



DS6005 – 1 March 2011 (LN28192)

### FEATURES

- Double Side Cooling
- High Surge Capability

### KEY PARAMETERS

|             |               |
|-------------|---------------|
| $V_{RRM}$   | <b>2200V</b>  |
| $I_{F(AV)}$ | <b>6800A</b>  |
| $I_{FSM}$   | <b>94000A</b> |

### VOLTAGE RATINGS

| Part and Ordering Number                             | Repetitive Peak Voltages $V_{RRM}$<br>V | Conditions                 |
|--|---|----------------------------|
| DRD6800A22<br>DRD6800A20<br>DRD6800A18<br>DRD6800A16 | 2200<br>2000<br>1800<br>1600            | $V_{RSM} = V_{RRM} + 100V$ |

### ORDERING INFORMATION

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

For example:

**DRD6800A22** for a 2200V device

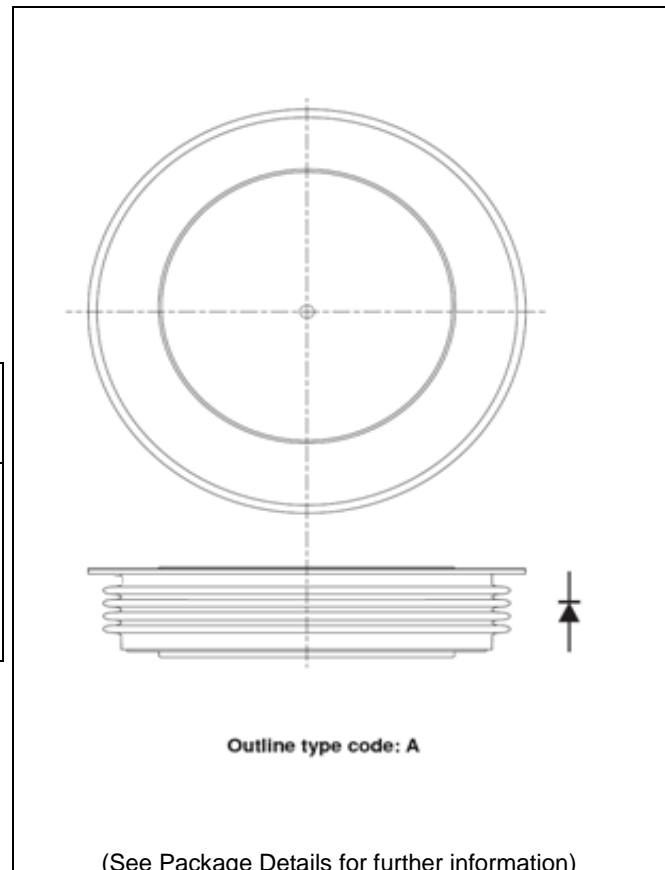


Fig. 1 Package outline

## 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 | 8650  | A     |
| $I_{F(RMS)}$              | RMS value                            | -                        | 13580 | A     |
| $I_F$                     | Continuous (direct) on-state current | -                        | 12230 | 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 | 6800  | A     |
| $I_{F(RMS)}$              | RMS value                            | -                        | 10680 | A     |
| $I_F$                     | Continuous (direct) on-state current | -                        | 9620  | A     |

## SURGE RATINGS

| Symbol    | Parameter                               | Test Conditions                                  | Max.  | Units                 |
|-----------|---|--|-------|-----------------------|
| $I_{FSM}$ | Surge (non-repetitive) on-state current | 10ms half sine, $T_{case} = 160^{\circ}\text{C}$ | 94.0  | kA                    |
| $I^2t$    | $I^2t$ for fusing                       | $V_R = 0$  | 44.18 | $\text{MA}^2\text{s}$ |

