

# STARPOWER

SEMICONDUCTOR

## Rectifier Diode

### RD50FFS180K1S

Molding Type Module

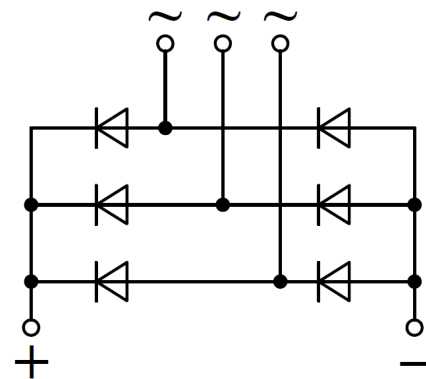
1800V/50A 6 in one-package

### 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	RD50FFS180K1S	Unit
$V_{RRM}$	Repetitive Peak Reverse Voltage	1800	V
$V_{RSM}$	Non-repetitive Peak Reverse Voltage	1800	V
$I_{FAV}$	Average Forward Current $T_C=115^{\circ}\text{C}$	50	A
$I_{FSM}$	Surge Forward Current $V_R=0\text{V}, t_p=10\text{ms}, T_j=45^{\circ}\text{C}$ $V_R=0\text{V}, t_p=8.3\text{ms}, T_j=45^{\circ}\text{C}$	850	A
		930	
$I^2t$	$I^2t$ -value $V_R=0\text{V}, t_p=10\text{ms}, T_j=45^{\circ}\text{C}$ $V_R=0\text{V}, t_p=8.3\text{ms}, T_j=45^{\circ}\text{C}$	3610	$\text{A}^2\text{s}$
		3600	
$P_D$	Maximum Power Dissipation @ $T_j=150^{\circ}\text{C}$	172	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 M5 Mounting Torque, Screw M5	2.5 to 5.0	N.m
		3.0 to 5.0	

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

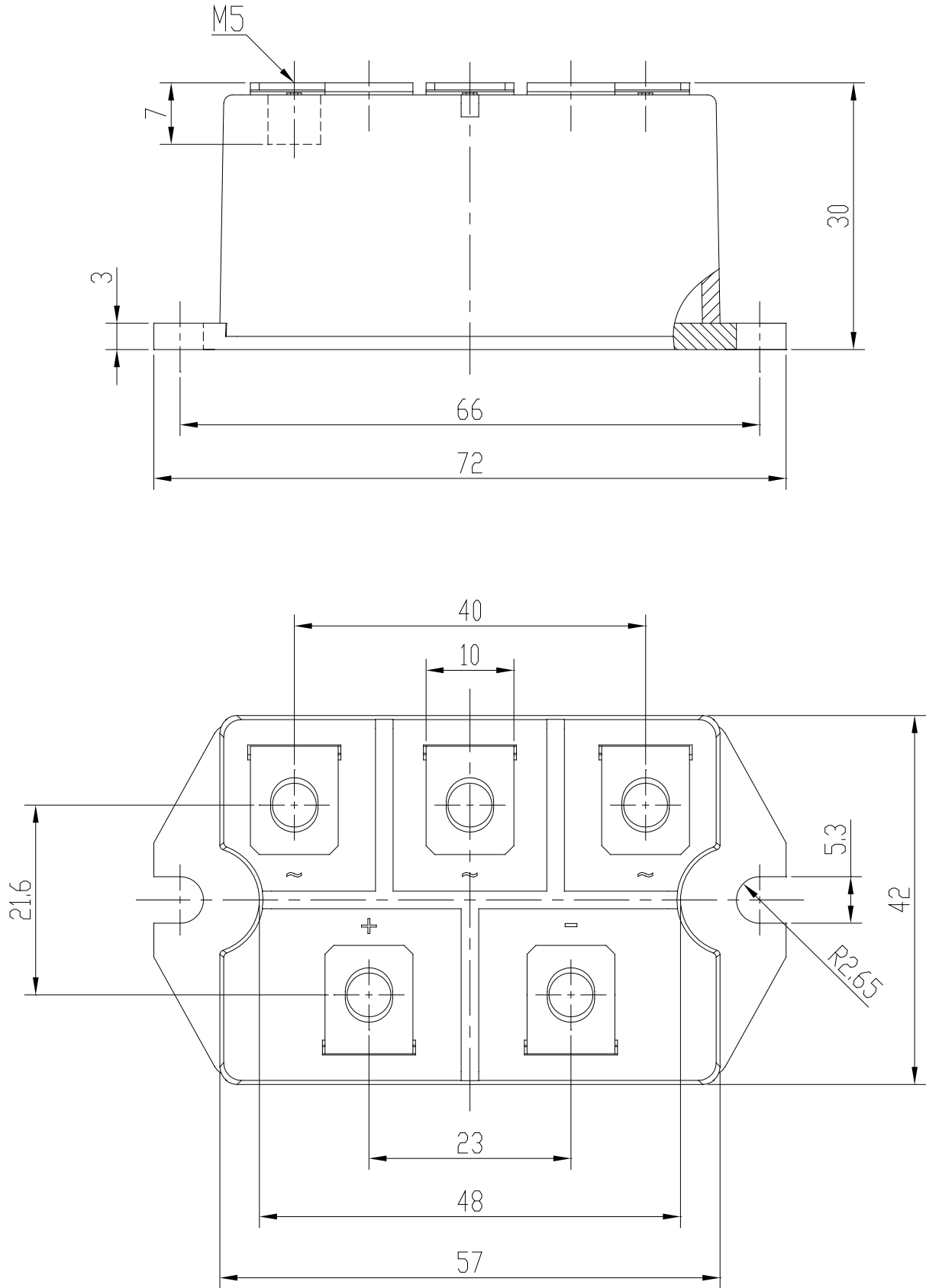
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_F$	Diode Forward Voltage	$I_F=80\text{A}$	$T_j=25^{\circ}\text{C}$		1.23	V
			$T_j=150^{\circ}\text{C}$		1.16	
$V_{(TO)}$	Threshold Voltage	$T_j=150^{\circ}\text{C}$			0.85	V
$r_T$	Forward Slope Resistance	$T_j=150^{\circ}\text{C}$			3.9	$\text{m}\Omega$
$I_R$	Diode Reverse Current	$V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$		0.5	mA
			$T_j=150^{\circ}\text{C}$		1.5	

**Thermal Characteristics**

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JC}$	Junction-to-Case (per Diode)		0.728	K/W
$R_{\theta CS}$	Case-to-Sink (Conductive grease applied)	0.07		K/W
G	Weight of Module	165		g

**Package Dimensions**

Dimensions in Millimeters



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