

FEATURES

- Double Side Cooling
- High Surge Capability
- High Temperature Operation

KEY PARAMETERS

V_{RRM}	5000V
$I_{F(AV)}$	3240A
I_{FSM}	55000A

VOLTAGE RATINGS

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

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

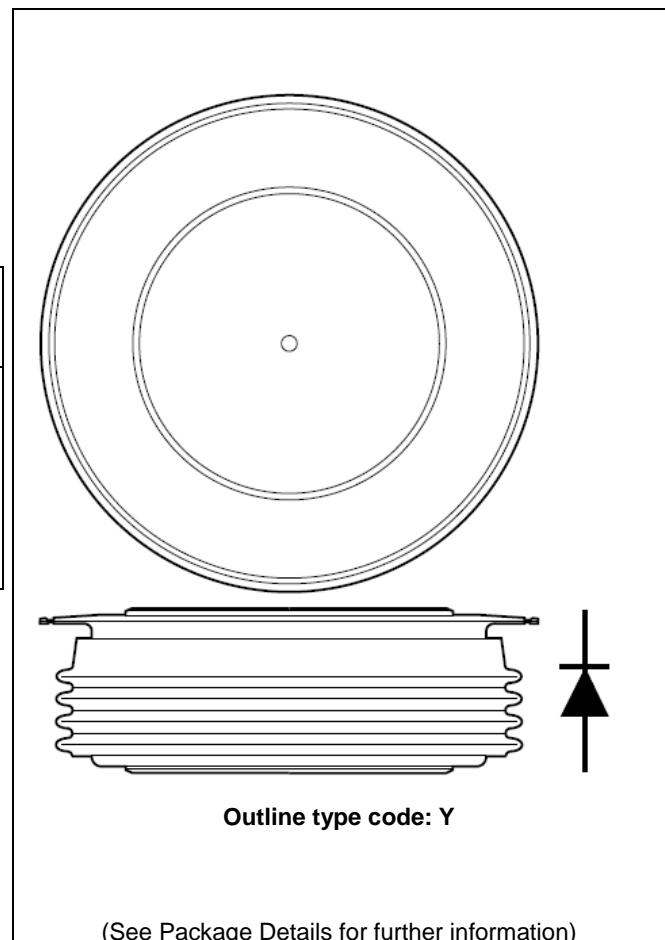


Fig. 1 Package outline

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

CURRENT RATINGS
 $T_{case} = 100^{\circ}C, T_{vj} 175^{\circ}C$

Symbol	Parameter	Test Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	3240	A
$I_{F(RMS)}$	RMS value	-	5089	A
I_F	Continuous (direct) on-state current	-	4700	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	2130	A
$I_{F(RMS)}$	RMS value	-	3346	A
I_F	Continuous (direct) on-state current	-	2930	A

