

### FEATURES

- Double Side Cooling
- High Surge Capability

### KEY PARAMETERS

|             |               |
|-------------|---------------|
| $V_{RRM}$   | <b>3400V</b>  |
| $I_{F(AV)}$ | <b>2050A</b>  |
| $I_{FSM}$   | <b>25800A</b> |

### VOLTAGE RATINGS

| Part and Ordering Number | Repetitive Peak Voltages<br>$V_{RRM}$<br>V | Conditions                 |
|--------------------------|--|----------------------------|
| DRD2050X34               | 3400                                       | $V_{RSM} = V_{RRM} + 100V$ |
| DRD2050X32               | 3200                                       |                            |
| DRD2050X30               | 3000                                       |                            |
| DRD2050X28               | 2800                                       |                            |
| DRD2050X26               | 2600                                       |                            |
| DRD2050X24               | 2400                                       |                            |

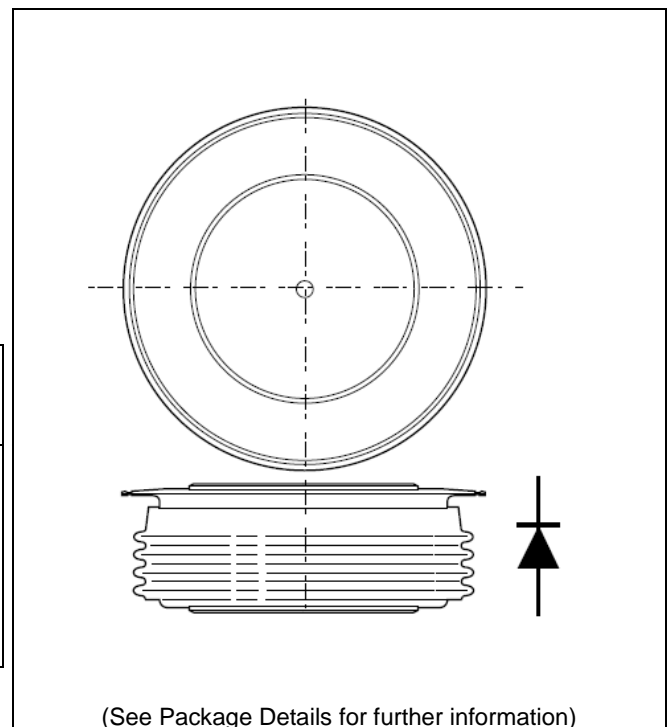


Fig. 1 Package outline

### ORDERING INFORMATION

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

For example:

**DRD2050X34** for a 3400V device

**CURRENT RATINGS**
**T<sub>case</sub> = 75°C unless stated otherwise**

| Symbol                    | Parameter                            | Test Conditions          | Max. | Units |
|---------------------------|--------------------------------------|--------------------------|------|-------|
| <b>Double Side Cooled</b> |                                      |                          |      |       |
| I <sub>F(AV)</sub>        | Mean forward current                 | Half wave resistive load | 2470 | A     |
| I <sub>F(RMS)</sub>       | RMS value                            | -                        | 3880 | A     |
| I <sub>F</sub>            | Continuous (direct) on-state current | -                        | 3490 | A     |

**T<sub>case</sub> = 100°C unless stated otherwise**

| Symbol                    | Parameter                            | Test Conditions          | Max. | Units |
|---------------------------|--------------------------------------|--------------------------|------|-------|
| <b>Double Side Cooled</b> |                                      |                          |      |       |
| I <sub>F(AV)</sub>        | Mean forward current                 | Half wave resistive load | 2050 | A     |
| I <sub>F(RMS)</sub>       | RMS value                            | -                        | 3220 | A     |
| I <sub>F</sub>            | Continuous (direct) on-state current | -                        | 2900 | A     |

**SURGE RATINGS**

| Symbol           | Parameter                               | Test Conditions                           | Max. | Units             |
|------------------|---|---|------|-------------------|
| I <sub>FSM</sub> | Surge (non-repetitive) on-state current | 10ms half sine, T <sub>case</sub> = 175°C | 25.8 | kA                |
| I <sup>2</sup> t | I <sup>2</sup> t for fusing             | V <sub>R</sub> = 0                        | 3.33 | MA <sup>2</sup> s |

