



DS5994 – 1 March 2011 (LN28180)

### FEATURES

- Double Side Cooling
- High Surge Capability

### KEY PARAMETERS

$V_{RRM}$	<b>1400V</b>
$I_{F(AV)}$	<b>3220A</b>
$I_{FSM}$	<b>35800A</b>

### VOLTAGE RATINGS

Part and Ordering Number	Repetitive Peak Voltages $V_{RRM}$ V	Conditions
DRD3220X14	1400	$V_{RSM} = V_{RRM} + 100V$
DRD3220X12	1200	
DRD3220X10	1000	
DRD3220X08	800	
DRD3220X06	600	

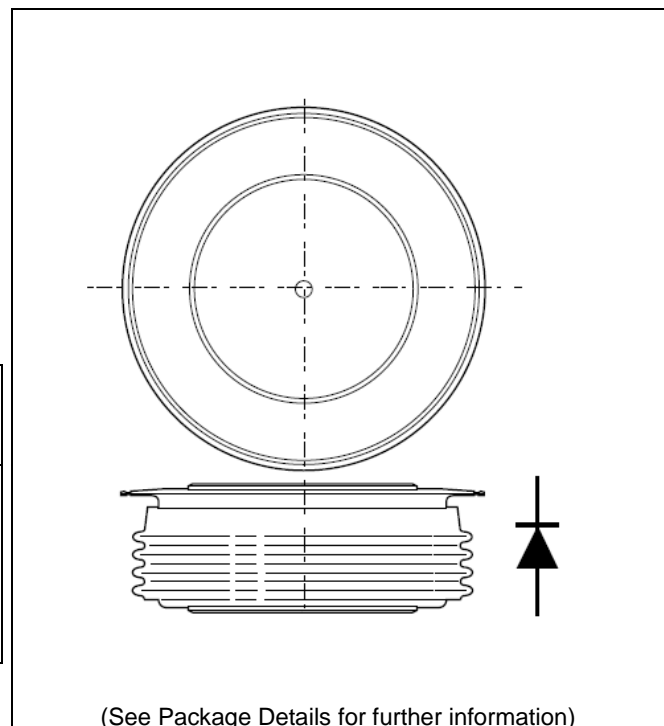


Fig. 1 Package outline

### ORDERING INFORMATION

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

For example:

**DRD3220X14** for a 1400V device

## CURRENT RATINGS

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

Symbol	Parameter	Test Conditions	Max.	Units
<b>Double Side Cooled</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	3810	A
$I_{F(RMS)}$	RMS value	-	5980	A
$I_F$	Continuous (direct) on-state current	-	5390	A

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

Symbol	Parameter	Test Conditions	Max.	Units
<b>Double Side Cooled</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	3220	A
$I_{F(RMS)}$	RMS value	-	5060	A
$I_F$	Continuous (direct) on-state current	-	4550	A

## SURGE RATINGS

Symbol	Parameter	Test Conditions	Max.	Units
$I_{FSM}$	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 190^{\circ}\text{C}$	35.8	kA
$I^2t$	$I^2t$ for fusing	$V_R = 0$	6.41	$\text{MA}^2\text{s}$