 $T_{case} = 100^{\circ}C, T_{vj}=150^{\circ}C$

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

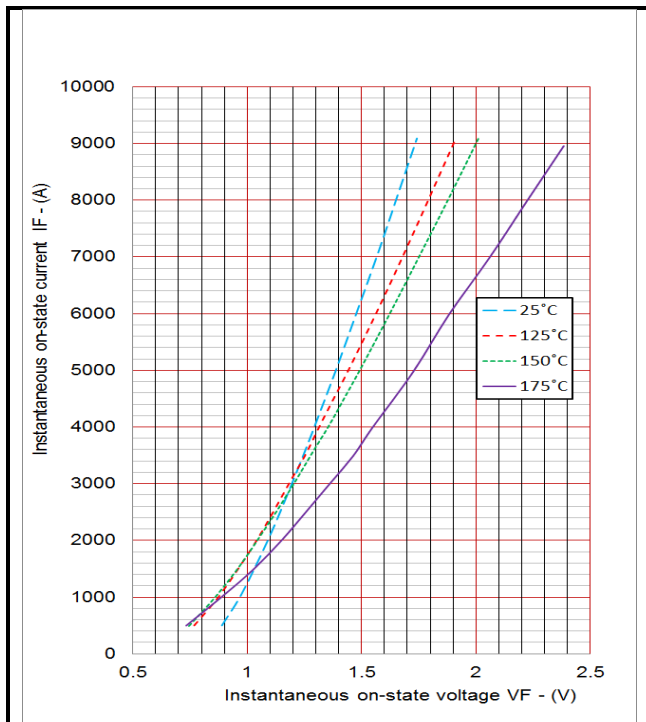
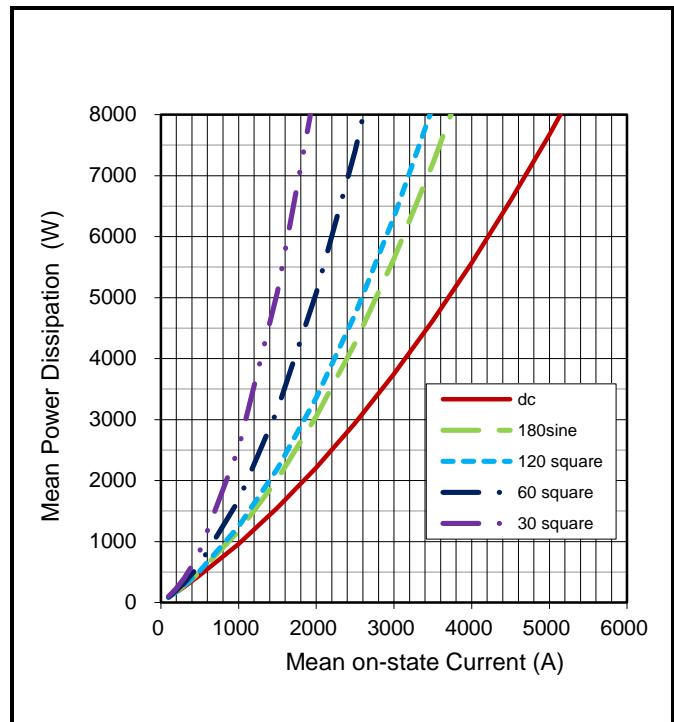
Symbol	Parameter	Test Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 150^{\circ}C$ $V_R = 50\% V_{RRM} - \frac{1}{4}$ sine	44	kA
I^2t	I^2t for fusing		9.68	MA ² s
I_{FSM}	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 150^{\circ}C$ $V_R = 0$	55	kA
I^2t	I^2t for fusing		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	$^{\circ}C/W$
		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)		-	180	$^{\circ}C$
		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_{FM}	Forward voltage	At 3000A peak, $T_{case} = 25^{\circ}C$	-	1.21	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 (150°C)

V_{TM} EQUATION $V_{TM} = A + B \ln(I_T) + C \cdot I_T + D \cdot \sqrt{I_T}$ these values are valid for I_F 500A to 9000A

Junction Temperature (°C)	25	125	150	175
A	0.295095	0.510698	0.557151	0.105618
B	0.096808	0.012794	0.00632	0.065544
C	9.04E-05	7.55E-05	7.65E-05	0.000111
D	-0.00266	0.006279	0.008552	0.007216

