

**FEATURES**

- Double Side Cooling
- High Surge Capability

**APPLICATIONS**

- Rectification
- Free-wheel Diode
- DC Motor Control
- Power Supplies
- Welding
- Battery Chargers

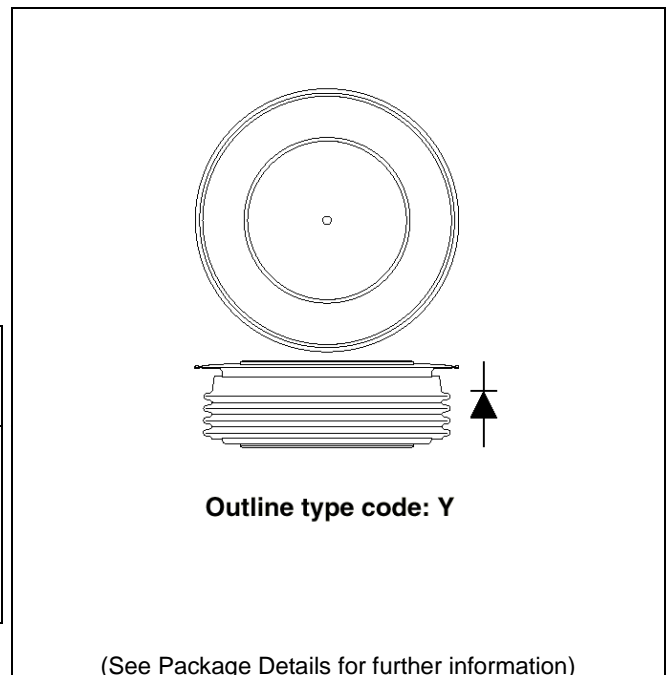
**VOLTAGE RATINGS**

Part and Ordering Number	Repetitive Peak Voltages $V_{RRM}$ V	Conditions
DRD2960Y40	4000	$V_{RSM} = V_{RRM} + 100V$
DRD2960Y39	3900	
DRD2960Y38	3800	
DRD2960Y37	3700	
DRD2960Y36	3600	
DRD2960Y35	3500	

Lower voltage grades available.

**KEY PARAMETERS**

$V_{RRM}$	<b>4000V</b>
$I_{F(AV)}$	<b>2956A</b>
$I_{FSM}$	<b>62500A</b>



**Fig. 1 Package outlines**

**ORDERING INFORMATION**

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

For example:

**DRD2960Y37** for a 3700V device in a Y outline

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

## CURRENT RATINGS

$T_{case} = 75^{\circ}C$  unless stated otherwise

Symbol	Parameter	Test Conditions	Max.	Units
<b>Double Side Cooled</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	3830	A
$I_{F(RMS)}$	RMS value	-	6016	A
$I_F$	Continuous (direct) on-state current	-	5597	A
<b>Single Side Cooled (Anode side)</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	2525	A
$I_{F(RMS)}$	RMS value	-	3966	A
$I_F$	Continuous (direct) on-state current	-	3421	A

$T_{case} = 100^{\circ}C$  unless stated otherwise

Symbol	Parameter	Test Conditions	Max.	Units
<b>Double Side Cooled</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	2956	A
$I_{F(RMS)}$	RMS value	-	4643	A
$I_F$	Continuous (direct) on-state current	-	4218	A
<b>Single Side Cooled (Anode side)</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	1913	A
$I_{F(RMS)}$	RMS value	-	3005	A
$I_F$	Continuous (direct) on-state current	-	2514	A

