

DS2007SF

RECTIFIER DIODE

APPLICATIONS

- Rectification.
- Freewheel Diode.
- DC Motor Control.
- Power Supplies.
- Welding.
- Battery Chargers.

KEY PARAMETERS

| | |
|-------------|---------------|
| V_{RRM} | 4000V |
| $I_{F(AV)}$ | 1225A |
| I_{FSM} | 25000A |

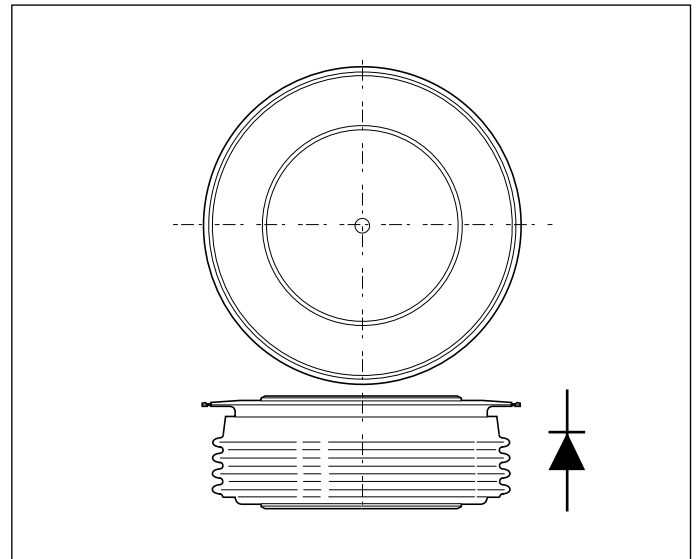
FEATURES

- Double Side Cooling.
- High Surge Capability.

VOLTAGE RATINGS

| Type Number | Repetitive Peak Reverse Voltage V_{RRM} V | Conditions |
|-------------|---|----------------------------|
| DS2007SF40 | 4000 | $V_{RSM} = V_{RRM} + 100V$ |
| DS2007SF39 | 3900 | |
| DS2007SF38 | 3800 | |
| DS2007SF37 | 3700 | |
| DS2007SF36 | 3600 | |
| DS2007SF35 | 3500 | |

Lower voltage grades available.



Outline type code: F. Turn to page 7 for further information.

CURRENT RATINGS

| Symbol | Parameter | Conditions | Max. | Units |
|--|-------------------------------------|---|------|-------|
| Double Side Cooled | | | | |
| $I_{F(AV)}$ | Mean forward current | Half wave resistive load, $T_{case} = 100^{\circ}C$ | 1225 | A |
| $I_{F(RMS)}$ | RMS value | $T_{case} = 100^{\circ}C$ | 1923 | A |
| I_F | Continuous (direct) forward current | $T_{case} = 100^{\circ}C$ | 1720 | A |
| Single Side Cooled (Anode side) | | | | |
| $I_{F(AV)}$ | Mean forward current | Half wave resistive load, $T_{case} = 100^{\circ}C$ | 820 | A |
| $I_{F(RMS)}$ | RMS value | $T_{case} = 100^{\circ}C$ | 1287 | A |
| I_F | Continuous (direct) forward current | $T_{case} = 100^{\circ}C$ | 1050 | A |

SURGE RATINGS

| Symbol | Parameter | Conditions | Max. | Units |
|-----------|--|--|---------------------|------------------|
| I_{FSM} | Surge (non-repetitive) forward current | 10ms half sine; $T_{case} = 150^{\circ}C$ $V_R = 50\% V_{RRM} - 1/4$ sine | 20.0 | kA |
| I^2t | I^2t for fusing | | 2.0×10^6 | A ² s |
| I_{FSM} | Surge (non-repetitive) forward current | 10ms half sine; $T_{case} = 150^{\circ}C$ $V_R = 0$ | 25.0 | kA |
| I^2t | I^2t for fusing | | 3.125×10^6 | A ² s |