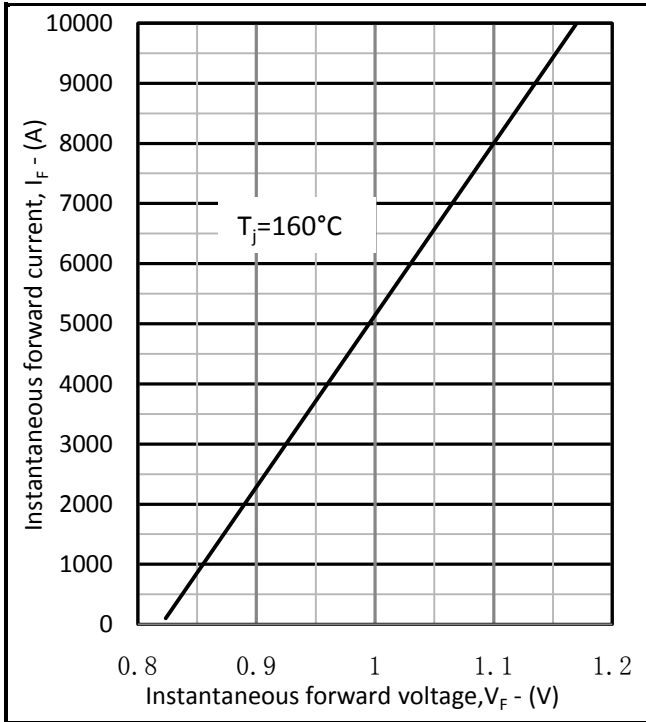
**THERMAL AND MECHANICAL RATINGS**

| Symbol        | Parameter                             | Test Conditions              |    | Min. | Max.   | Units |
|---------------|---------------------------------------|------------------------------|----|------|--------|-------|
| $R_{th(j-c)}$ | Thermal resistance – junction to case | Double side cooled           | DC | -    | 0.0057 | °C/W  |
| $R_{th(c-h)}$ | Thermal resistance – case to heatsink | Double side cooled           | DC | -    | 0.0015 | °C/W  |
| $T_{vj}$      | Virtual junction temperature          | Blocking $V_{DRM} / V_{RRM}$ |    | -40  | 160    | °C    |
| $T_{stg}$     | Storage temperature range             |                              |    | -40  | 160    | °C    |
| $F_m$         | Clamping force                        |                              |    | 80   | 100    | kN    |

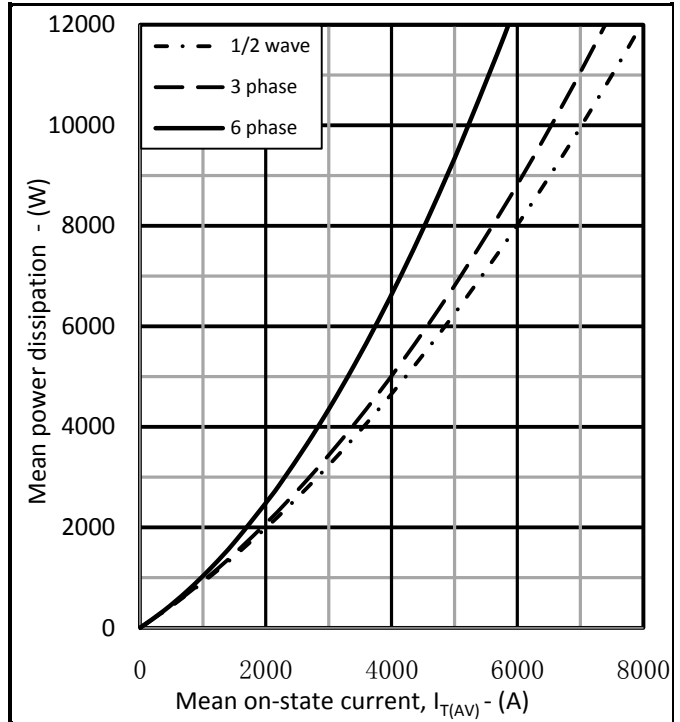
**CHARACTERISTICS**

| Symbol   | Parameter            | Test Conditions  | Min. | Max.  | Units     |
|----------|----------------------|--|------|-------|-----------|
| $V_{FM}$ | Forward voltage      | At 6000A peak, $T_{case} = 160^{\circ}C$   | -    | 1.03  | V         |
| $I_{RM}$ | Peak reverse current | At $V_{DRM}$ , $T_{case} = 160^{\circ}C$   | -    | 400   | mA        |
| $Q_S$    | Total stored charge  | $I_F = 4000A$ , $di_{RR}/dt = 10A/\mu s$<br>$T_{case} = 160^{\circ}C$ , $V_R = 100V$ | -    | 6000  | $\mu C$   |
| $V_{TO}$ | Threshold voltage    | At $T_{vj} = 160^{\circ}C$   | -    | 0.82  | V         |
| $r_T$    | Slope resistance     | At $T_{vj} = 160^{\circ}C$   | -    | 0.035 | $m\Omega$ |

