

FEATURES

- Double Side Cooling
- High Surge Capability

KEY PARAMETERS

V_{RRM}	1500V
$I_{F(AV)}$	5794A
I_{FSM}	57kA

VOLTAGE RATINGS

Part and Ordering Number	Repetitive Peak Voltages V_{RRM} V	Conditions
DRD4890L15 DRD4890L14 DRD4890L12	1500 1400 1200	$V_{RSM} = V_{RRM} + 100V$

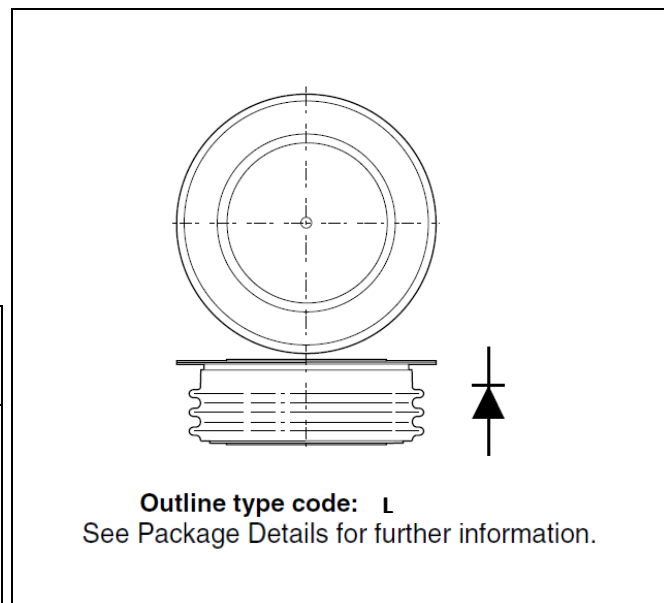


Fig. 1 Package outline

ORDERING INFORMATION

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

For example:

DRD4890L14 for a 1400V device

CURRENT RATINGS

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

Symbol	Parameter	Test Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	5794	A
$I_{F(RMS)}$	RMS value	-	9101	A
I_F	Continuous (direct) on-state current	-	7934	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	4230	A
$I_{F(RMS)}$	RMS value	-	6645	A
I_F	Continuous (direct) on-state current	-	5468	A

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

Symbol	Parameter	Test Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	4890	A
$I_{F(RMS)}$	RMS value	-	7681	A
I_F	Continuous (direct) on-state current	-	6600	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	3540	A
$I_{F(RMS)}$	RMS value	-	5560	A
I_F	Continuous (direct) on-state current	-	4500	A

SURGE RATINGS

Symbol	Parameter	Test Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 190^{\circ}C$	52.0	kA
I^2t	I^2t for fusing	$V_R = 50\% V_{RRM} - \frac{1}{4}$ sine	13.5	MA ² s
I_{FSM}	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 190^{\circ}C$	57.0	kA
I^2t	I^2t for fusing	$V_R = 0$	16.2	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	-	0.013	$^{\circ}C/W$
		Single side cooled	Anode DC	-	0.025	$^{\circ}C/W$
			Cathode DC	-	0.027	$^{\circ}C/W$
$R_{th(c-h)}$	Thermal resistance – case to heatsink	Clamping force 43kN (with mounting compound)	Double side	-	0.003	$^{\circ}C/W$
			Single side	-	0.006	$^{\circ}C/W$
T_{vj}	Virtual junction temperature	On-state (conducting)	-	200	$^{\circ}C$	
		Reverse (blocking)	-	190	$^{\circ}C$	
T_{stg}	Storage temperature range		-55	190	$^{\circ}C$	
F_m	Clamping force		40.0	48.0	kN	

