



DS5994 – 1 March 2011 (LN28180)

FEATURES

- Double Side Cooling
- High Surge Capability

KEY PARAMETERS

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

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	

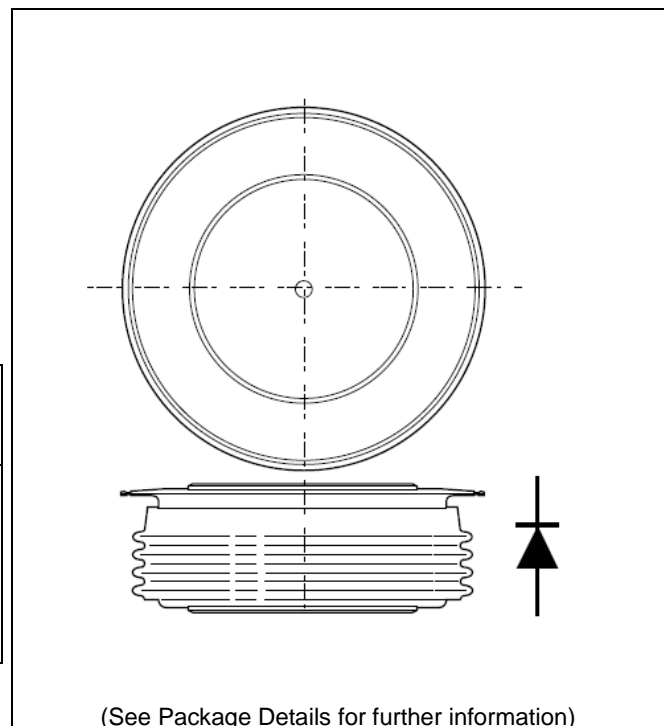


Fig. 1 Package outline

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
Double Side Cooled				
$I_{F(AV)}$	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
Double Side Cooled				
$I_{F(AV)}$	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	MA^2s

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	μC
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