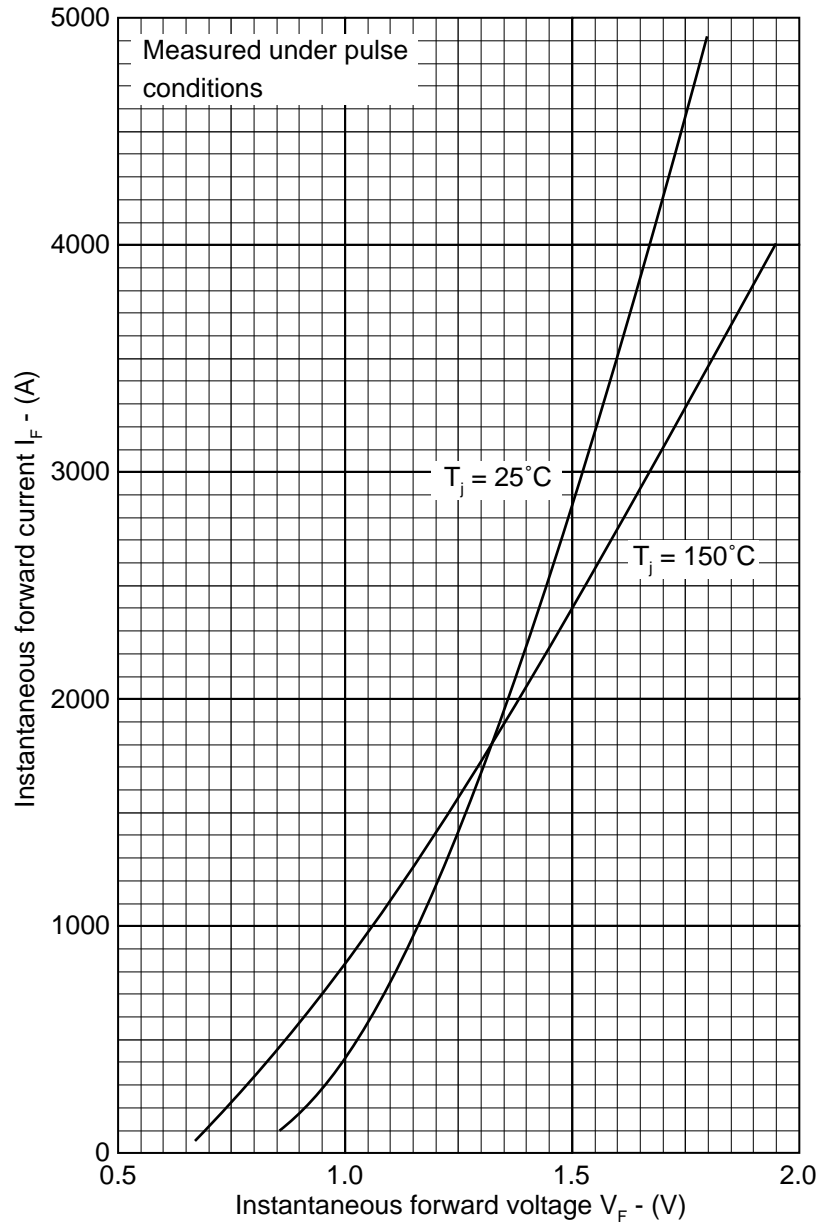
THERMAL AND MECHANICAL DATA

| Symbol | Parameter | Conditions | | Min. | Max. | Units |
|---------------|---------------------------------------|--|-------------|------|-------|---------------|
| $R_{th(j-c)}$ | Thermal resistance - junction to case | Double side cooled | dc | - | 0.022 | $^{\circ}C/W$ |
| | | Single side cooled | Anode dc | - | 0.038 | $^{\circ}C/W$ |
| | | | Cathode dc | - | 0.052 | $^{\circ}C/W$ |
| $R_{th(c-h)}$ | Thermal resistance - case to heatsink | Clamping force 19.5kN with mounting compound | Double side | - | 0.004 | $^{\circ}C/W$ |
| | | | Single side | - | 0.008 | $^{\circ}C/W$ |
| T_{vj} | Virtual junction temperature | Forward (conducting) | | - | 160 | $^{\circ}C$ |
| | | Reverse (blocking) | | - | 150 | $^{\circ}C$ |
| T_{stg} | Storage temperature range | | | -55 | 175 | $^{\circ}C$ |
| - | Clamping force | | | 18.0 | 22.0 | kN |

