# DSF8025SE / DSF8025SG

## Fast Recovery Diode

DS6153-1 July 2014 (LN31793)

## APPLICATIONS

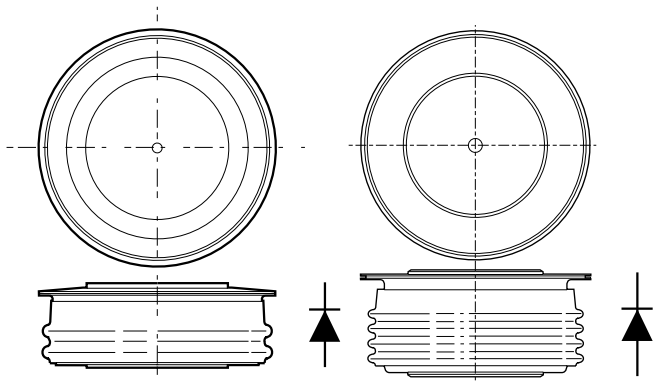
- Induction Heating
- A.C. Motor Drives
- Inverters And Choppers
- Welding
- High Frequency Rectification
- UPS

## KEY PARAMETERS

| | |
|---|---|
| $V_{RRM}$ | 2500V |
| $I_{F(AV)}$ | 650A |
| $I_{FSM}$ | 7500A |
| $Q_r$ | 540µC |
| $t_{rr}$ | 5.0µs |

## FEATURES

- Double side cooling
- High surge capability
- Low recovery charge



Package outline type code: E  Package outline type code: G

(See package details for further information)

**Fig. 1 Package outlines**

## VOLTAGE RATINGS

| Type Number | Repetitive Peak Reverse Voltage $V_{RRM}$ V | Conditions |
|---|---|---|
| DSF8025SE25<br>DSF8025SG25 | 2500 | $V_{RSM} = V_{RRM} + 100V$ |
| DSF8025SE24<br>DSF8025SG24 | 2400 | |
| DSF8025SE23<br>DSF8025SG23 | 2300 | |
| DSF8025SE22<br>DSF8025SG22 | 2200 | |
| DSF8025SE21<br>DSF8025SG21 | 2100 | |
| DSF8025SE20<br>DSF8025SG20 | 2000 | |

Lower voltage grades available.

## ORDERING INFORMATION

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

**DSF8025SE23** for 2300V product in an 'E' outline,

**DSF8025SG23** for 2300V product in an 'G' outline,

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

## CURRENT RATINGS

| Symbol | Parameter | Conditions | Max. | Units |
|---|---|---|---|---|
| **Double Side Cooled** | | | | |
| $I_{F(AV)}$ | Mean forward current | Half wave resistive load, $T_{case}$ = 65°C | 650 | A |
| $I_{F(RMS)}$ | RMS value | $T_{case}$ = 65°C | 1020 | A |
| $I_F$ | Continuous (direct) forward current | $T_{case}$ = 65°C | 785 | A |
| **Single Side Cooled (Anode side)** | | | | |
| $I_{F(AV)}$ | Mean forward current | Half wave resistive load, $T_{case}$ = 65°C | 385 | A |
| $I_{F(RMS)}$ | RMS value | $T_{case}$ = 65°C | 604 | A |
| $I_F$ | Continuous (direct) forward current | $T_{case}$ = 65°C | 465 | A |

## SURGE RATINGS

| Symbol | Parameter | Conditions | Max. | Units |
|---|---|---|---|---|
| $I_{FSM}$ | Surge (non-repetitive) forward current | 10ms half sine; with 0% $V_{RRM}$, $T_j$ = 150°C | 7.5 | kA |
| $I^2t$ | $I^2t$ for fusing | | 281 x $10^3$ | $A^2s$ |
| $I_{FSM}$ | Surge (non-repetitive) forward current | 10ms half sine; with 50% $V_{RRM}$, $T_j$ = 150°C | 6.0 | kA |
| $I^2t$ | $I^2t$ for fusing | | 180 x $10^3$ | $A^2s$ |

