

FEATURES

- Optimised For High Current Rectifiers
- High Surge Capability
- Very Low On-state Voltage

APPLICATIONS

- Electroplating
- Power Supplies
- Welding

VOLTAGE RATINGS

| Part and Ordering Number | Repetitive Peak Reverse Voltage V_{RRM} V | Conditions |
|--------------------------|---|---------------------|
| RD33FG06 | 600 | $V_{RSM} = V_{RRM}$ |
| RD33FG05 | 500 | |
| RD33FG04 | 400 | |
| RD33FG03 | 300 | |
| RD33FG02 | 200 | |
| RD33FG01 | 100 | |

KEY PARAMETERS

| | | |
|-------------|--------------|---------------|
| V_{RRM} | | 600V |
| $I_{F(AV)}$ | (max) | 3997A |
| I_{FSM} | (max) | 46750A |

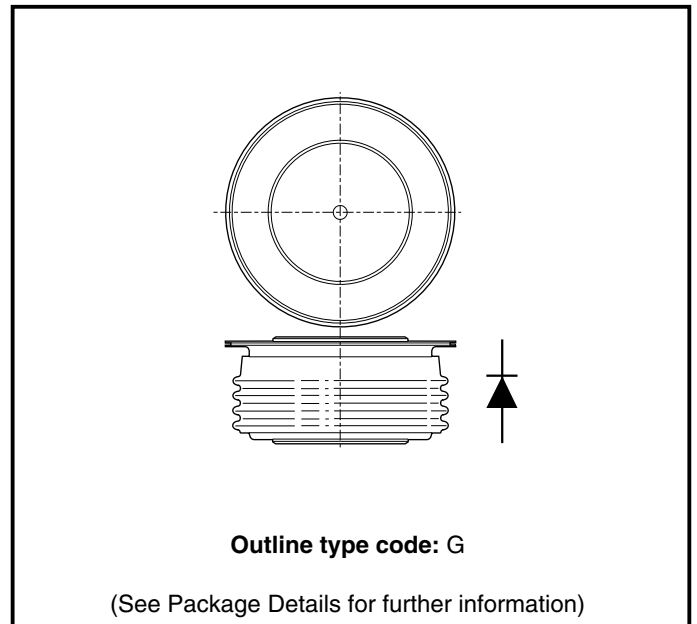


Fig. 1 Package outline

ORDERING INFORMATION

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

For example:

RD33FG03

Note: Please use the complete part number when ordering and quote this number in any future correspondence relating to your order.

CURRENT RATINGS

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

| Symbol | Parameter | Conditions | Max. | Units |
|--|-------------------------------------|--------------------------|------|-------|
| Double Side Cooled | | | | |
| $I_{F(AV)}$ | Mean forward current | Half wave resistive load | 3997 | A |
| $I_{F(RMS)}$ | RMS value | - | 6278 | A |
| I_F | Continuous (direct) forward current | - | 6358 | A |
| Single Side Cooled (Anode side) | | | | |
| $I_{F(AV)}$ | Mean forward current | Half wave resistive load | 2831 | A |
| $I_{F(RMS)}$ | RMS value | - | 4447 | A |
| I_F | Continuous (direct) forward current | - | 4401 | A |

$T_{case} = 85^{\circ}\text{C}$ unless otherwise stated

| Symbol | Parameter | Test Conditions | Max. | Units |
|---------------------------|-------------------------------------|--------------------------|------|-------|
| Double Side Cooled | | | | |
| $I_{F(AV)}$ | Mean forward current | Half wave resistive load | 3830 | A |
| $I_{F(RMS)}$ | RMS value | - | 6010 | A |
| I_F | Continuous (direct) forward current | - | 6080 | A |
| Single Side Cooled | | | | |
| $I_{F(AV)}$ | Mean forward current | Half wave resistive load | 2710 | A |
| $I_{F(RMS)}$ | RMS value | - | 4260 | A |
| I_F | Continuous (direct) forward current | - | 4210 | A |