CHARACTERISTICS

| Symbol | Parameter | Conditions | Min. | Max. | Units |
|-----------|-----------------------|---|------|------|------------|
| V_{FM} | Forward voltage | At 3400A peak, $T_{case} = 25^{\circ}C$ | - | 1.6 | V |
| I_{RRM} | Peak reverse current | At V_{RRM} , $T_{case} = 150^{\circ}C$ | - | 75 | mA |
| Q_S | Total stored charge | $I_F = 2000A$, $di_{RR}/dt = 3A/\mu s$, $T_{case} = 150^{\circ}C$, $V_R = 100V$ | - | 3500 | μC |
| I_{RR} | Peak recovery current | | - | 110 | A |
| V_{TO} | Threshold voltage | At $T_{vj} = 150^{\circ}C$ | - | 0.82 | V |
| r_T | Slope resistance | At $T_{vj} = 150^{\circ}C$ | - | 0.29 | m Ω |

CURVES

**FIG. 1 MAXIMUM (LIMIT) FORWARD CHARACTERISTICS**

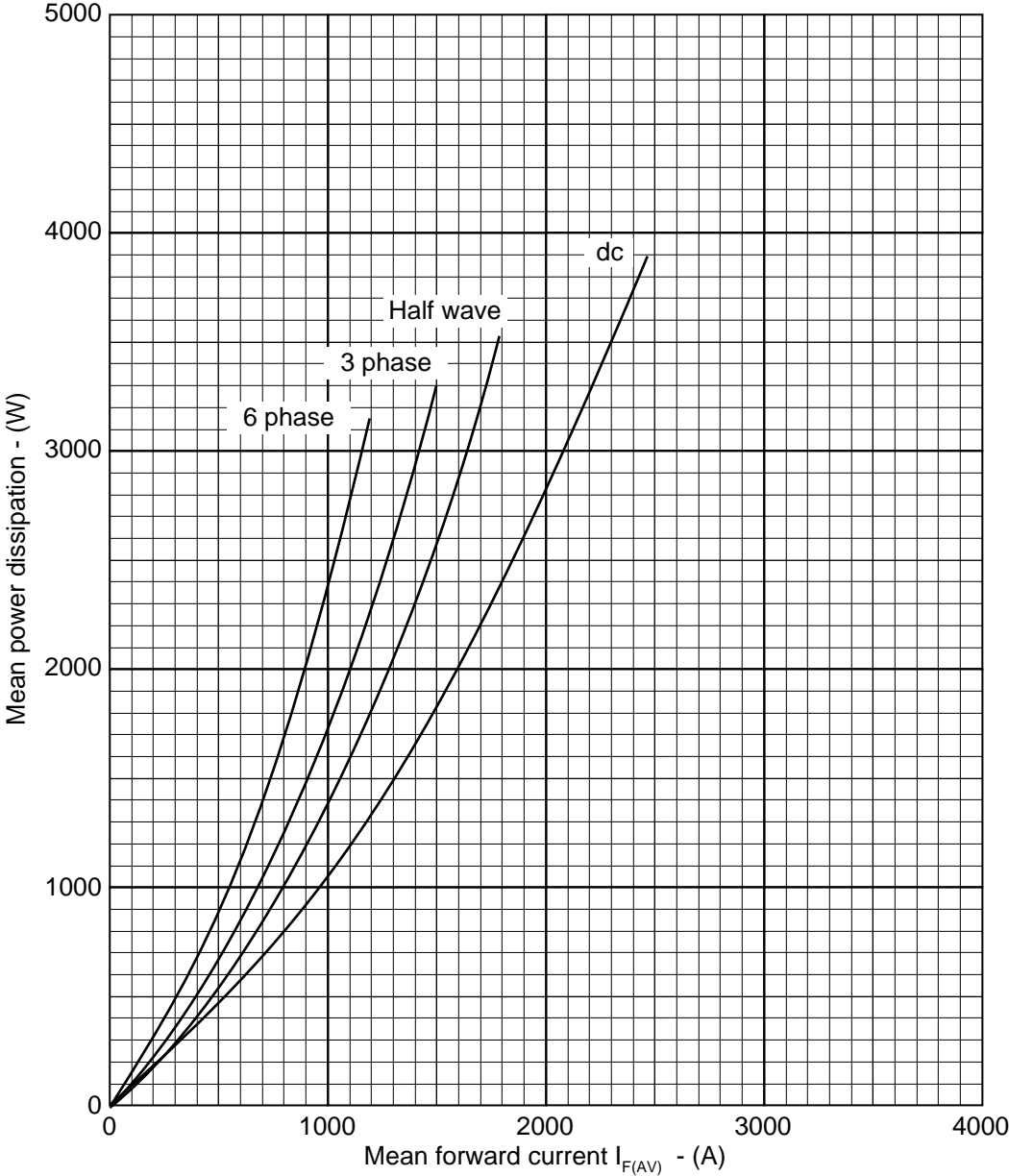
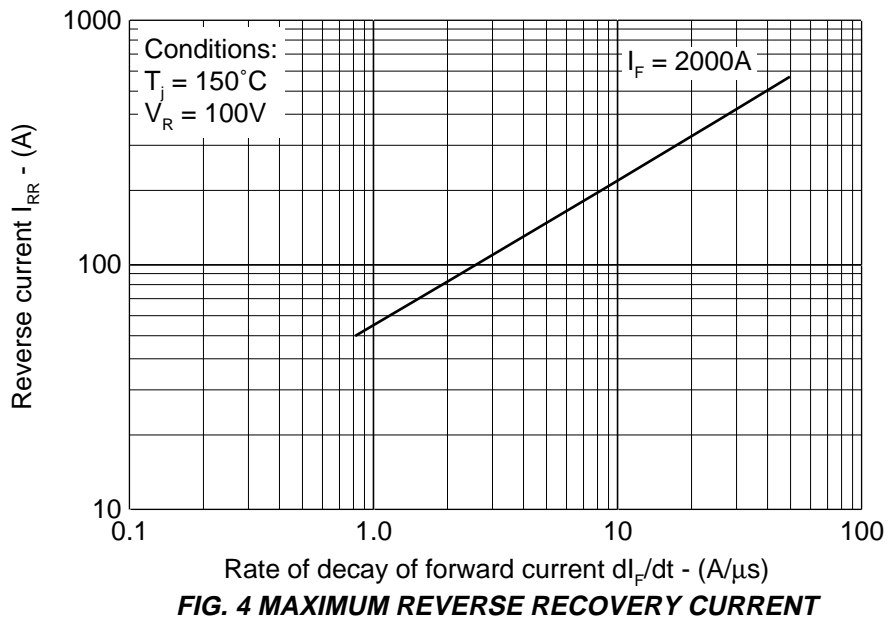
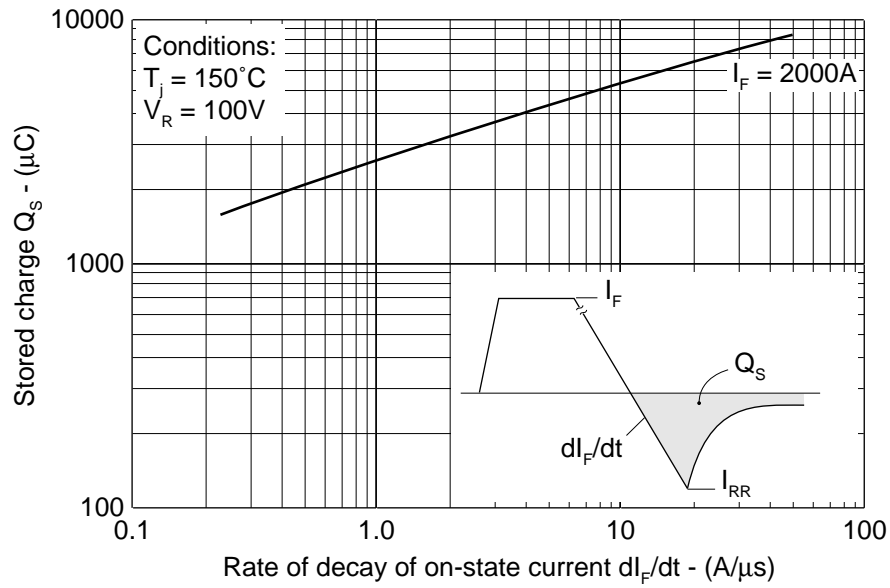


