

STARPOWER

SEMICONDUCTOR

Rectifier Diode

RD165SGJ180C1S

Molding Type Module

1800V/165A 1 in one-package

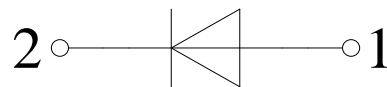


General Description

STARPOWER Rectifier Diode Power Module provides ultra low conduction loss. They are designed for the applications such as SMPS.

Features

- Low forward voltage drop
- Small temperature coefficient
- High Surge Capacity
- Low inductance
- Isolated Copper Baseplate Using DBC Technology



Equivalent Circuit Schematic

Typical Applications

- Input bridge rectifier
- AC/DC motor control
- Power supply

Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol | Description | RD165SGJ180C1S | Unit |
|-----------|--|----------------|----------------------|
| V_{RRM} | Repetitive Peak Reverse Voltage | 1800 | V |
| V_{RSM} | Non-repetitive Peak Reverse Voltage | 1900 | V |
| I_{FAV} | Average Forward Current $T_C=105^\circ\text{C}$ | 165 | A |
| I_{FSM} | Surge Forward Current $V_R=0\text{V}, t_p=10\text{ms}, T_j=45^\circ\text{C}$ | 6200 | A |
| | $V_R=0\text{V}, t_p=8.3\text{ms}, T_j=45^\circ\text{C}$ | 6700 | |
| I^2t | I^2t -value $V_R=0\text{V}, t_p=10\text{ms}, T_j=45^\circ\text{C}$ | 192200 | A^2s |
| | $V_R=0\text{V}, t_p=8.3\text{ms}, T_j=45^\circ\text{C}$ | 224450 | |
| P_D | Maximum Power Dissipation @ $T_j=150^\circ\text{C}$ | 609 | W |
| T_j | Junction Temperature | -40 to +150 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature Range | -40 to +125 | $^\circ\text{C}$ |
| V_{ISO} | Isolation Voltage RMS, $f=50\text{Hz}, t=1\text{min}$ | 4000 | V |
| M | Terminal Connection Torque, Screw M6 | 2.5 to 5.0 | N.m |
| | Mounting Torque, Screw M6 | 3.0 to 5.0 | |

Electrical Characteristics of Diode $T_C=25^\circ\text{C}$ unless otherwise noted

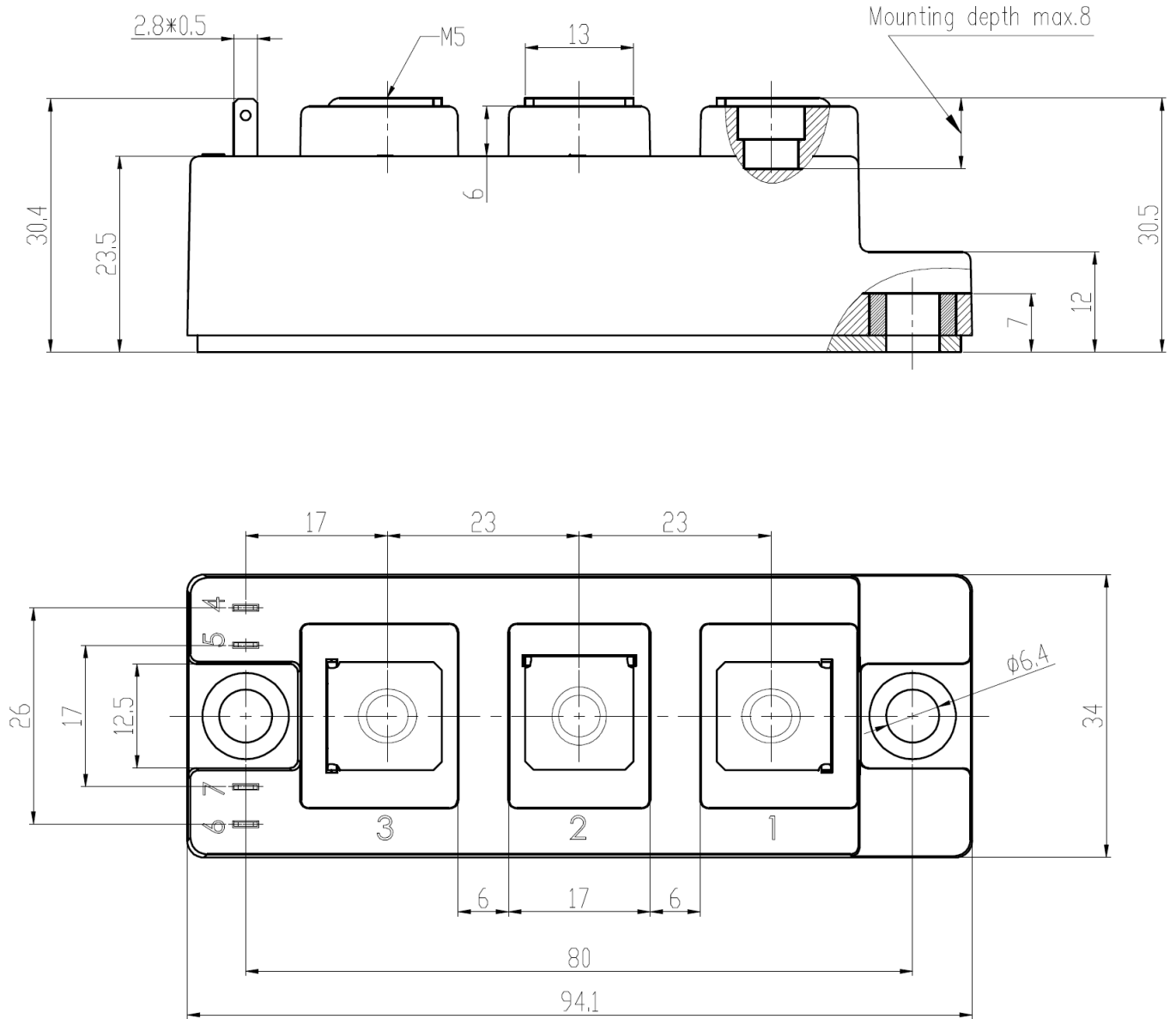
| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Units | |
|--------|-----------------------|-------------------|-------------------------|------|------|-------|----|
| V_F | Diode Forward Voltage | $I_F=300\text{A}$ | $T_j=25^\circ\text{C}$ | | 1.15 | 1.35 | V |
| | | | $T_j=150^\circ\text{C}$ | | 1.05 | | |
| I_R | Diode Reverse Current | $V_R=V_{RRM}$ | $T_j=25^\circ\text{C}$ | | | 1.00 | mA |
| | | | $T_j=150^\circ\text{C}$ | | | 8.00 | |

Thermal Characteristics

| Symbol | Parameter | Typ. | Max. | Units |
|-----------------|--|------|-------|-------|
| $R_{\theta JC}$ | Junction-to-Case (per Diode) | | 0.205 | K/W |
| $R_{\theta CS}$ | Case-to-Sink (Conductive grease applied) | 0.05 | | K/W |
| Weight | Weight of Module | 150 | | g |

Package Dimensions

Dimensions in Millimeters



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