SURGE RATINGS

| Symbol | Parameter | Test Conditions | Max. | Units |
|-----------|--|---|---------------------|------------------|
| I_{FSM} | Surge (non-repetitive) forward current | 10ms half sine, $T_{case} = 175^{\circ}C$ | 37.4 | kA |
| I^2t | I^2t for fusing | $V_R = 50\% V_{RRM}$ - 1/4 sine | 7.0×10^6 | A ² s |
| I_{FSM} | Surge (non-repetitive) forward current | 10ms half sine, $T_{case} = 175^{\circ}C$ | 46.75 | kA |
| I^2t | I^2t for fusing | $V_R = 0$ | 10.93×10^6 | A 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 | - | 0.032 | $^{\circ}CW$ |
| | | Single side cooled | Anode DC | - | 0.064 | $^{\circ}CW$ |
| | | | Cathode DC | - | 0.064 | $^{\circ}CW$ |
| $R_{th(c-h)}$ | Thermal resistance - case to heatsink | Clamping force 12.0kN | Double side | - | 0.008 | $^{\circ}CW$ |
| | | (with mounting compound) | Single side | - | 0.016 | $^{\circ}CW$ |
| T_{vj} | Virtual junction temperature | Forward (conducting) | | - | 225 | $^{\circ}C$ |
| | | Reverse (blocking) | | - | 200 | $^{\circ}C$ |
| T_{stg} | Storage temperature range | | -55 | 200 | $^{\circ}C$ | |
| F_m | Clamping force | | 10.8 | 13.2 | kN | |

CHARACTERISTICS

| Symbol | Parameter | Test Conditions | Min. | Max. | Units |
|----------|-------------------------------|---|------|--------|------------|
| I_{RM} | Peak reverse current | At V_{RRM} , $T_{case} = 200^{\circ}C$ | - | 50 | mA |
| I_{rr} | Peak reverse recovery current | $I_F = 1000A$, $dI_{RR}/dt = 3A/\mu s$, $T_{case} = 200^{\circ}C$, $V_R = 100V$ | - | 30 | A |
| Q_S | Total stored charge | | - | 160 | μC |
| V_{TO} | Threshold voltage | At $T_{vj} = 200^{\circ}C$ | - | 0.6 | V |
| r_T | Slope resistance | At $T_{vj} = 200^{\circ}C$ | - | 0.0872 | m Ω |