**SURGE RATINGS**

Symbol	Parameter	Test Conditions	Max.	Units
$I_{FSM}$	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 150^{\circ}C$	50.0	kA
$I^2t$	$I^2t$ for fusing	$V_R = 50\% V_{RRM} - 1/4$ sine	12.5	MA <sup>2</sup> s
$I_{FSM}$	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 150^{\circ}C$	62.5	kA
$I^2t$	$I^2t$ for fusing	$V_R = 0$	19.6	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)	-	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
$V_{FM}$	Forward voltage	At 3000A peak, $T_{case} = 25^{\circ}C$	-	1.15	V
$I_{RM}$	Peak reverse current	At $V_{DRM}$ , $T_{case} = 150^{\circ}C$	-	250	mA
$Q_S$	Total stored charge	$I_F = 2000A$ , $dI_{RR}/dt = 3A/\mu s$	-	5000	$\mu C$
$I_{rr}$	Peak reverse recovery current	$T_{case} = 150^{\circ}C$ , $V_R = 100V$	-	150	A
$V_{TO}$	Threshold voltage	At $T_{vj} = 150^{\circ}C$	-	0.75	V
$r_T$	Slope resistance	At $T_{vj} = 150^{\circ}C$	-	0.118	$m\Omega$

## CURVES

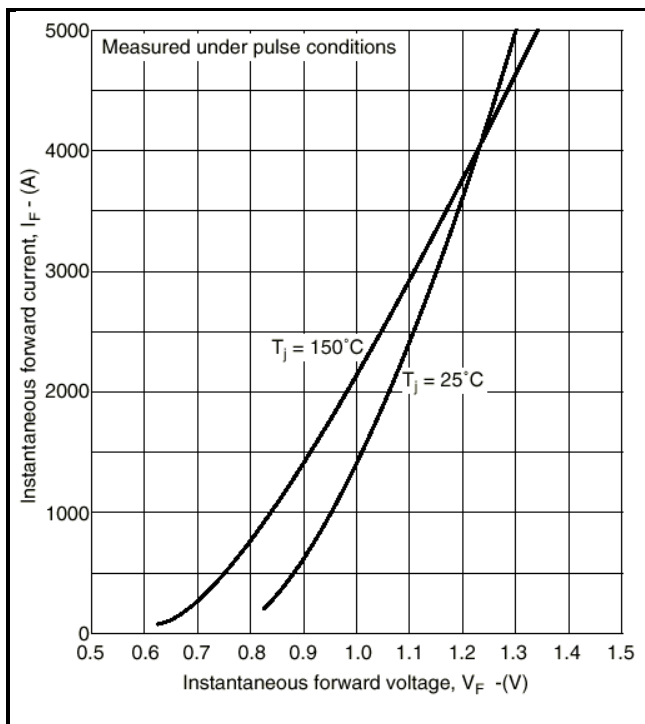


Fig.2 Maximum (limit) on-state characteristics

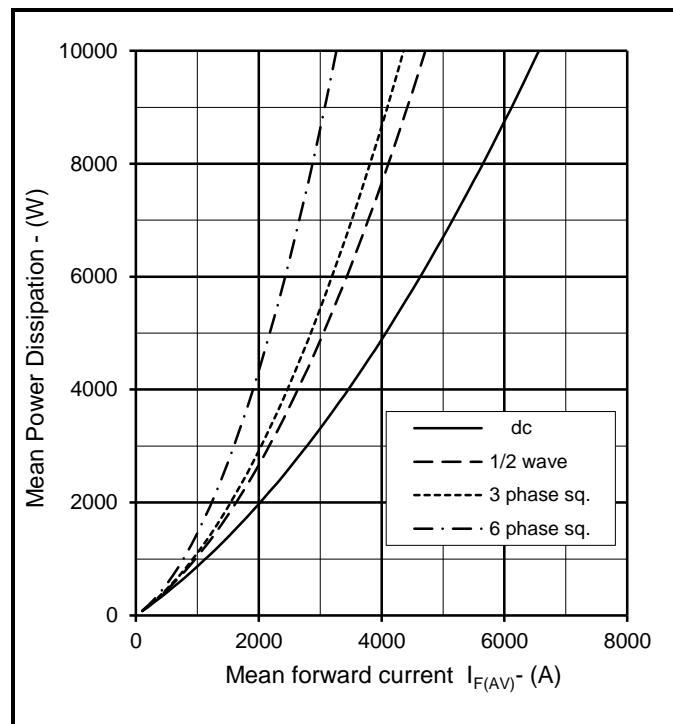


Fig.3 Dissipation curves

### $V_{TM}$ EQUATION

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

Where

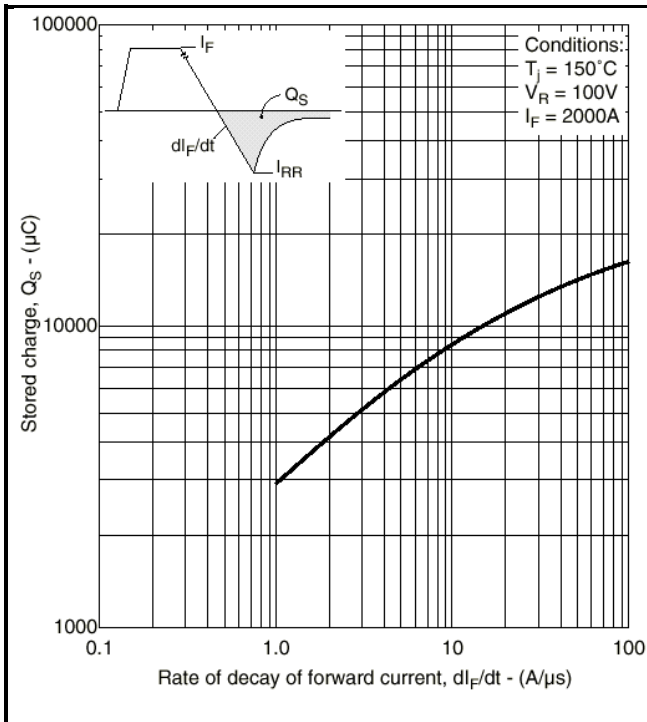
$$A = -0.15357$$

$$B = 0.177571$$

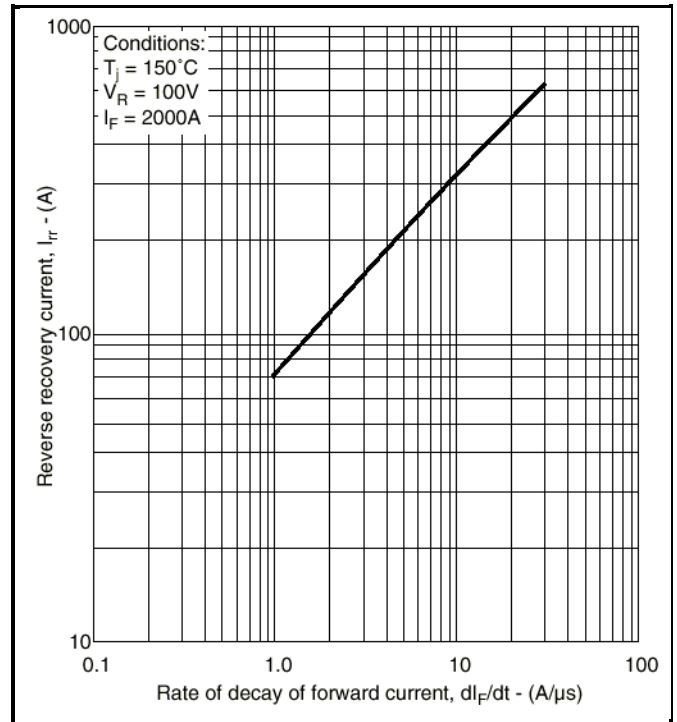
$$C = 0.000179$$

$$D = -0.01294$$

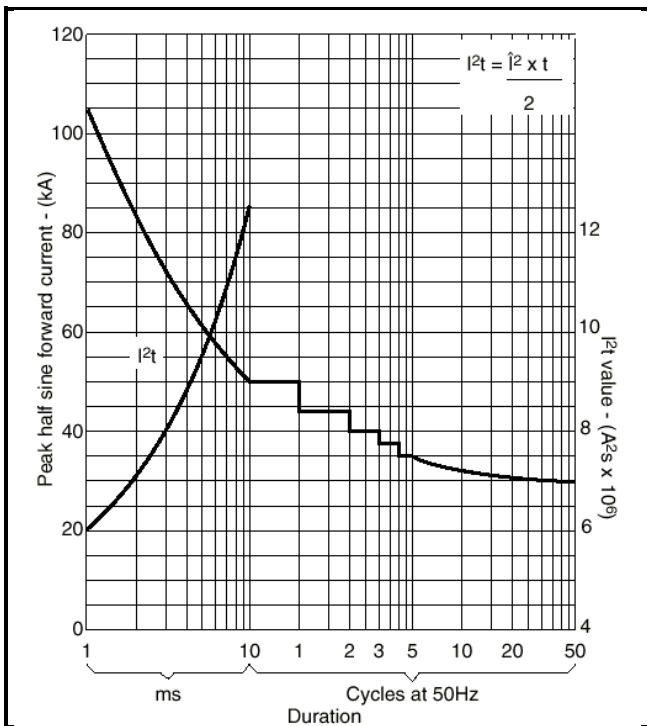
these values are valid for  $T_j = 150^{\circ}C$  for  $I_F$  500A to 5000A