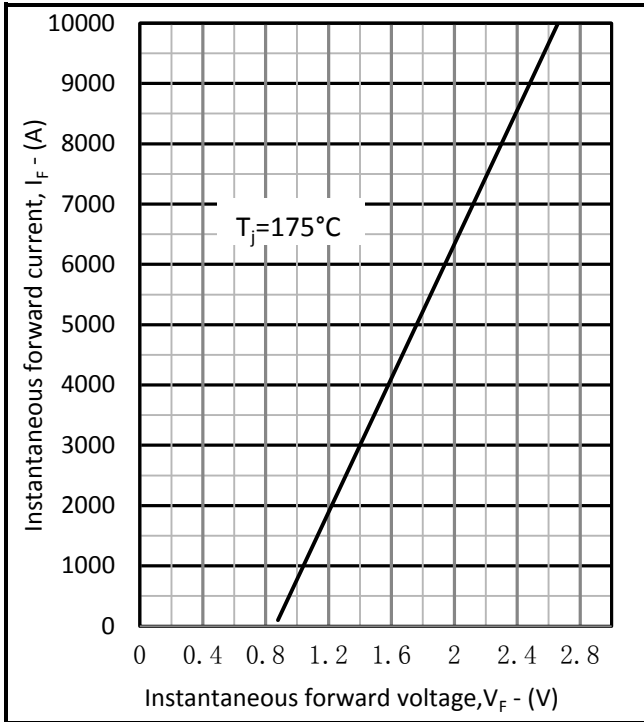
**THERMAL AND MECHANICAL RATINGS**

| Symbol        | Parameter                             | Test Conditions              |    | Min. | Max.  | Units |
|---------------|---------------------------------------|------------------------------|----|------|-------|-------|
| $R_{th(j-c)}$ | Thermal resistance – junction to case | Double side cooled           | DC | -    | 0.018 | °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  | 175   | °C    |
| $T_{stg}$     | Storage temperature range             |                              |    | -40  | 175   | °C    |
| $F_m$         | Clamping force                        |                              |    | 26   | 34    | kN    |

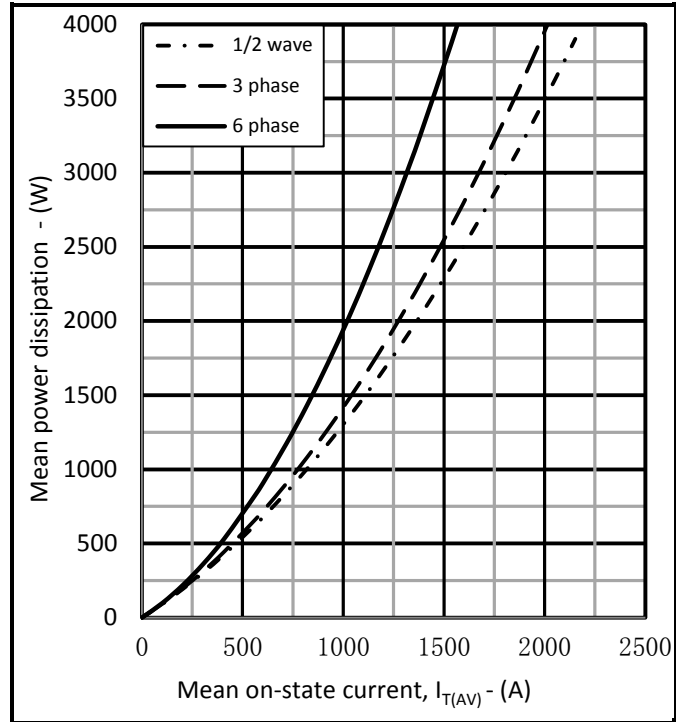
**CHARACTERISTICS**

| Symbol   | Parameter            | Test Conditions  | Min. | Max. | Units      |
|----------|----------------------|--|------|------|------------|
| $V_{FM}$ | Forward voltage      | At 3000A peak, $T_{case} = 25^{\circ}C$  | -    | 1.55 | V          |
| $I_{RM}$ | Peak reverse current | At $V_{DRM}$ , $T_{case} = 175^{\circ}C$   | -    | 150  | mA         |
| $Q_S$    | Total stored charge  | $I_F = 2000A$ , $dI_{RR}/dt = 10A/\mu s$<br>$T_{case} = 175^{\circ}C$ , $V_R = 100V$ | -    | 5000 | $\mu C$    |
| $V_{TO}$ | Threshold voltage    | At $T_{vj} = 175^{\circ}C$   | -    | 0.86 | V          |
| $r_T$    | Slope resistance     | At $T_{vj} = 175^{\circ}C$   | -    | 0.18 | m $\Omega$ |