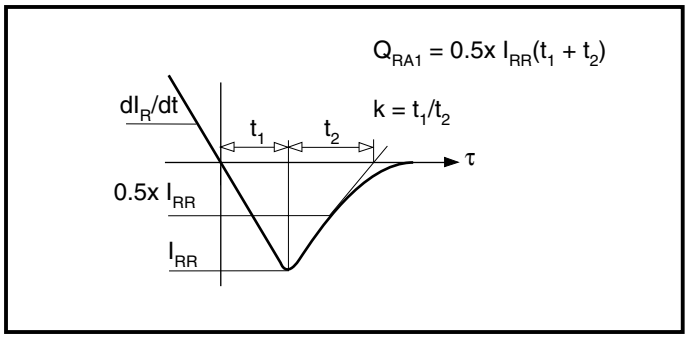
## THERMAL AND MECHANICAL DATA

| Symbol | Parameter | Conditions | | Min. | Max. | Units |
|---|---|---|---|---|---|---|
| $R_{th(j-c)}$ | Thermal resistance - junction to case | Double side cooled | dc | - | 0.047 | °C/W |
| | | Single side cooled | Anode dc | - | 0.094 | °C/W |
| | | | Cathode dc | - | 0.094 | °C/W |
| $R_{th(c-h)}$ | Thermal resistance - case to heatsink | Clamping force 8.0kN with mounting compound | Double side | - | 0.018 | °C/W |
| | | | Single side | - | 0.036 | °C/W |
| $T_{vj}$ | Virtual junction temperature | Forward (conducting) | | - | 150 | °C |
| $T_{stg}$ | Storage temperature range | | | -55 | 175 | °C |
| - | Clamping force | | | 7.0 | 9.0 | kN |

## CHARACTERISTICS

| Symbol | Parameter | Conditions | Typ. | Max. | Units |
|---|---|---|---|---|---|
| $V_{FM}$ | Forward voltage | At 1000A peak, $T_{case}$ = 25°C | - | 2.3 | V |
| $I_{RM}$ | Peak reverse current | At $V_{RRM}$, $T_{case}$ = 150°C | - | 50 | mA |
| $t_{rr}$ | Reverse recovery time | $I_F$ = 1000A, $di_{RR}/dt$ = 100A/µs<br>$T_{case}$ = 150°C, $V_R$ = 100V | - | 5.0 | µs |
| $Q_{RA1}$ | Recovered charge (50% chord) | | - | 540 | µC |
| $I_{RR}$ | Reverse recovery current | | - | 235 | A |
| K | Soft factor | | 1.8 | - | - |
| $V_{TO}$ | Threshold voltage | At $T_{vj}$ = 150°C | - | 1.48 | V |
| $r_T$ | Slope resistance | At $T_{vj}$ = 150°C | - | 0.8 | mΩ |
| $V_{FRP}$ | Peak forward recovery voltage | di/dt = 1000A/µs, $T_j$ = 125°C | 70 | - | V |