CHARACTERISTICS

Symbol	Parameter	Test Conditions	Typ.	Max.	Units
V_{FM}	Forward voltage	At 3000A peak, $T_{case} = 25^{\circ}C$	-	1.05	V
I_{RM}	Peak reverse current	At V_{RRM} , $T_{case} = 190^{\circ}C$	-	60	mA
Q_S	Total stored charge	$I_F = 2000A$, $dI_{RR}/dt = 50A/\mu s$ $T_{case} = 175^{\circ}C$, $V_R = 100V$	-	4000	μC
I_{rr}	Peak reverse recovery current		-	600	A
t_{rr}	Reverse recovery time		-	20	us
V_{TO}	Threshold voltage	At $T_{vj} = 190^{\circ}C$	-	0.75	V
r_T	Slope resistance	At $T_{vj} = 190^{\circ}C$	-	0.046	$m\Omega$

CURVES

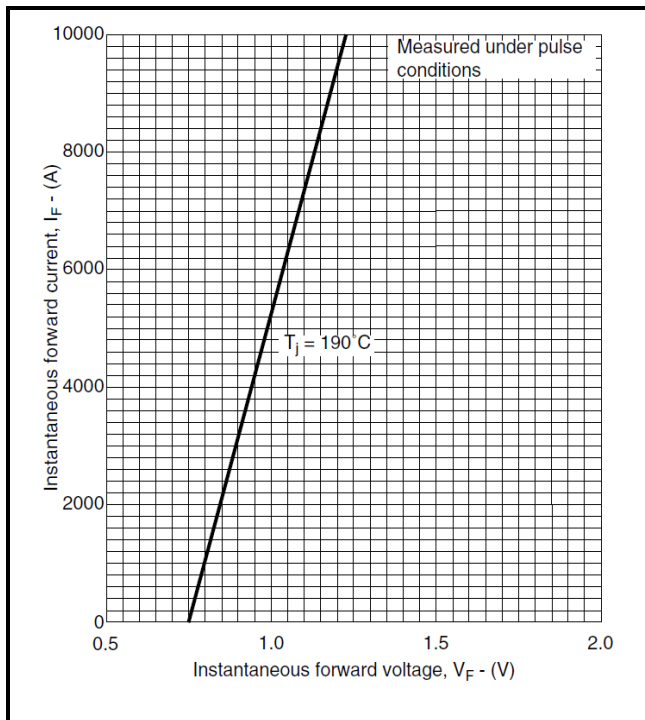


Fig.2 Maximum & minimum on-state characteristics

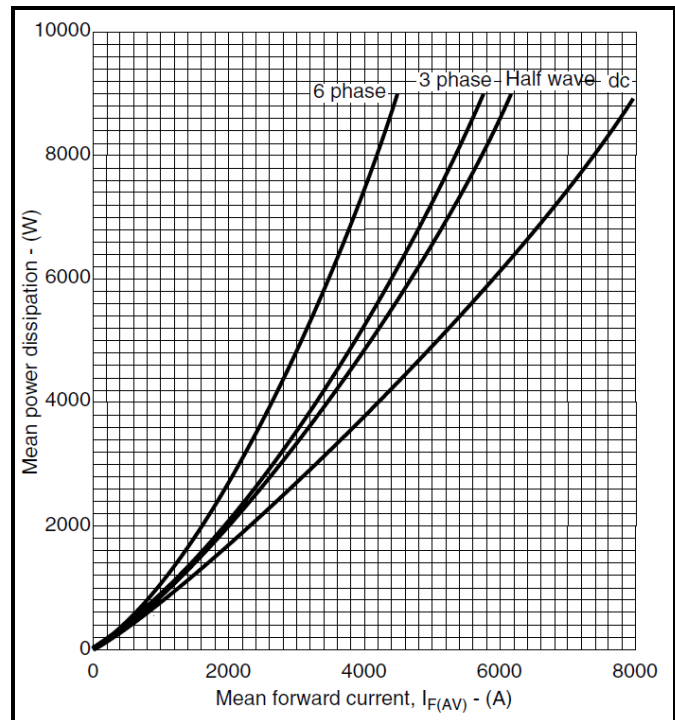


Fig.3 Dissipation curves

V_{TM} EQUATION

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

Where $A = 0.517184$

$B = 0.035583$

$C = 4.94 \times 10^5$

$D = -0.0011$

these values are valid for $T_j = 190^{\circ}C$ for I_F 500A to 10000A

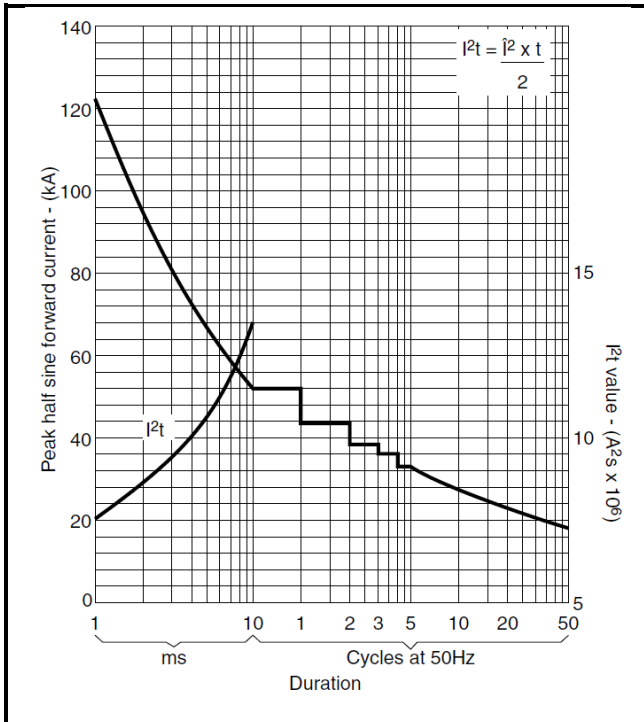


Fig.4 Surge (non-repetitive) forward current vs time (with 50% V_{RRM} at T_{case} 190°C)

