

FEATURES

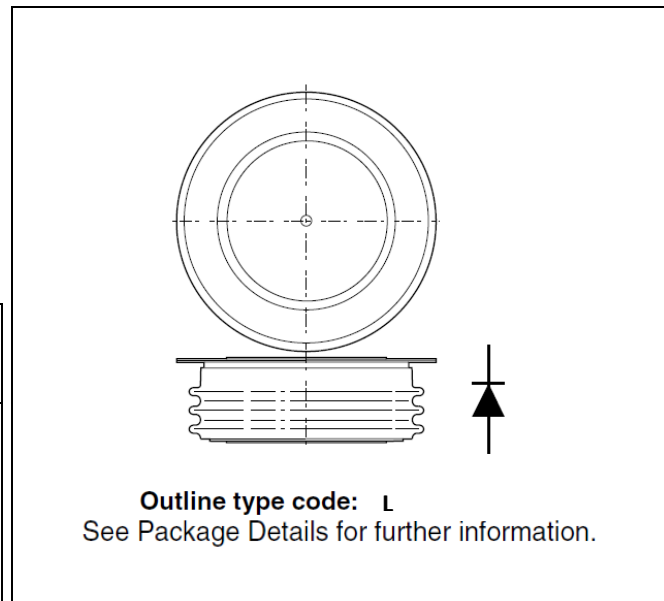
- Double Side Cooling
- High Surge Capability

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

| Symbol | Parameter | Test Conditions | Max. | Units |
|--|--------------------------------------|--------------------------|------|-------|
| Double Side Cooled | | | | |
| $I_{F(AV)}$ | Mean forward current | Half wave resistive load | 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 |

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

| Symbol | Parameter | Test Conditions | Max. | Units |
|--|--------------------------------------|--------------------------|------|-------|
| Double Side Cooled | | | | |
| $I_{F(AV)}$ | Mean forward current | Half wave resistive load | 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, $T_{case} = 190^{\circ}C$ $V_R = 50\% V_{RRM} - \frac{1}{4}$ sine | 52.0 | kA |
| I^2t | I^2t for fusing | | 13.5 | MA ² s |
| I_{FSM} | Surge (non-repetitive) on-state current | 10ms half sine, $T_{case} = 190^{\circ}C$ $V_R = 0$ | 57.0 | kA |
| I^2t | I^2t for fusing | | 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°C | - | 1.05 | V |
| I _{RM} | Peak reverse current | At V _{RRM} , T _{case} = 190°C | - | 60 | mA |
| Q _S | Total stored charge | I _F = 2000A, dI _{RR} /dt = 50A/μs T _{case} = 175°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°C | - | 0.75 | V |
| r _T | Slope resistance | At T _{vj} = 190°C | - | 0.046 | mΩ |