## DEFINITION OF K FACTOR AND $Q_{RA1}$



## CURVES

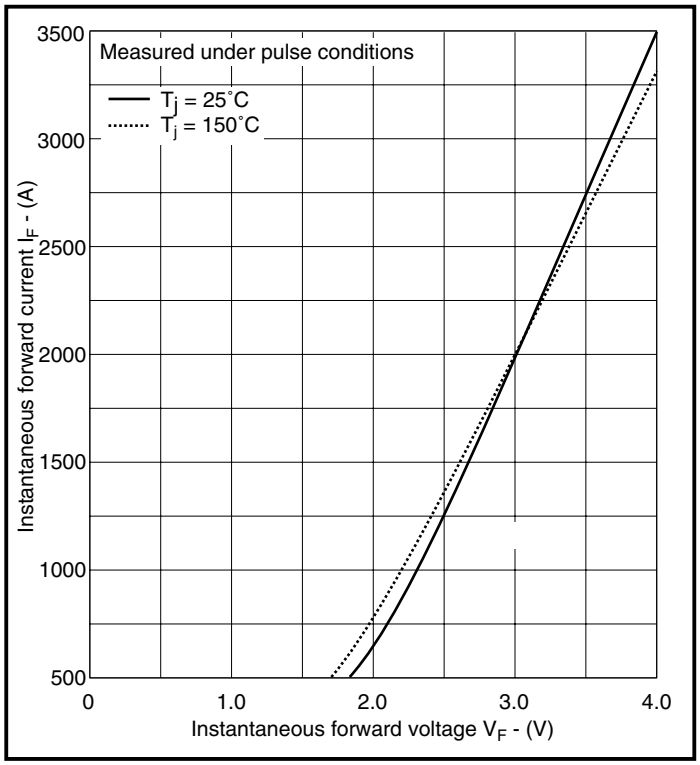



**Fig.2 Maximum (limit) forward characteristics**

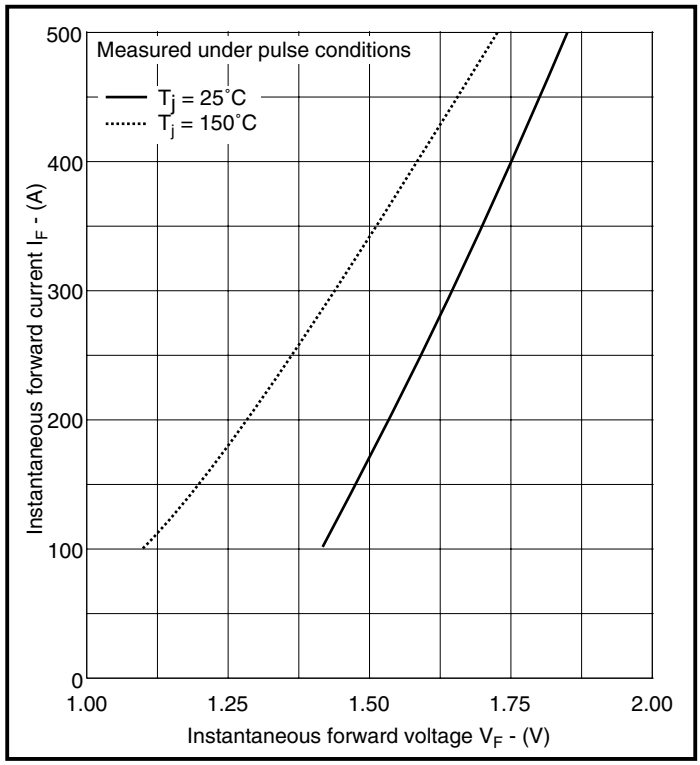



**Fig.3 Maximum (limit) forward characteristics**

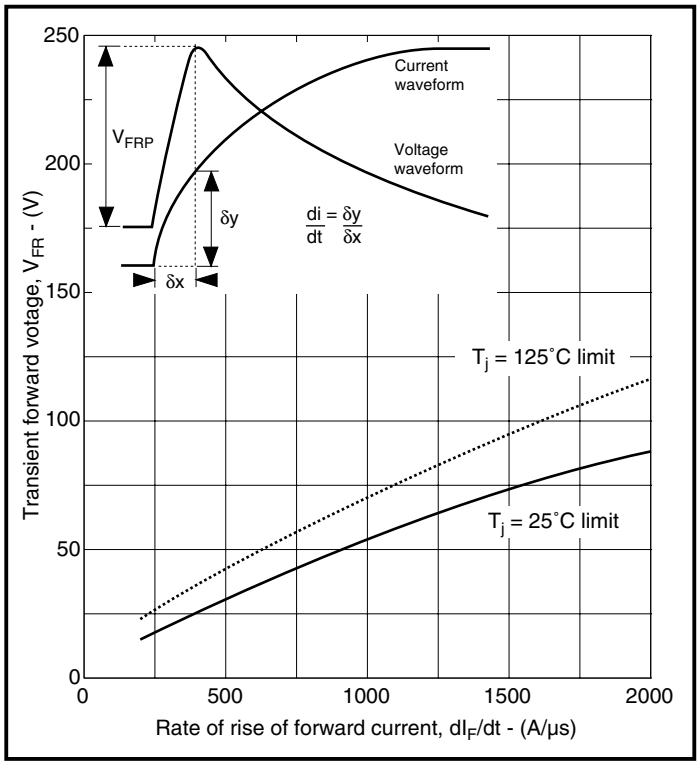