CURVES

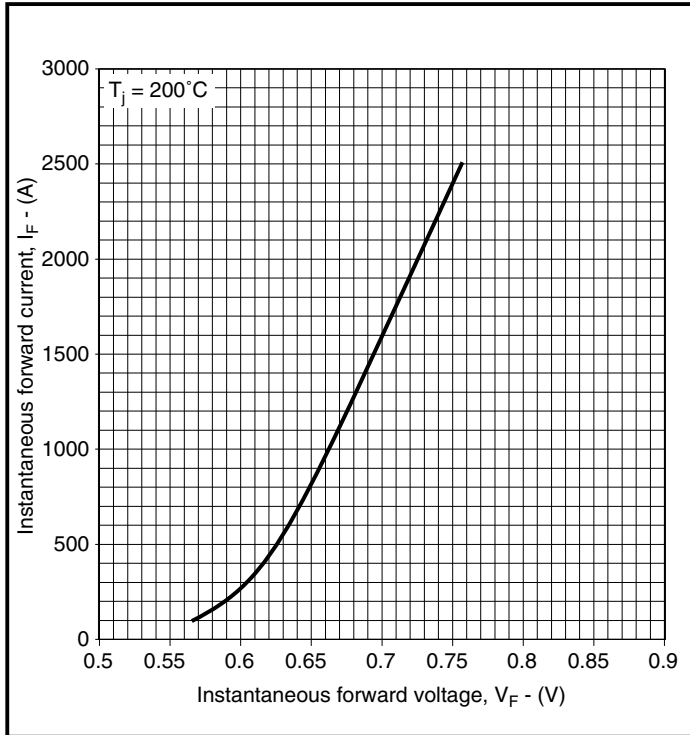


Fig. 2 Maximum (limit) forward characteristics

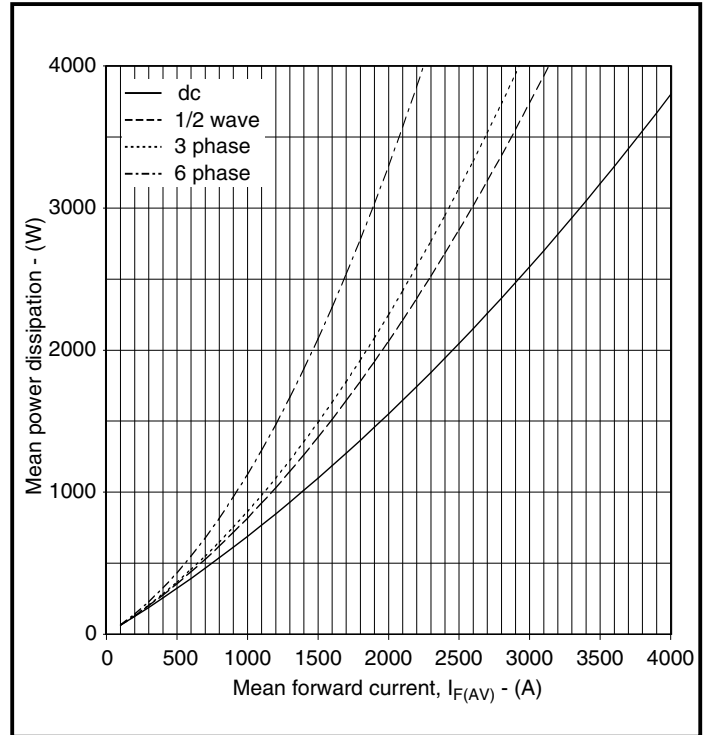


Fig. 3 Power dissipation

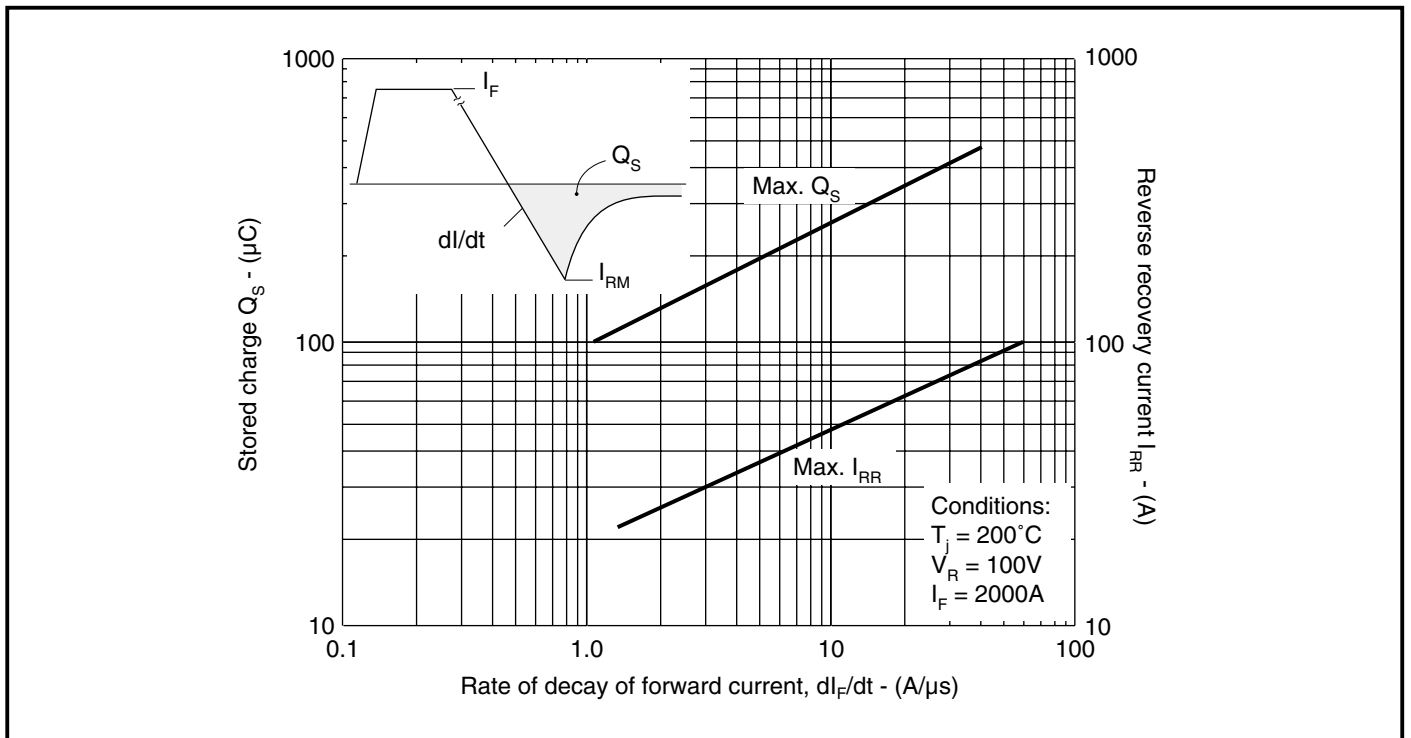