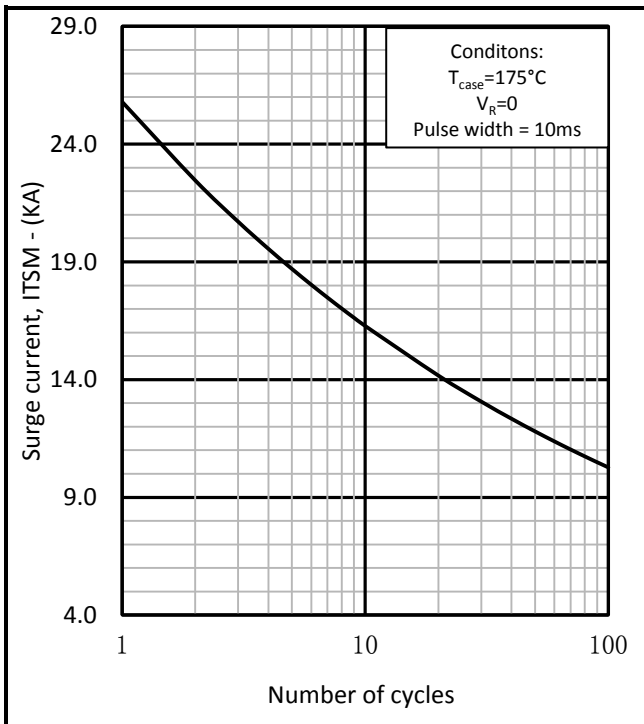
**CURVES**



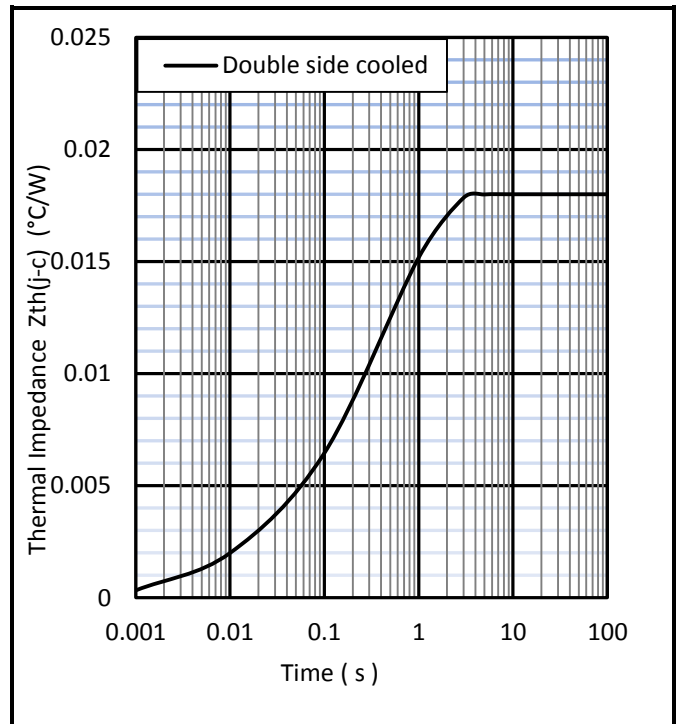
**Fig.2 Maximum forward characteristics**



**Fig.3 Dissipation curves**



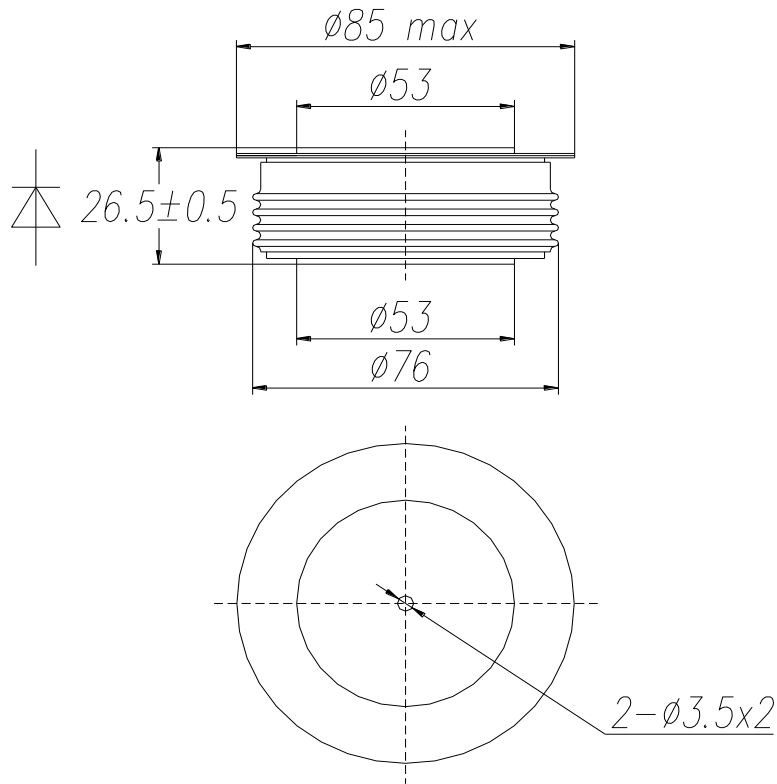
**Fig.4 Surge (Non-Repetitive) Forward current vs time**



**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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|                                 |   |
|---------------------------------|---|
| <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.  |
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