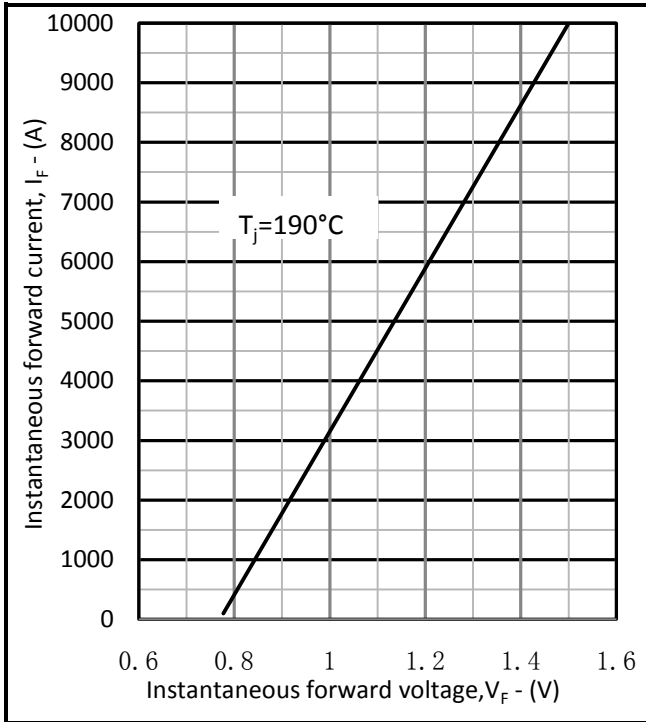
**THERMAL AND MECHANICAL RATINGS**

Symbol	Parameter	Test Conditions		Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance – junction to case	Double side cooled	DC	-	0.018	°C/W
$R_{th(c-h)}$	Thermal resistance – case to heatsink	Double side cooled	DC	-	0.005	°C/W
$T_{vj}$	Virtual junction temperature	Blocking $V_{DRM} / V_{RRM}$		-40	190	°C
$T_{stg}$	Storage temperature range			-40	190	°C
$F_m$	Clamping force			26	34	kN

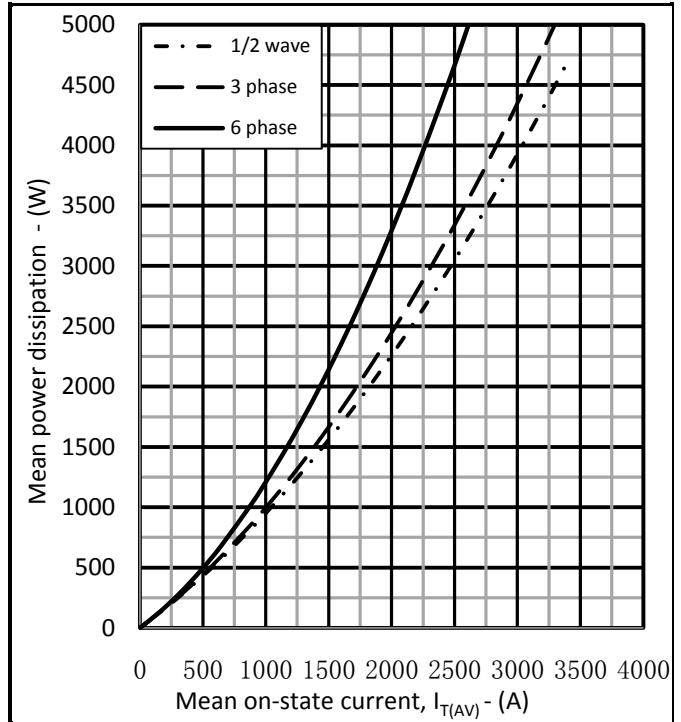
**CHARACTERISTICS**

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 $V_{DRM}$ , $T_{case} = 190^{\circ}C$	-	150	mA
$Q_S$	Total stored charge	$I_F = 2000A$ , $di_{RR}/dt = 10A/\mu s$ $T_{case} = 190^{\circ}C$ , $V_R = 100V$	-	4000	$\mu C$
$V_{TO}$	Threshold voltage	At $T_{vj} = 190^{\circ}C$	-	0.77	V
$r_T$	Slope resistance	At $T_{vj} = 190^{\circ}C$	-	0.073	$m\Omega$