CURVES

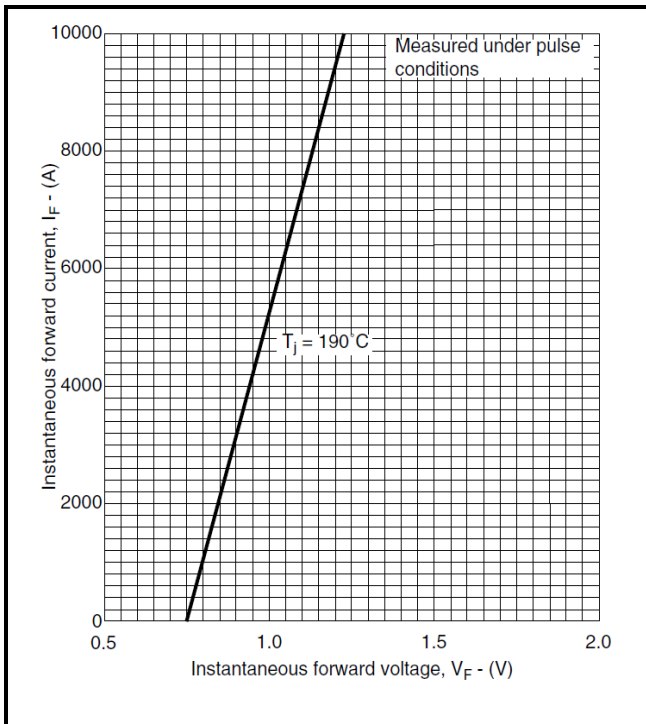


Fig.2 Maximum & minimum on-state characteristics

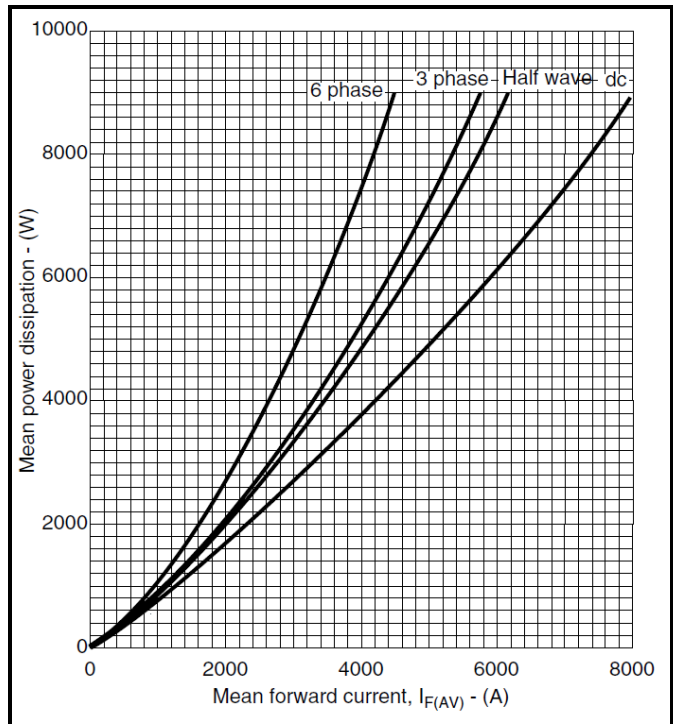


Fig.3 Dissipation curves

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 x 10⁵
 D = -0.0011

these values are valid for T_j = 190°C for I_F 500A to 10000A

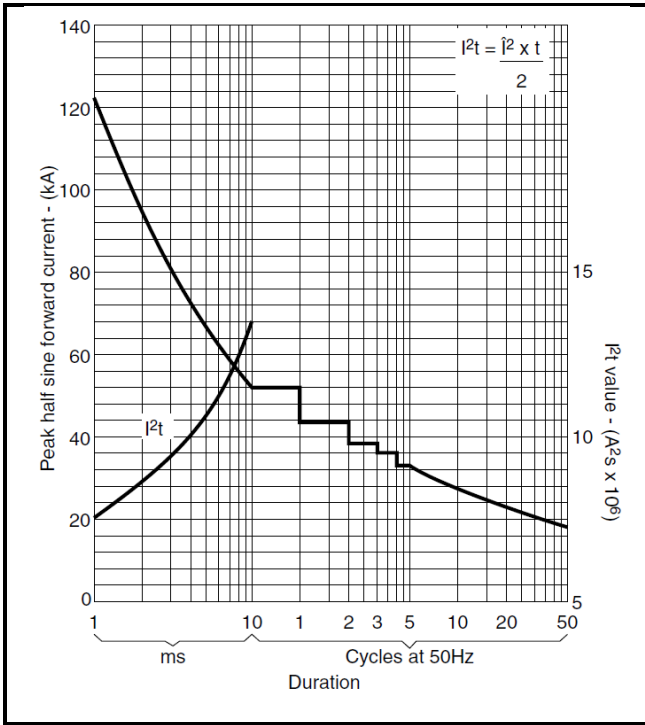


Fig.4 Surge (non-repetitive) forward current vs time (with 50% V_{RRM} at $T_{case} 190^{\circ}C$)