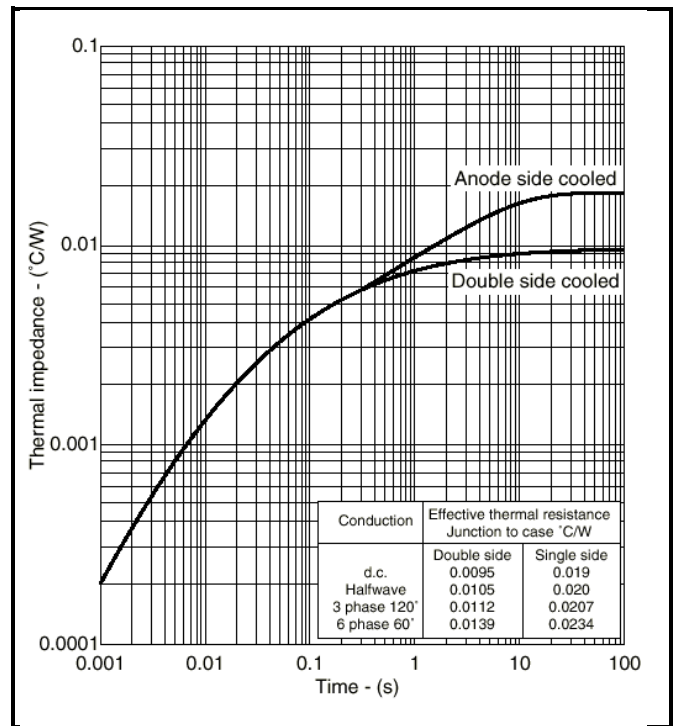
**Fig.4 Total stored charge**



**Fig.5 Maximum reverse recovery current**



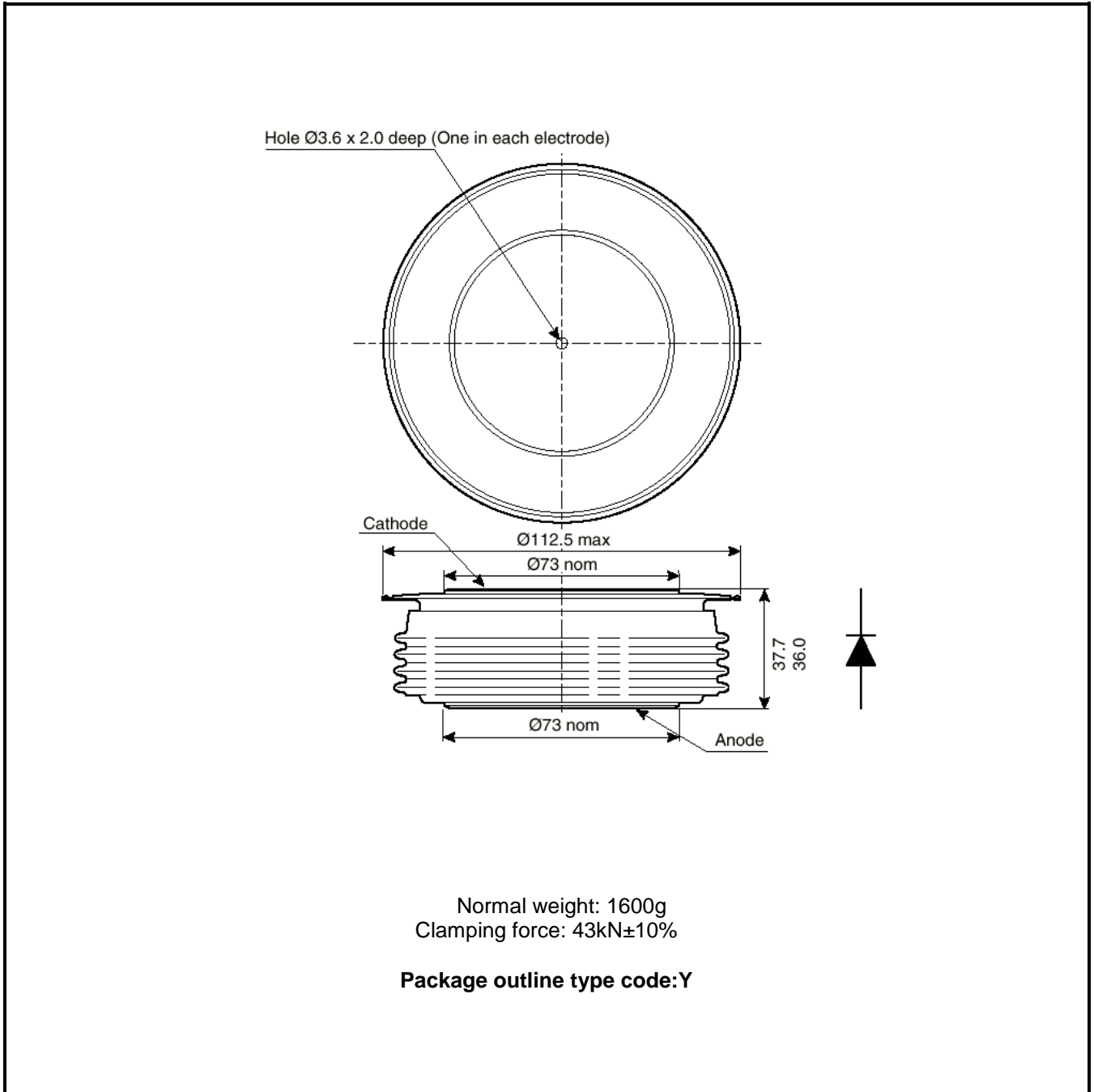
**Fig.6 Surge (non-repetitive) forward current vs time (with 50%  $V_{RRM}$  at  $T_{case} 150^\circ\text{C}$ )**



**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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<b>Target Information:</b>	This is the most tentative form of information and represents a very preliminary specification. No actual design work on the product has been started.
<b>Preliminary Information:</b>	The product design is complete and final characterisation for volume production is in progress. The datasheet represents the product as it is now understood but details may change.
<b>No Annotation:</b>	The product has been approved for production and unless otherwise notified by Dynex any product ordered will be supplied to the <b>current version of the data sheet prevailing at the time of our order acknowledgement.</b>

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