**Fig.5 Transient forward voltage vs rate of rise of forward current**

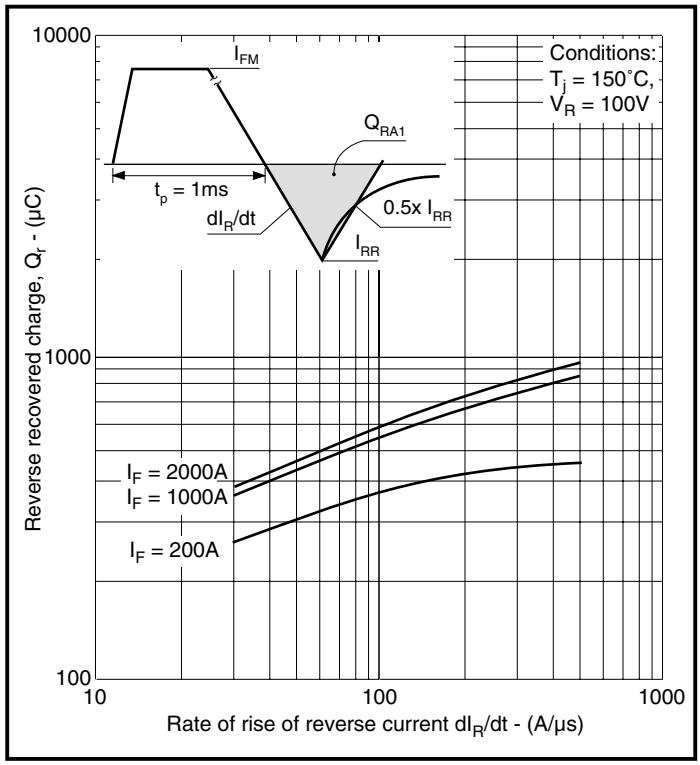



**Fig.6 Recovered charge**

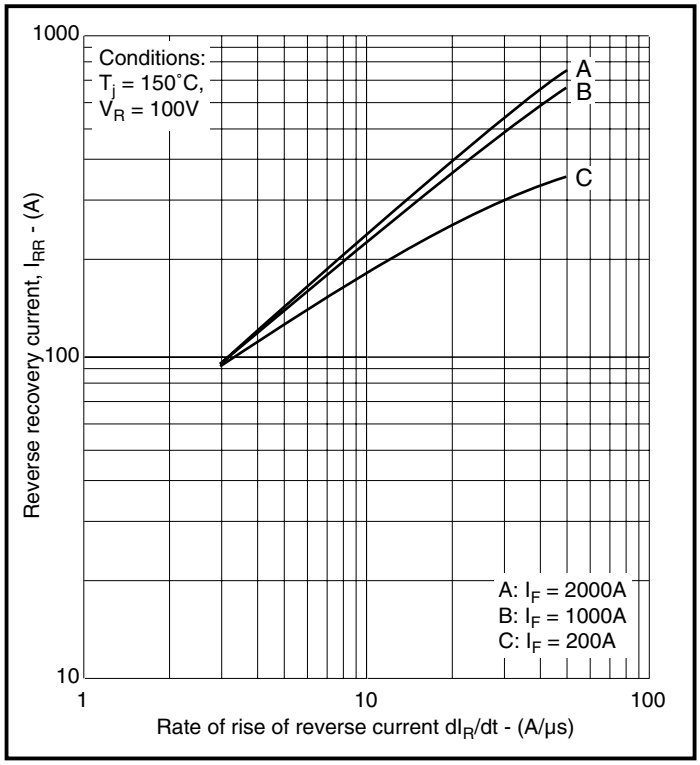



**Fig.7 Typical reverse recovery current vs rate of fall of forward current**

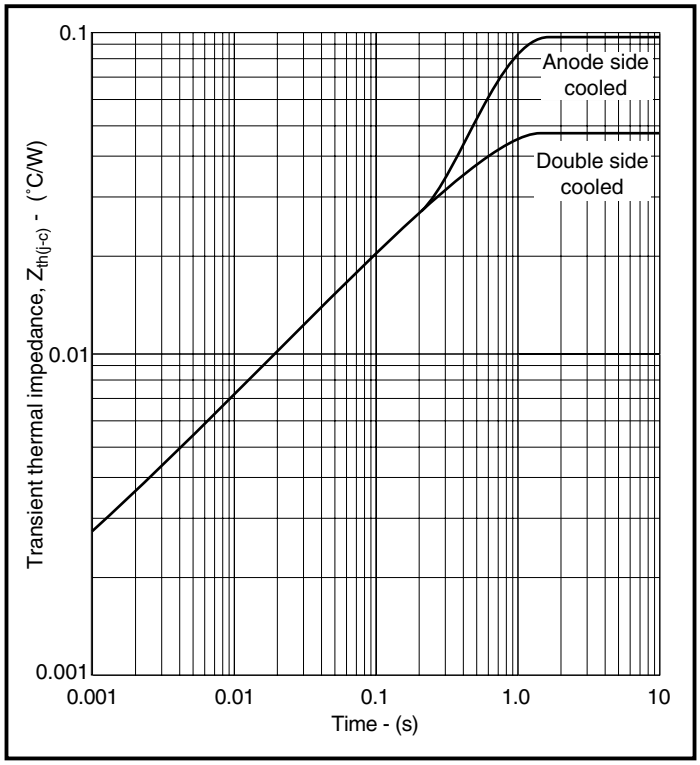
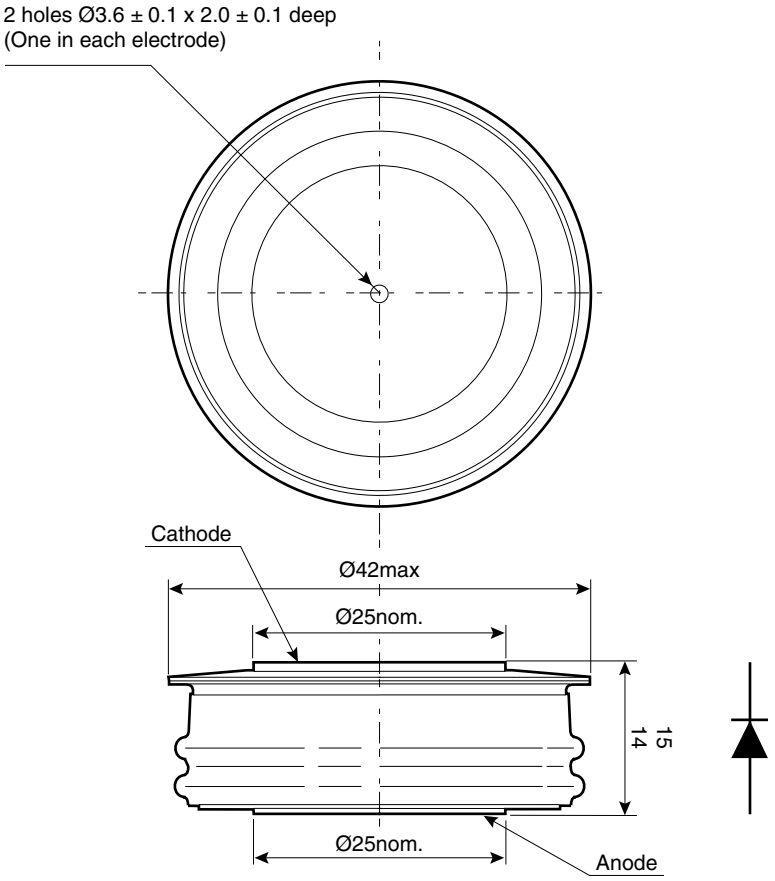