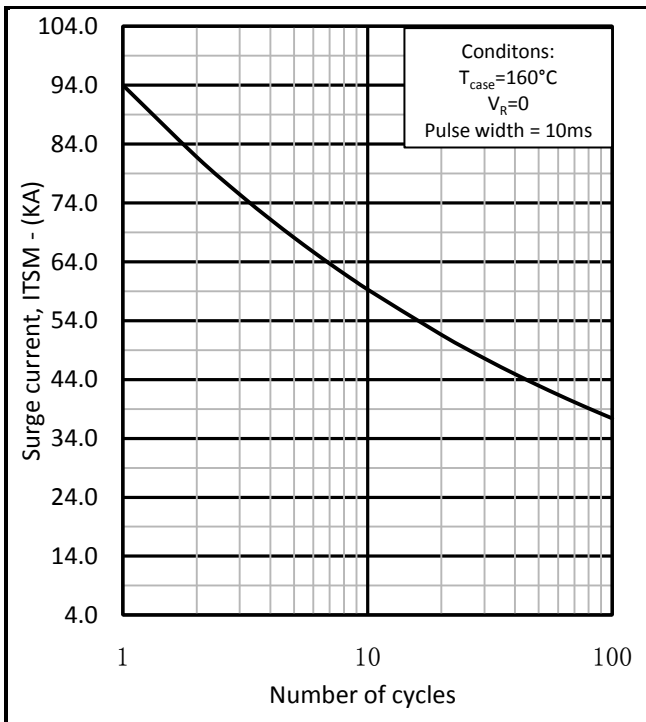
**CURVES**



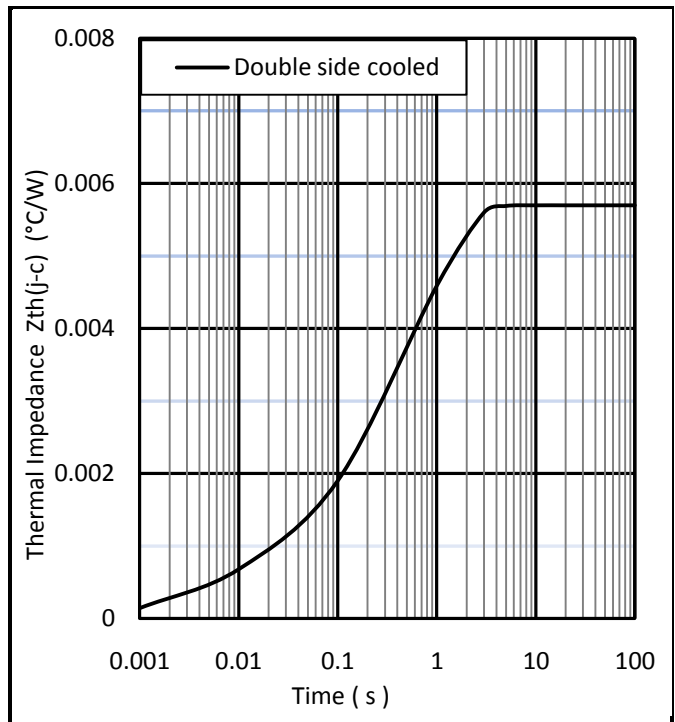
**Fig.2 Maximum forward characteristics**