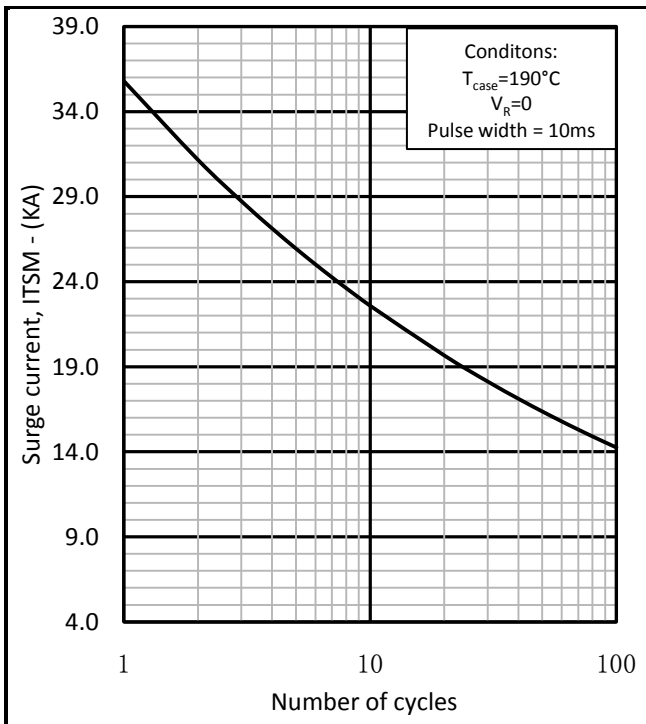
**CURVES**



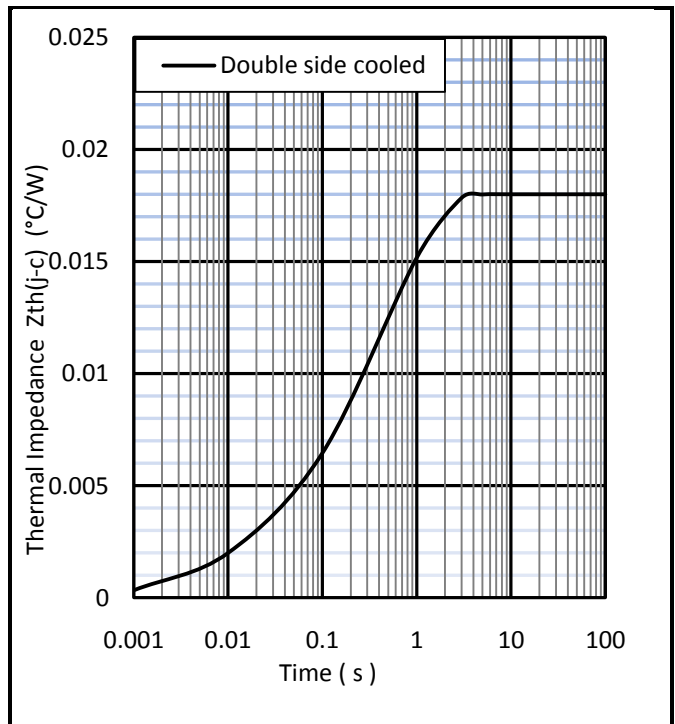
**Fig.2 Maximum forward characteristics**



**Fig.3 Dissipation curves**



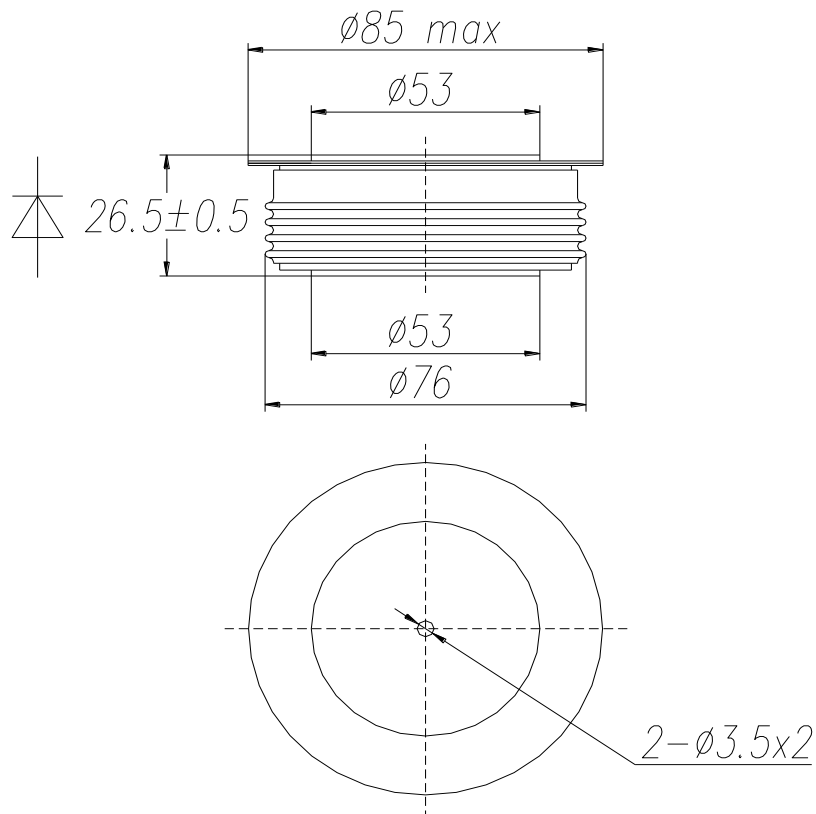
**Fig.4 Surge (Non-Repetitive) Forward current vs time**



**Fig.5 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.



**Package outline type code: X**

**Note:**  
Some packages may be supplied with gate and or tags.

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