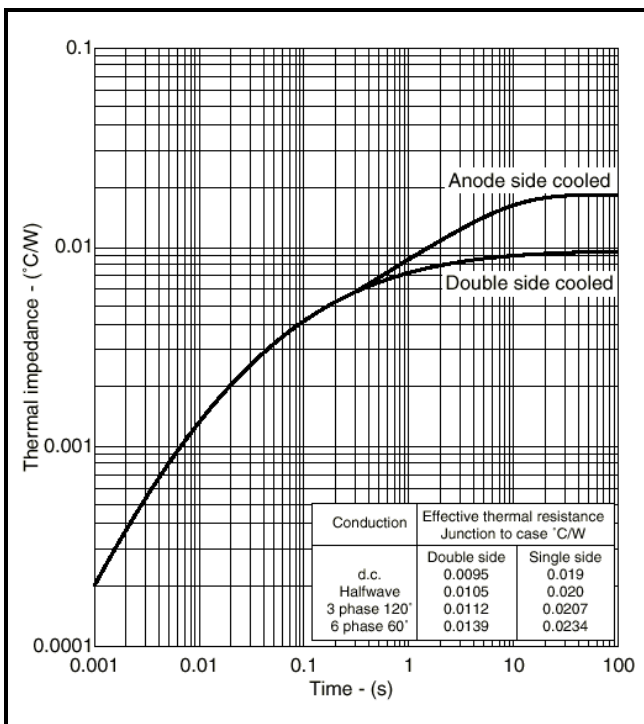
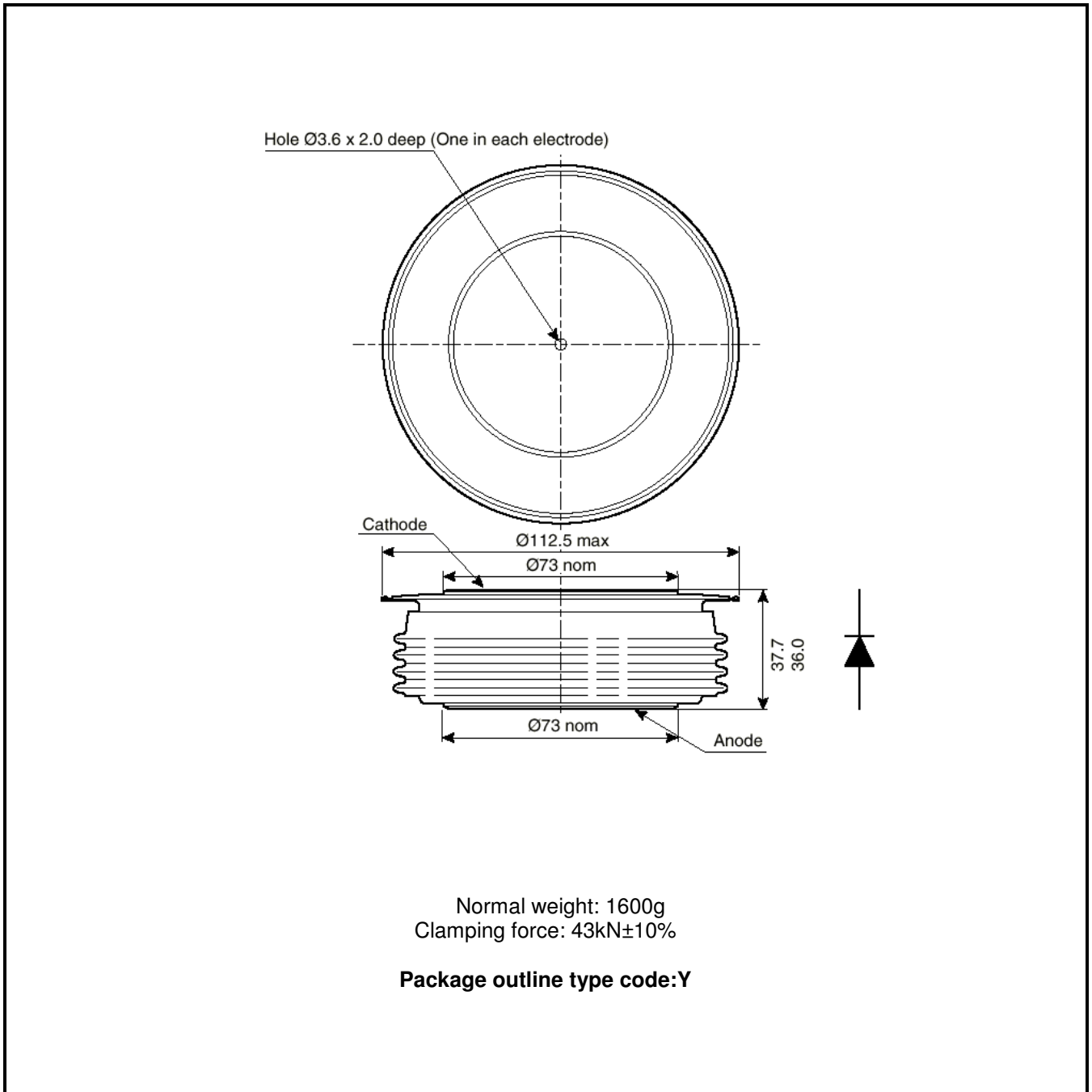


Fig.6 Maximum (limit) transient thermal impedance-junction to case

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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