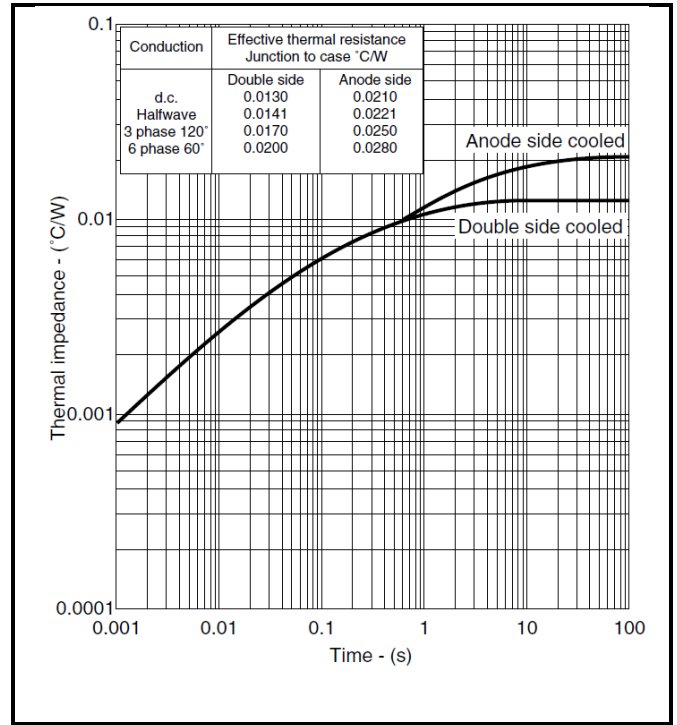
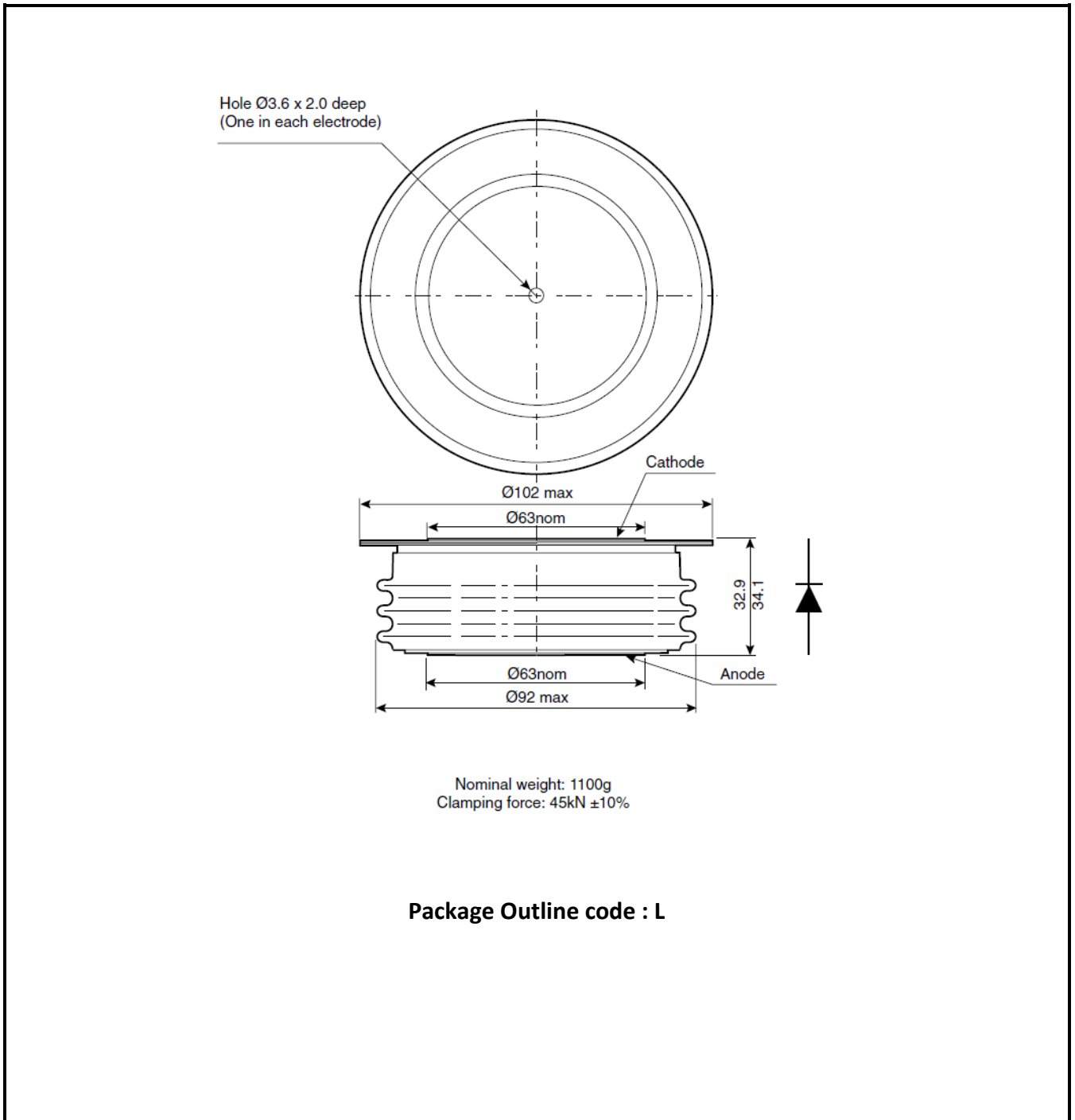


Fig.5 Maximum (limit) transient thermal impedance-junction to case

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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| | |
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