FIG. 2 DISSIPATION CURVES



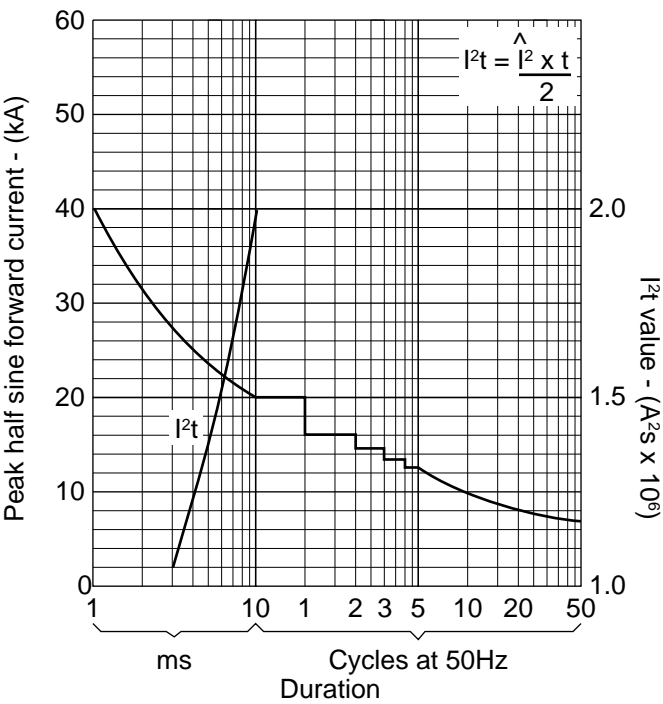


FIG. 5 SURGE (NON-REPETITIVE) FORWARD CURRENT vs TIME (WITH 50% V_{RRM} $T_{case} = 150^{\circ}C$)