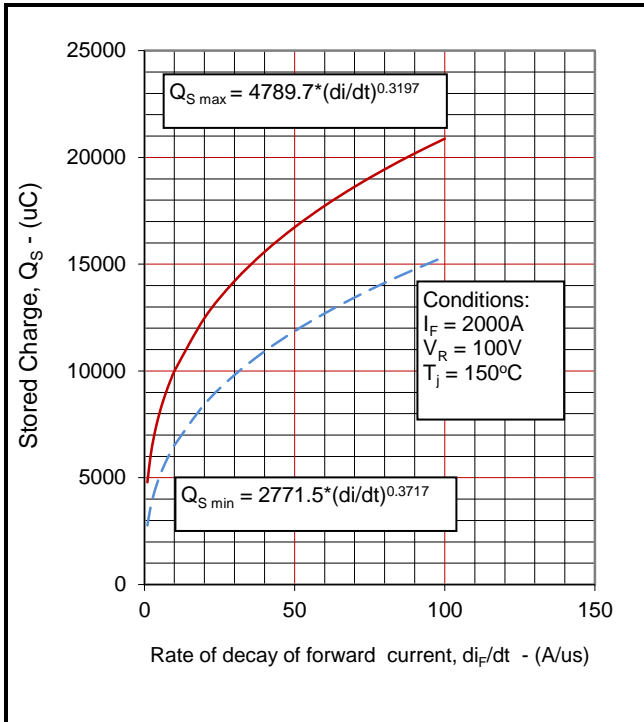


Fig.4 Total stored charge

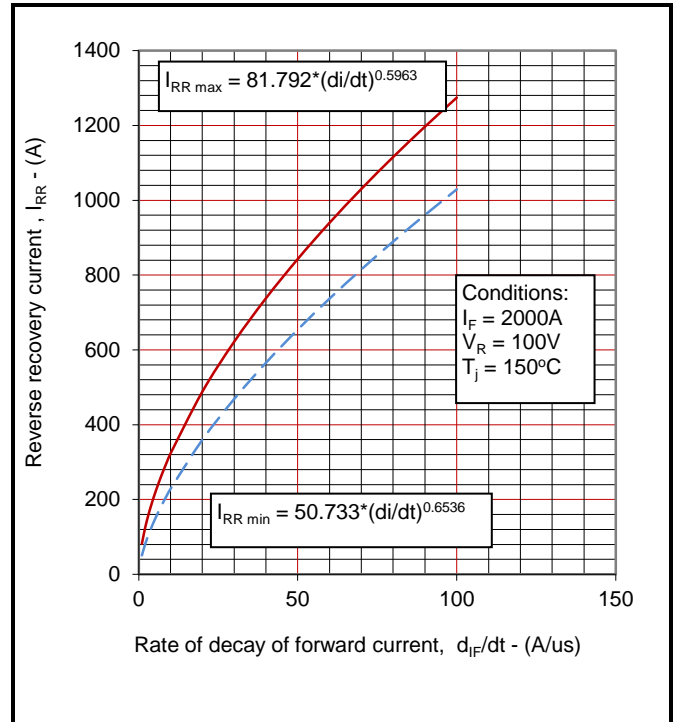


Fig.5 Maximum reverse recovery current

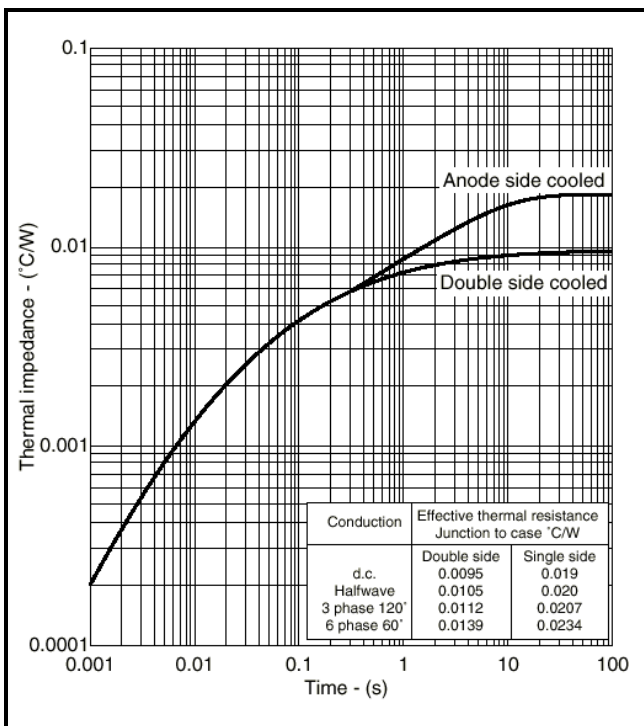