Fig. 4 Maximum stored charge and reverse recovery current vs dI/dt

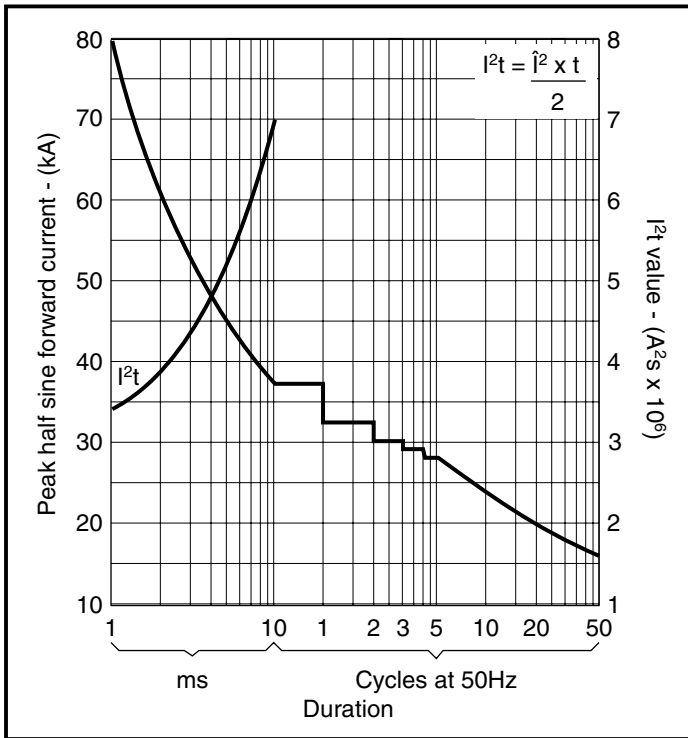


Fig. 5 Surge (non-repetitive) forward current vs time (with 50% V_{RRM} @ $T_{case} = 175^{\circ}C$)