**Fig.3 Dissipation curves**



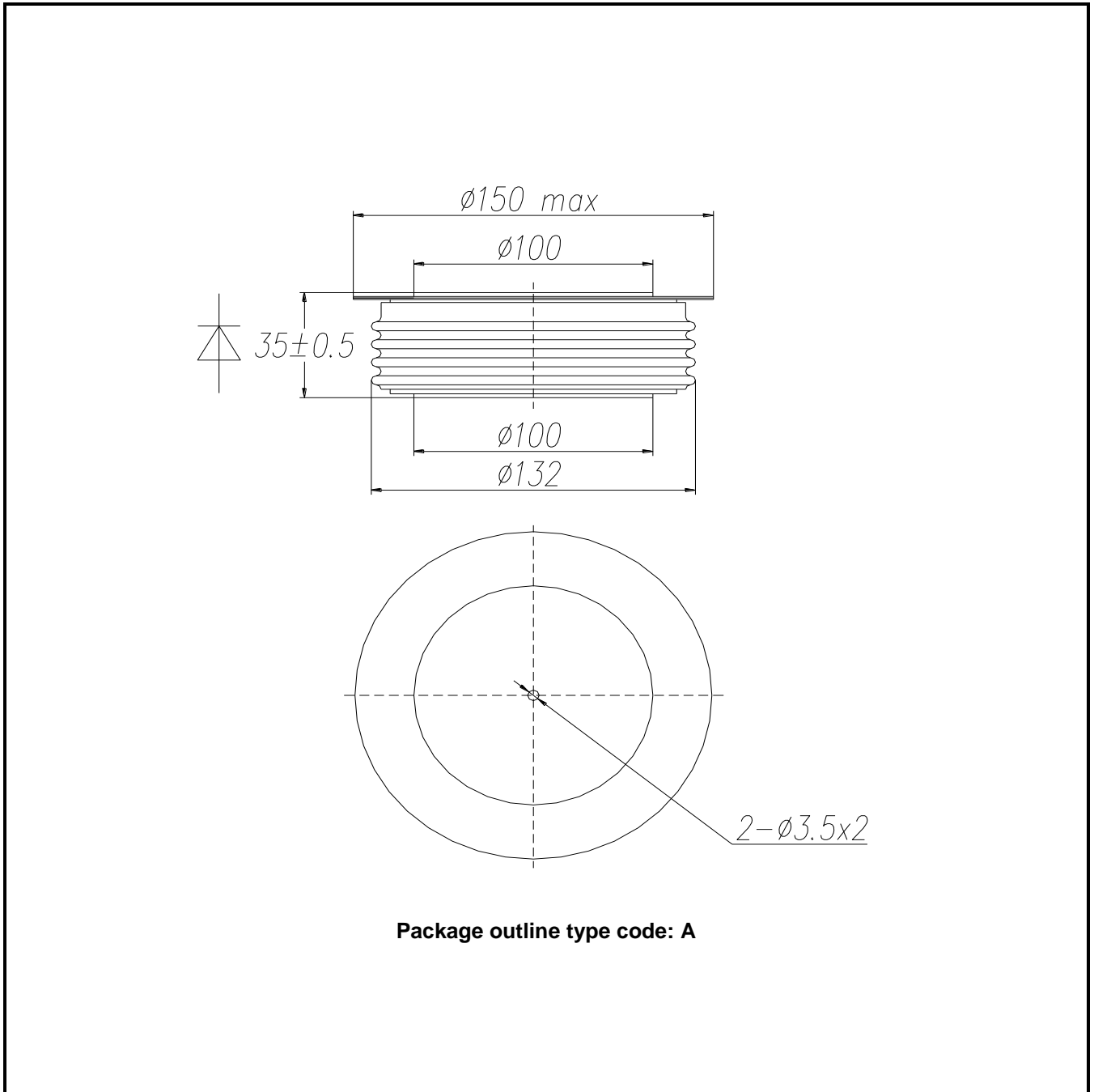
**Fig.4 Surge (Non-Repetitive) Forward current vs time**



**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.



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

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|                                 |   |
|---------------------------------|---|
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**HEADQUARTERS OPERATIONS**

DYNEX SEMICONDUCTOR LIMITED  
Doddington Road, Lincoln, Lincolnshire, LN6 3LF  
United Kingdom.  
Phone: +44 (0) 1522 500500  
Fax: +44 (0) 1522 500550  
Web: <http://www.dynexsemi.com>

**CUSTOMER SERVICE**

Phone: +44 (0) 1522 502753 / 502901  
Fax: +44 (0) 1522 500020  
e-mail: [power\\_solutions@dynexsemi.com](mailto:power_solutions@dynexsemi.com)