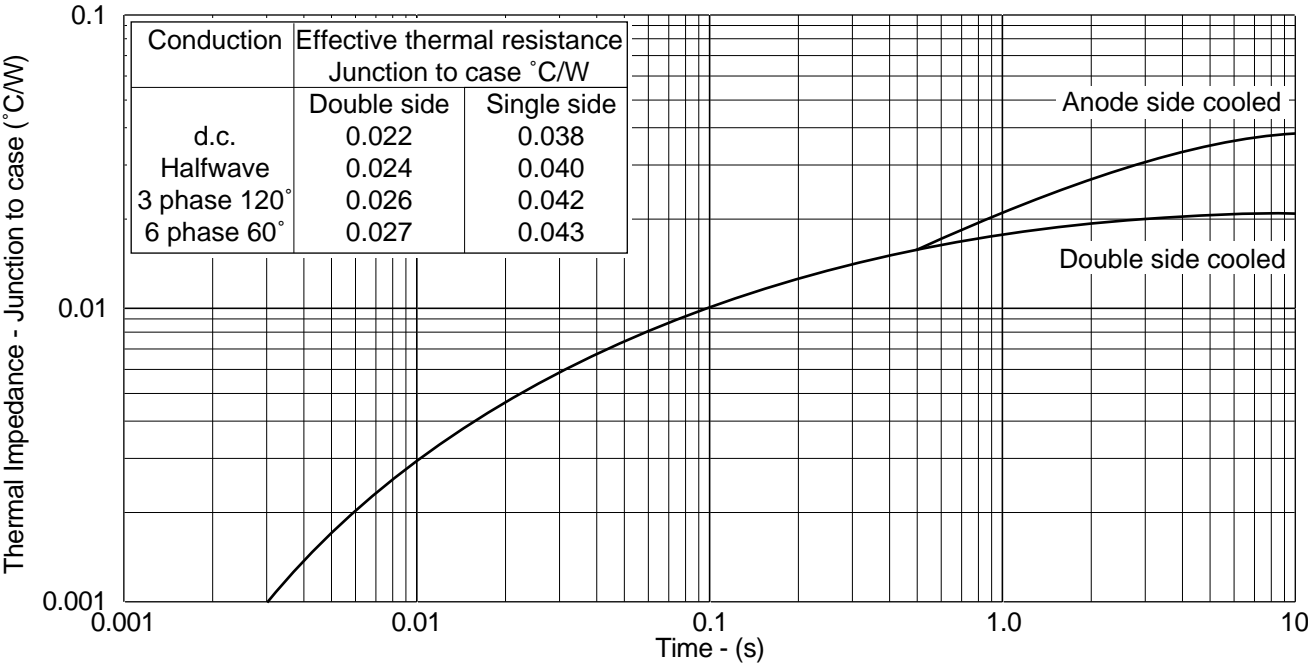
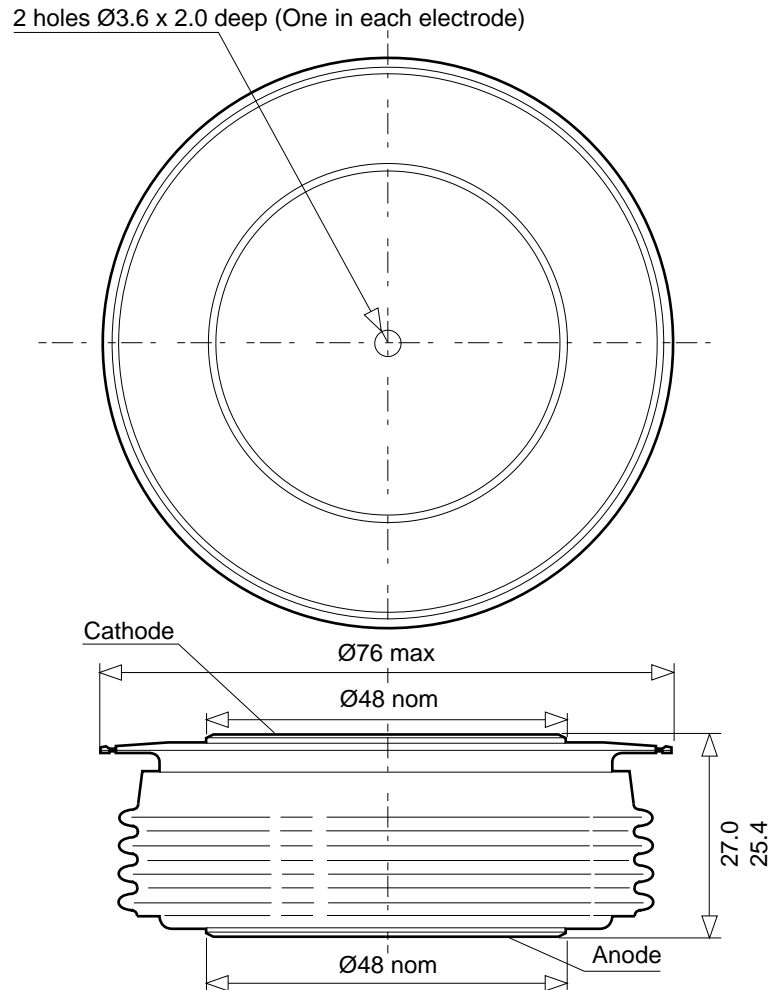


FIG. 6 TRANSIENT THERMAL IMPEDANCE - JUNCTION TO CASE - ($^{\circ}C/W$)

PACKAGE DETAILS - F

For further package information, please contact your local Customer Service Centre. All dimensions in mm, unless stated otherwise. DO NOT SCALE.



Weight: 500g



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