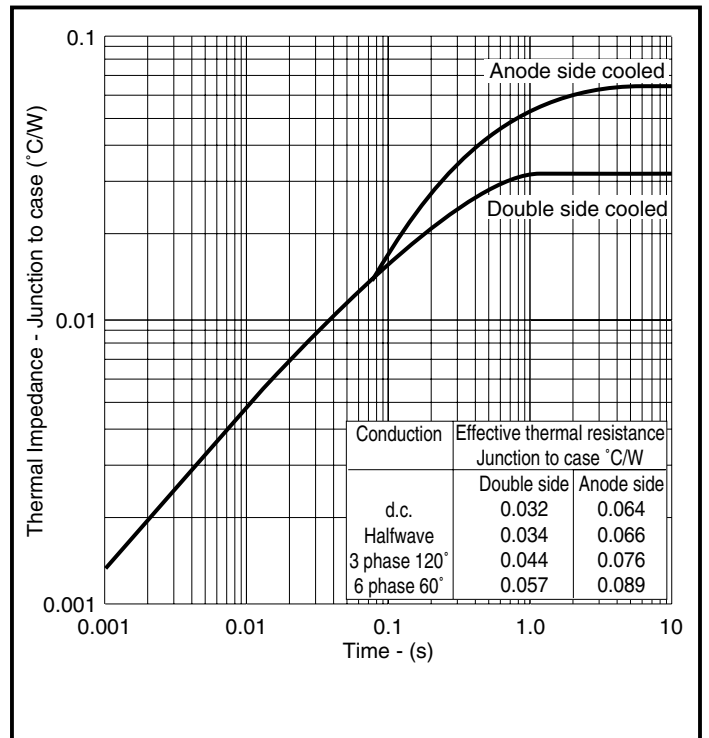
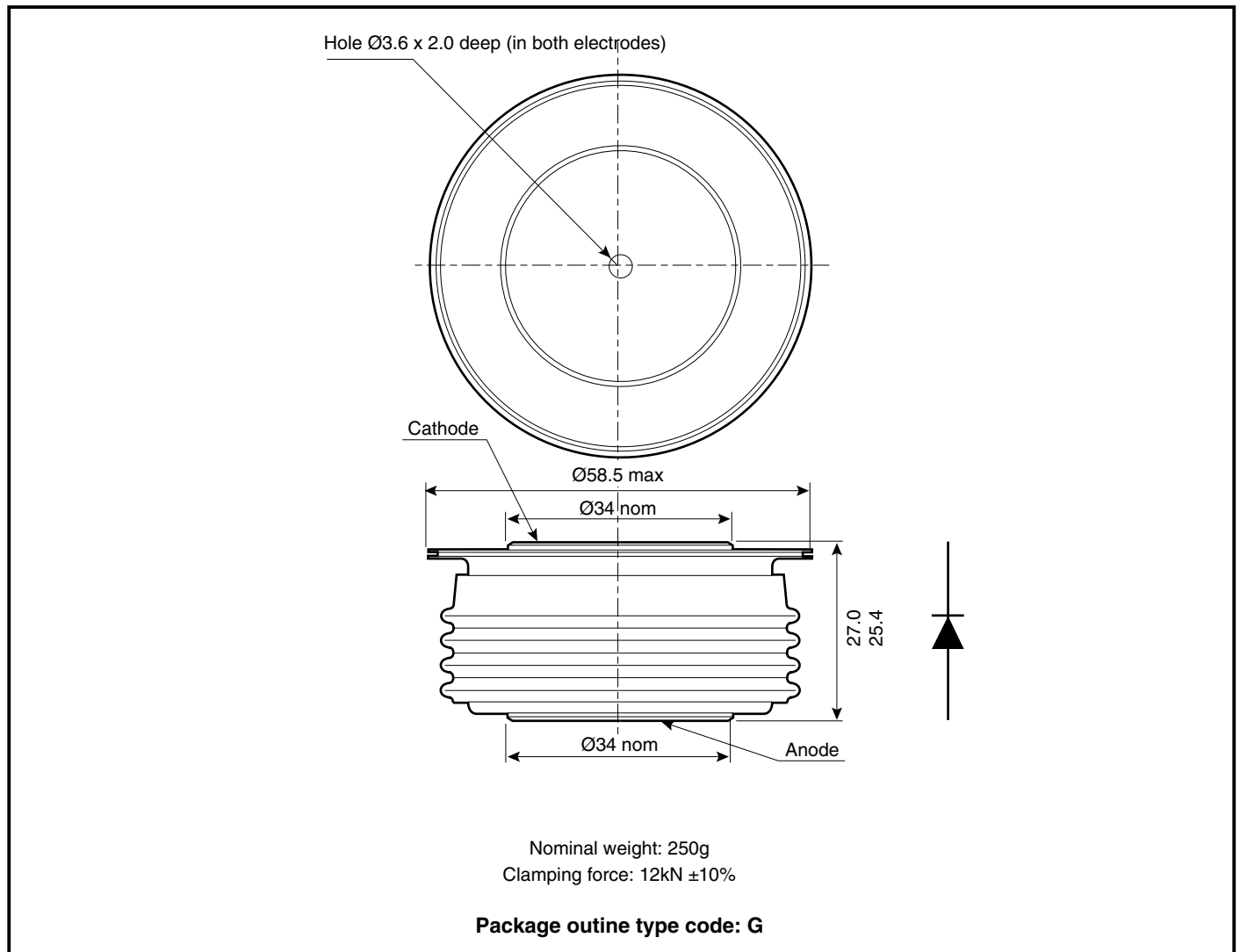


Fig. 6 Maximum (limit) transient thermal impedance

PACKAGE DETAILS

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



Note:

1. Package maybe supplied with pins and/or tags.

POWER ASSEMBLY CAPABILITY

The Power Assembly group was set up to provide a support service for those customers requiring more than the basic semiconductor, and has developed a flexible range of heatsink and clamping systems in line with advances in device voltages and current capability of our semiconductors.

We offer an extensive range of air and liquid cooled assemblies covering the full range of circuit designs in general use today. The Assembly group offers high quality engineering support dedicated to designing new units to satisfy the growing needs of our customers.

Using the latest CAD methods our team of design and applications engineers aim to provide the Power Assembly Complete Solution (PACs).

HEATSINKS

The Power Assembly group has its own proprietary range of extruded aluminium heatsinks which have been designed to optimise the performance of Dynex semiconductors. Data with respect to air natural, forced air and liquid cooling (with flow rates) is available on request.

For further information on device clamps, heatsinks and assemblies, please contact your nearest sales representative or Customer Services.

Stresses above those listed in this data sheet may cause permanent damage to the device. In extreme conditions, as with all semiconductors, this may include potentially hazardous rupture of the package. Appropriate safety precautions should always be followed.



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