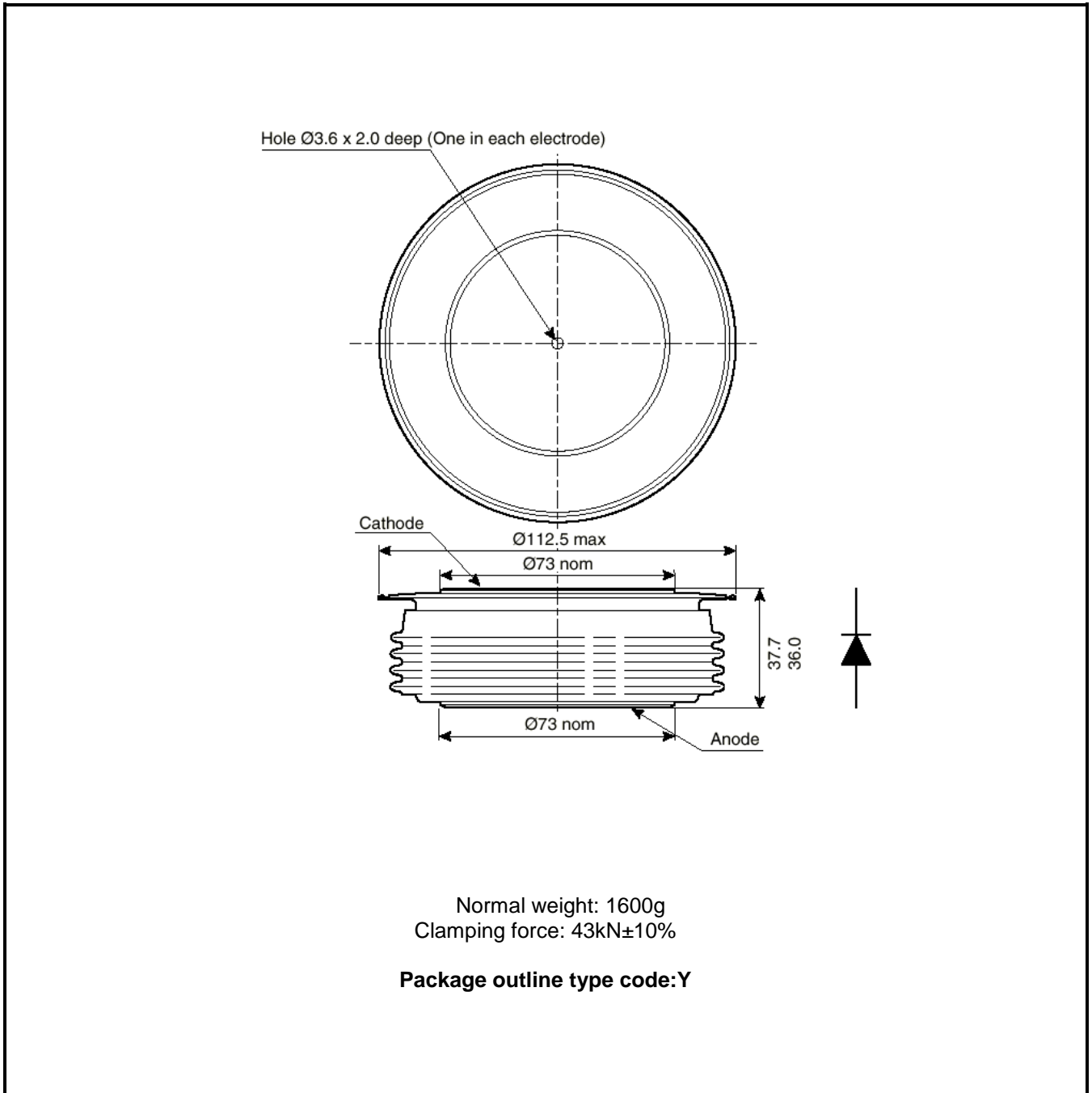


Fig.6 Maximum (limit) transient thermal impedance-junction to case

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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