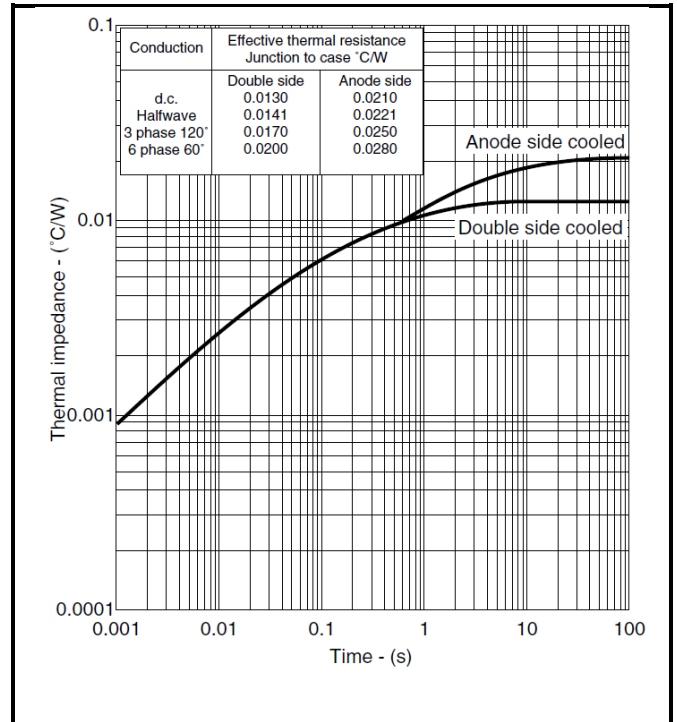
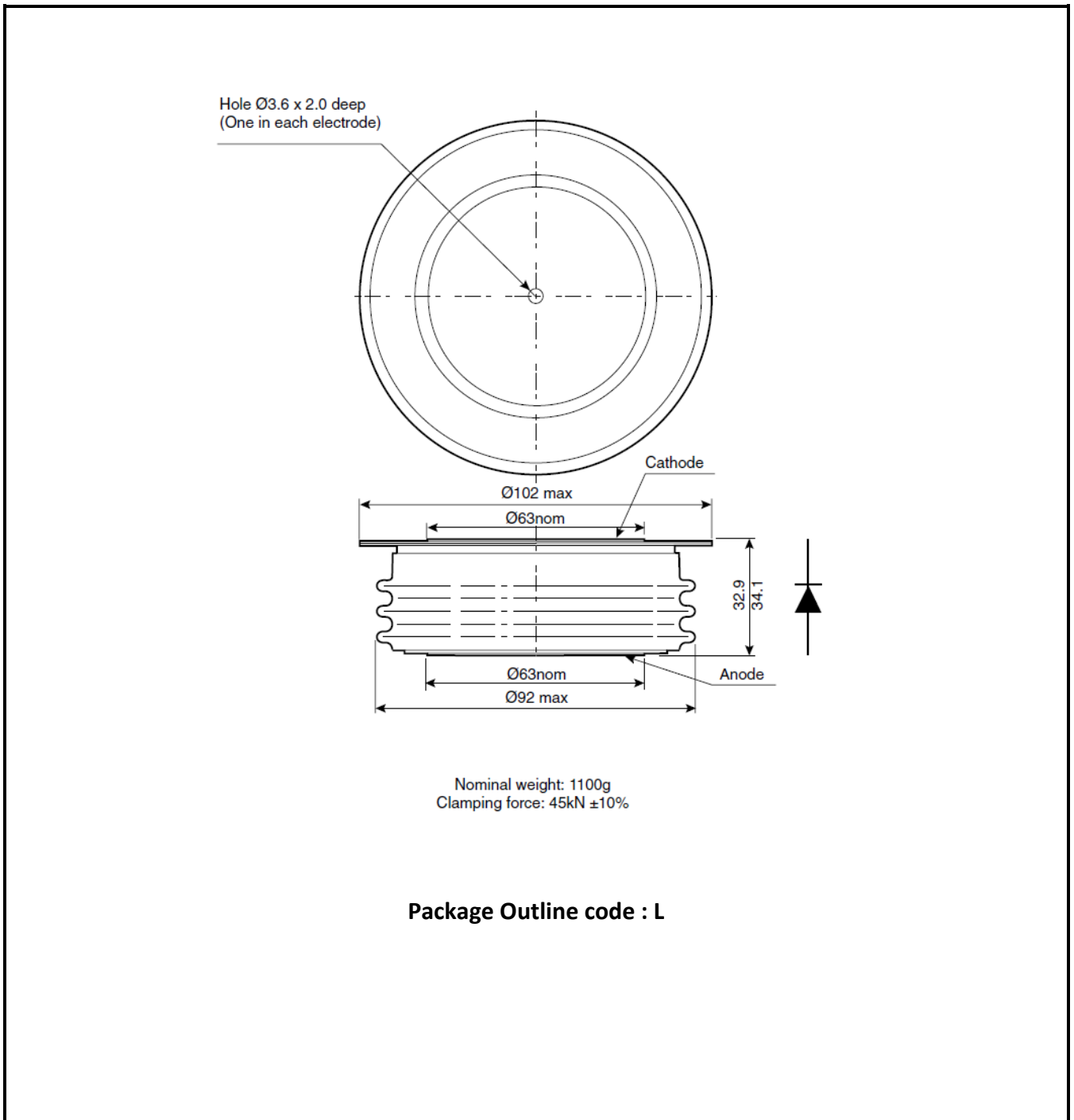


Fig.5 Maximum (limit) transient thermal impedance-junction to case

PACKAGE DETAILS

For further package information, please contact Customer Services. All dimensions in mm, unless stated otherwise. DO NOT SCALE.



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

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