**Fig.8 Maximum (limit) transient thermal impedance - junction to case - (˚C/W)**

## PACKAGE DETAILS

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




Nominal weight: 82g
Clamping force: 8kN ±10%
Package maybe supplied with pins and/or tags.

**Package outline type code: E**

**Fig. 9 Package details - E**

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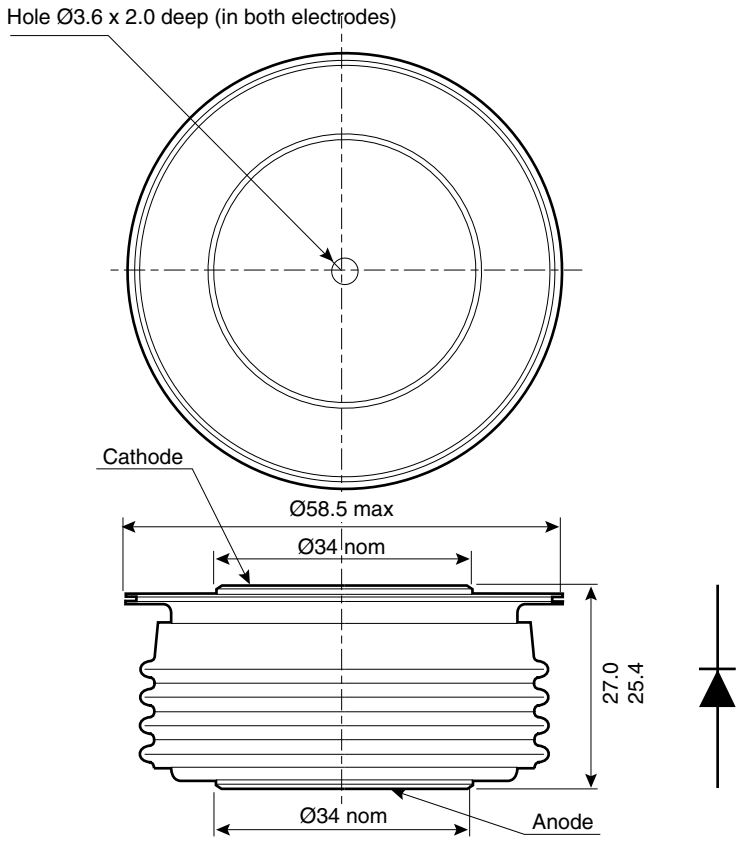


Nominal weight: 250g
Clamping force: 12kN ±10%

**Package outine type code: G**

**Fig. 10 Package details - G**

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