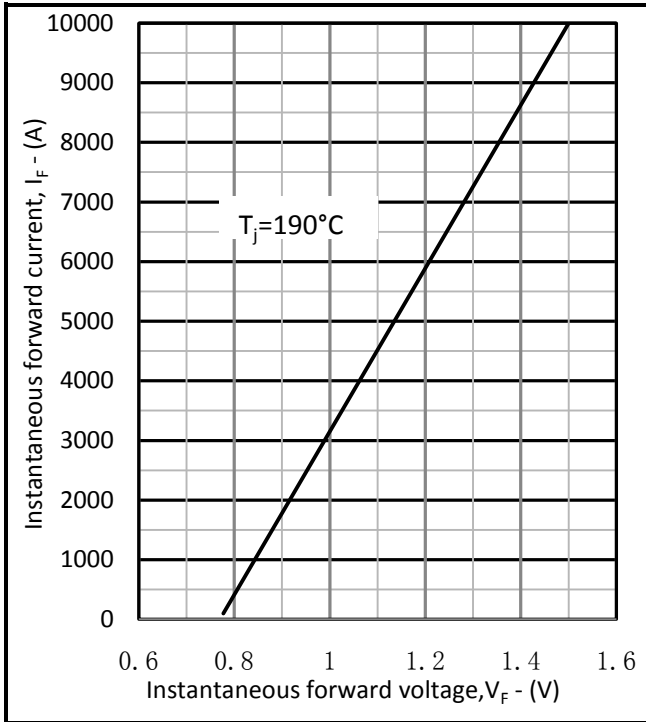


Fig.2 Maximum forward characteristics

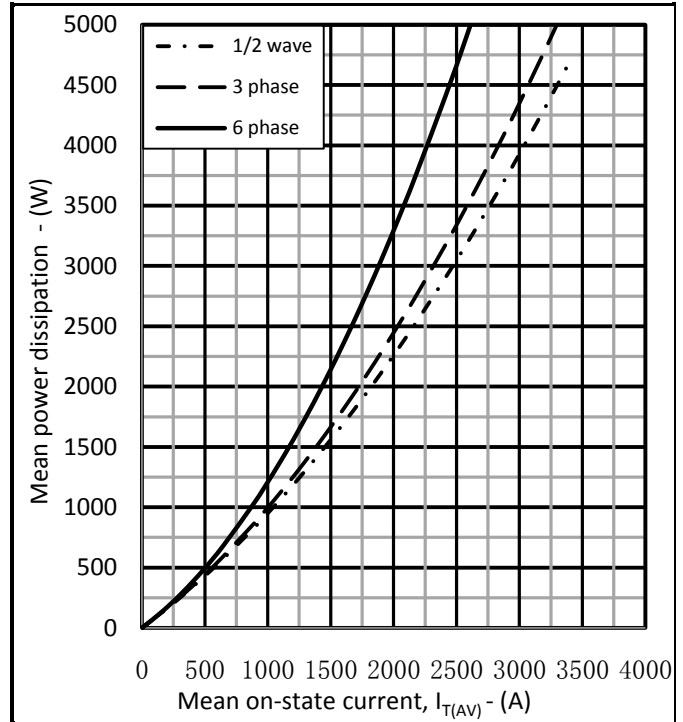


Fig.3 Dissipation curves

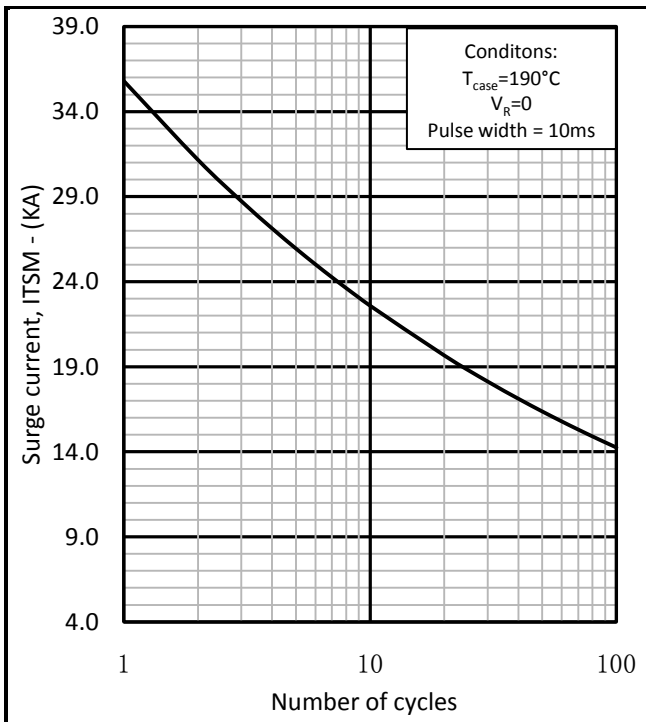


Fig.4 Surge (Non-Repetitive) Forward current vs time

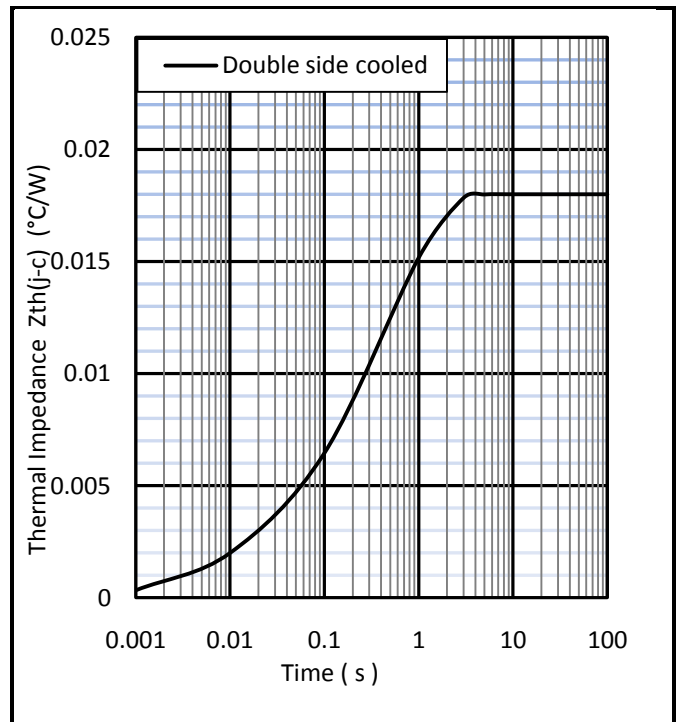
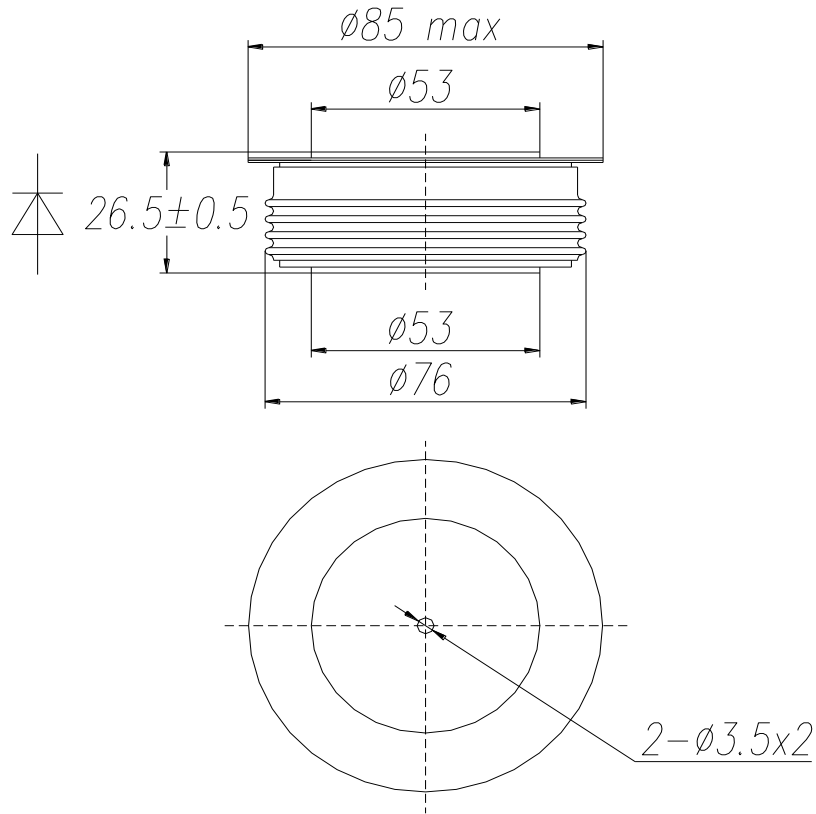


Fig.5 Maximum (limit) transient thermal impedance-junction to case

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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