

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

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

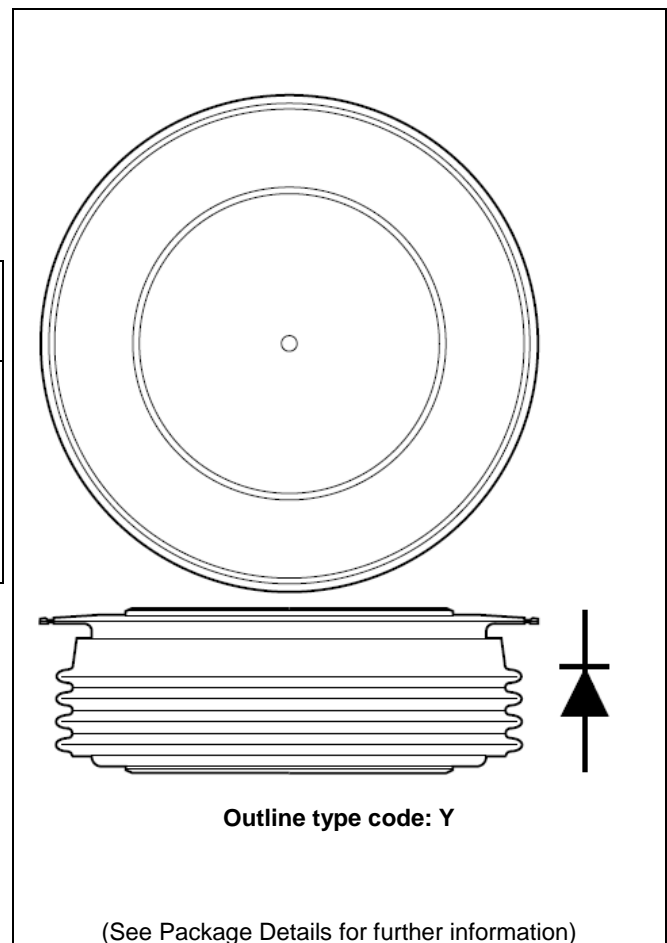


Fig. 1 Package outline

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	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)		-	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°C	-	1.21	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

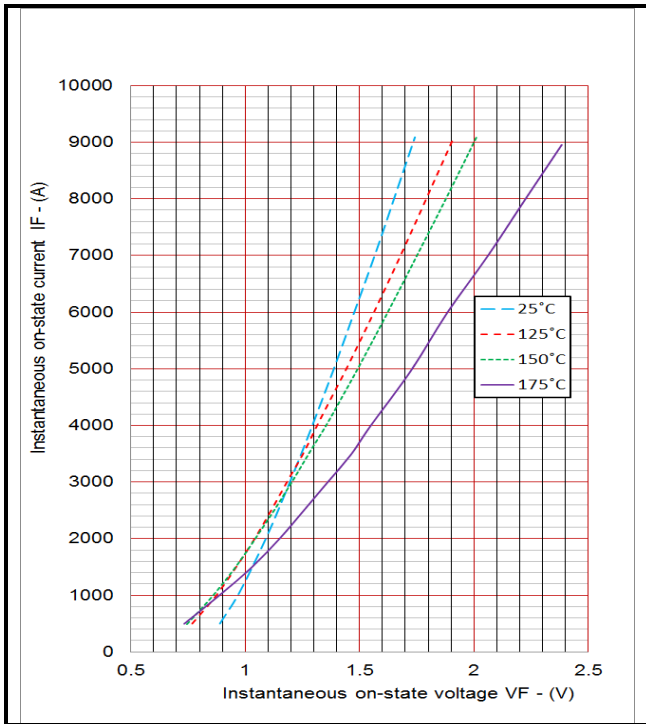


Fig.2 Maximum (limit) on-state characteristics

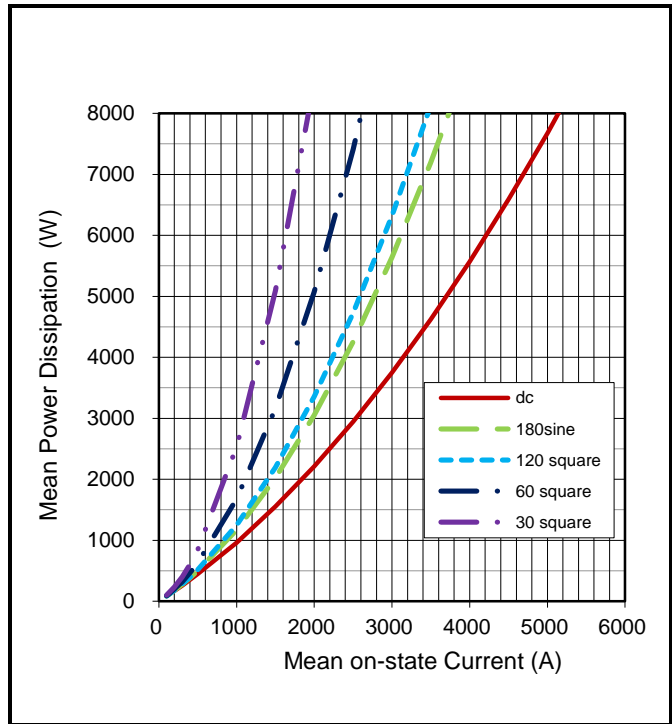


Fig.3 Dissipation curves (150°C)

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

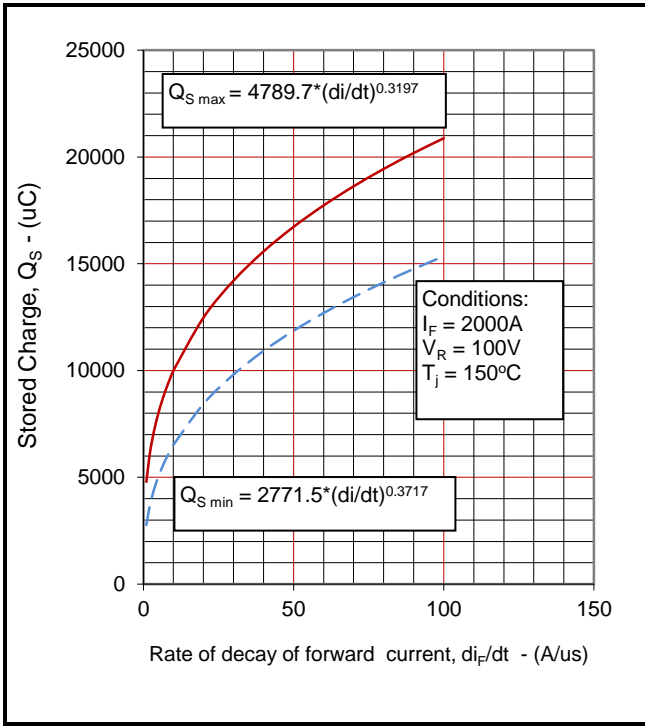


Fig.4 Total stored charge

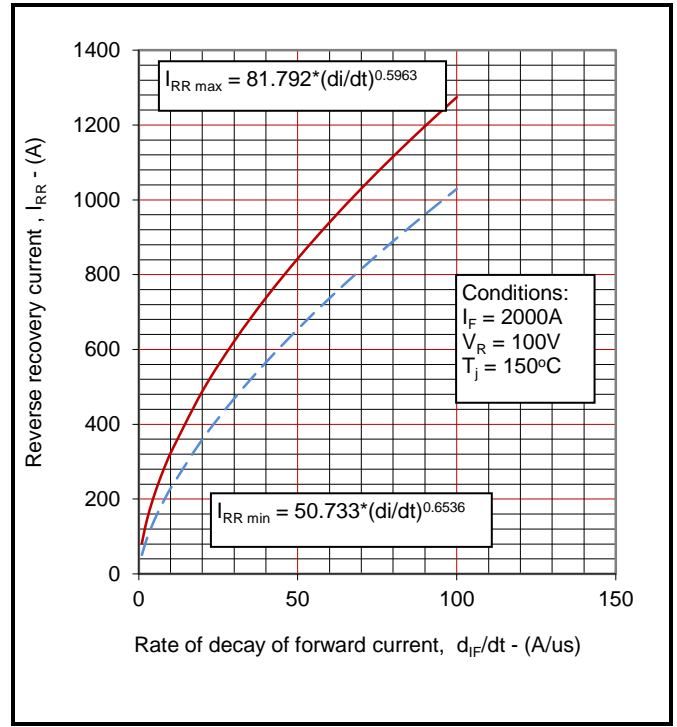


Fig.5 Maximum reverse recovery current

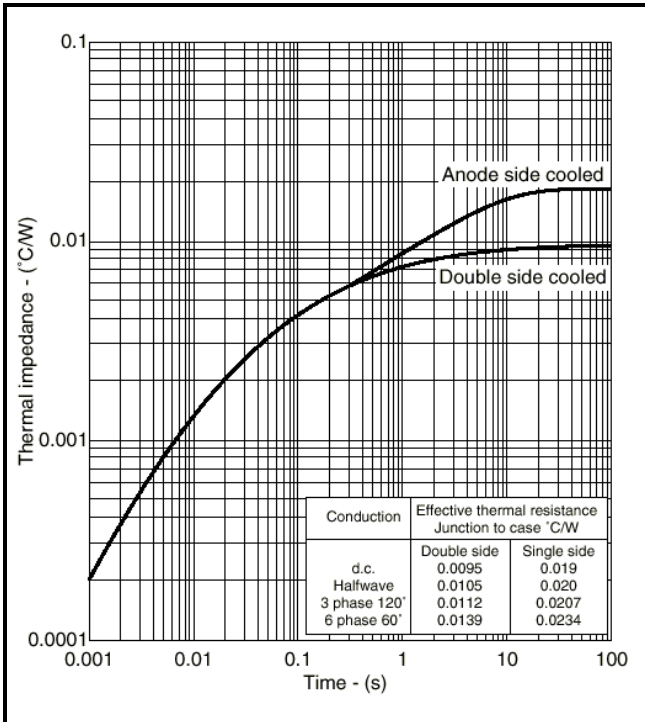
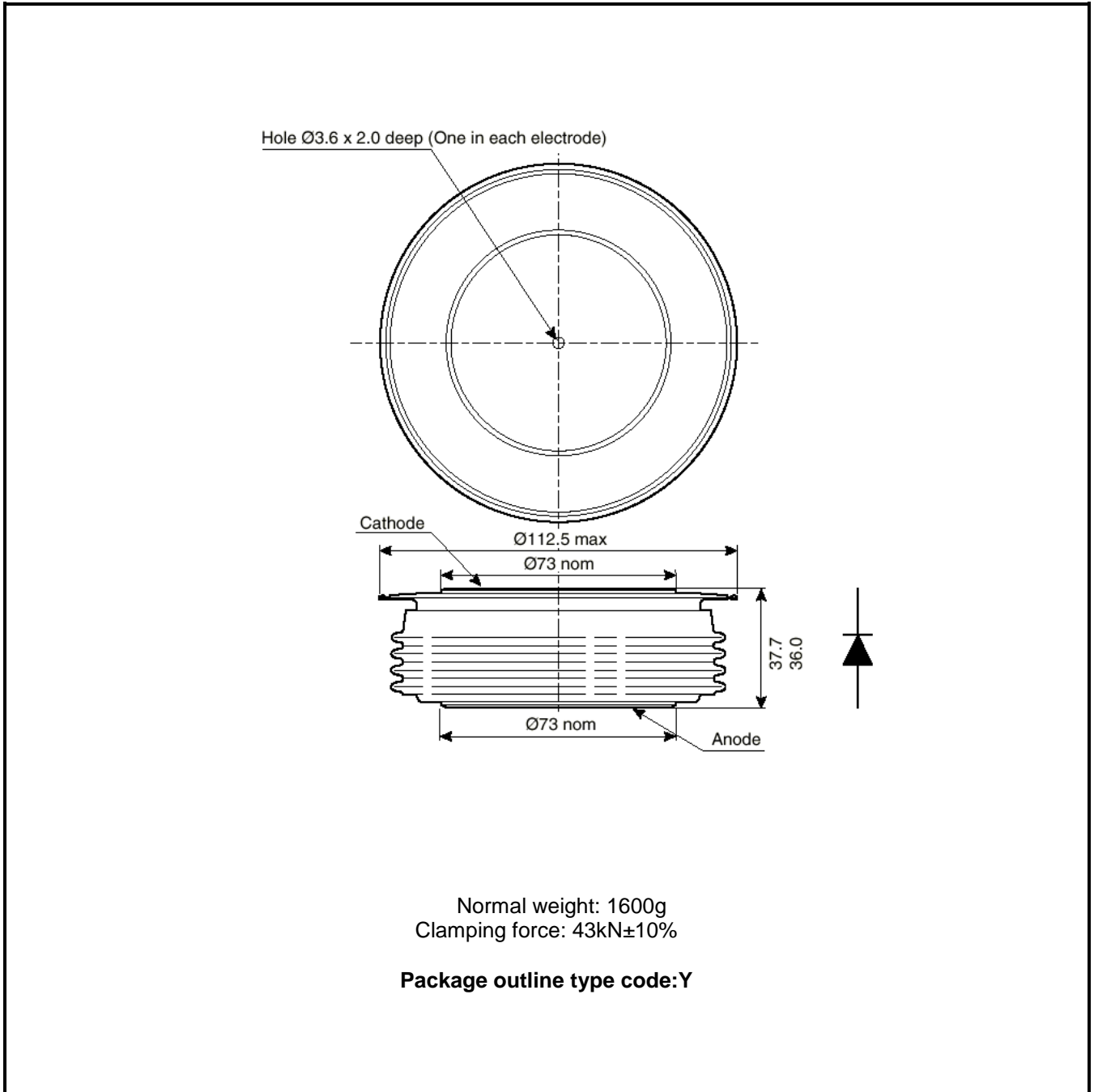


Fig.6 Maximum (limit) transient thermal impedance-junction to case

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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No Annotation:	The product has been approved for production and unless otherwise notified by Dynex any product ordered will be supplied to the current version of the data sheet prevailing at the time of our order acknowledgement.

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HEADQUARTERS OPERATIONS

DYNEX SEMICONDUCTOR LIMITED
Doddington Road, Lincoln, Lincolnshire, LN6 3LF
United Kingdom.
Phone: +44 (0) 1522 500500
Web: <http://www.dynexsemi.com>

CUSTOMER SERVICE

Phone: +44 (0) 1522 502753 / 502901
e-mail: powersolutions@dynexsemi.com