

# STARPOWER

SEMICONDUCTOR

## Rectifier Diode

### RD100HFS160C1S

Molding Type Module

1600V/100A 2 in one-package

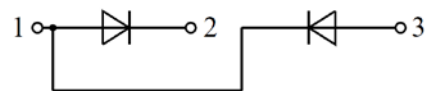
#### General Description

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



#### Features

- Planar Passivated Chips
- High Surge Capacity
- Dual Diodes Cascaded Circuit
- 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	RD100HFS160C1S	Units
$V_{RRM}$	Repetitive Peak Reverse Voltage	1600	V
$V_{RSM}$	Non-repetitive Peak Reverse Voltage	1700	V
$I_{F(AV)}$	Average On-state Current @ $T_C=100^\circ\text{C}$	115	A
$I_{FSM}$	Surge Current $t_p=10\text{ms}(50\text{Hz}), T_j=45^\circ\text{C}, \text{sine}$	1800	A
	$t_p=8.3\text{ms}(60\text{Hz}), T_j=45^\circ\text{C}, \text{sine}$	1850	
	$t_p=10\text{ms}(50\text{Hz}), T_j=150^\circ\text{C}, \text{sine}$	1560	
	$t_p=8.3\text{ms}(60\text{Hz}), T_j=150^\circ\text{C}, \text{sine}$	1700	
$I^2t$ -value	$t_p=10\text{ms}(50\text{Hz}), T_j=45^\circ\text{C}, \text{sine}$	16200	$\text{A}^2\text{s}$
	$t_p=8.3\text{ms}(60\text{Hz}), T_j=45^\circ\text{C}, \text{sine}$	14260	
	$t_p=10\text{ms}(50\text{Hz}), T_j=150^\circ\text{C}, \text{sine}$	12170	
	$t_p=8.3\text{ms}(60\text{Hz}), T_j=150^\circ\text{C}, \text{sine}$	12040	
$T_{jmax}$	Maximum Junction Temperature	150	$^\circ\text{C}$
$T_{jop}$	Operating Junction Temperature	-40 to +125	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-40 to +125	$^\circ\text{C}$
$V_{ISO}$	Isolation Voltage RMS, $f=50\text{Hz}, t=1\text{min}$	3400	V
Mounting Torque	Power Terminal Screw:M5 Mounting Screw:M6	2.5 to 5.0 3.0 to 5.0	N.m
Weight	Weight of Module	150	g

**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	$I_F=200\text{A}$	$T_j=25^\circ\text{C}$		1.25	V
			$T_j=150^\circ\text{C}$		1.20	
$I_R$	Diode Reverse Current	$V_R=V_{RRM}$			2.0	mA
$L_{CE}$	Stray Inductance				30	nH
$R_{CC'+EE'}$	Module Lead Resistance, Terminal To Chip	$T_C=25^\circ\text{C}$		0.75		m $\Omega$

**Thermal Characteristics**

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case (per Diode)		0.336	K/W
$R_{\theta CS}$	Case-to-Sink (Conductive grease applied)	0.05		K/W

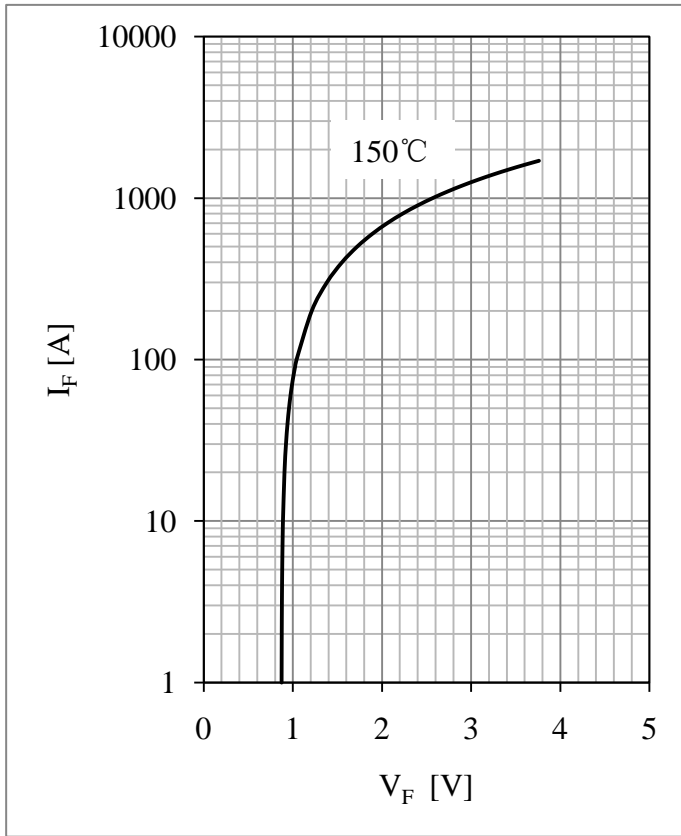


Fig 1. Diode Forward Characteristic

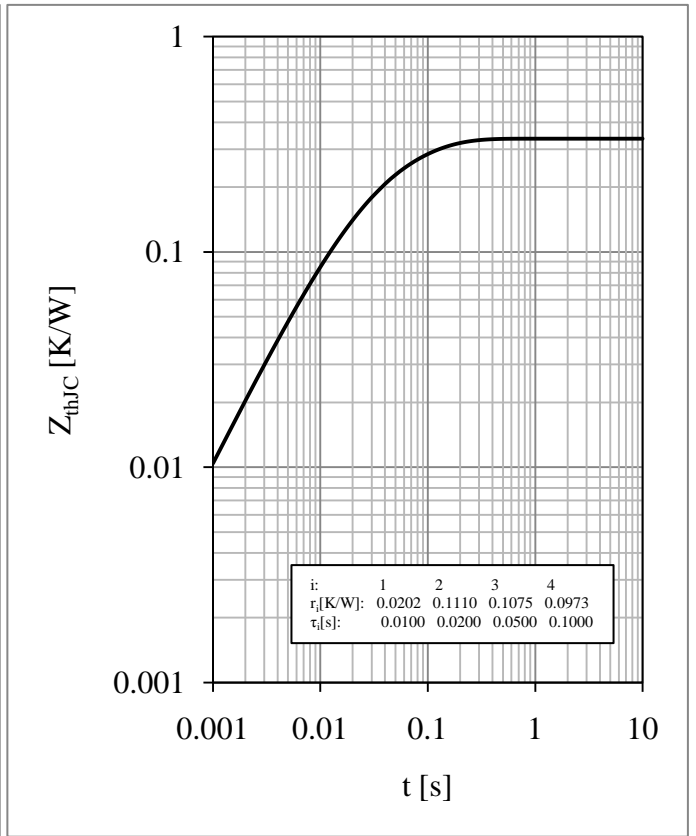
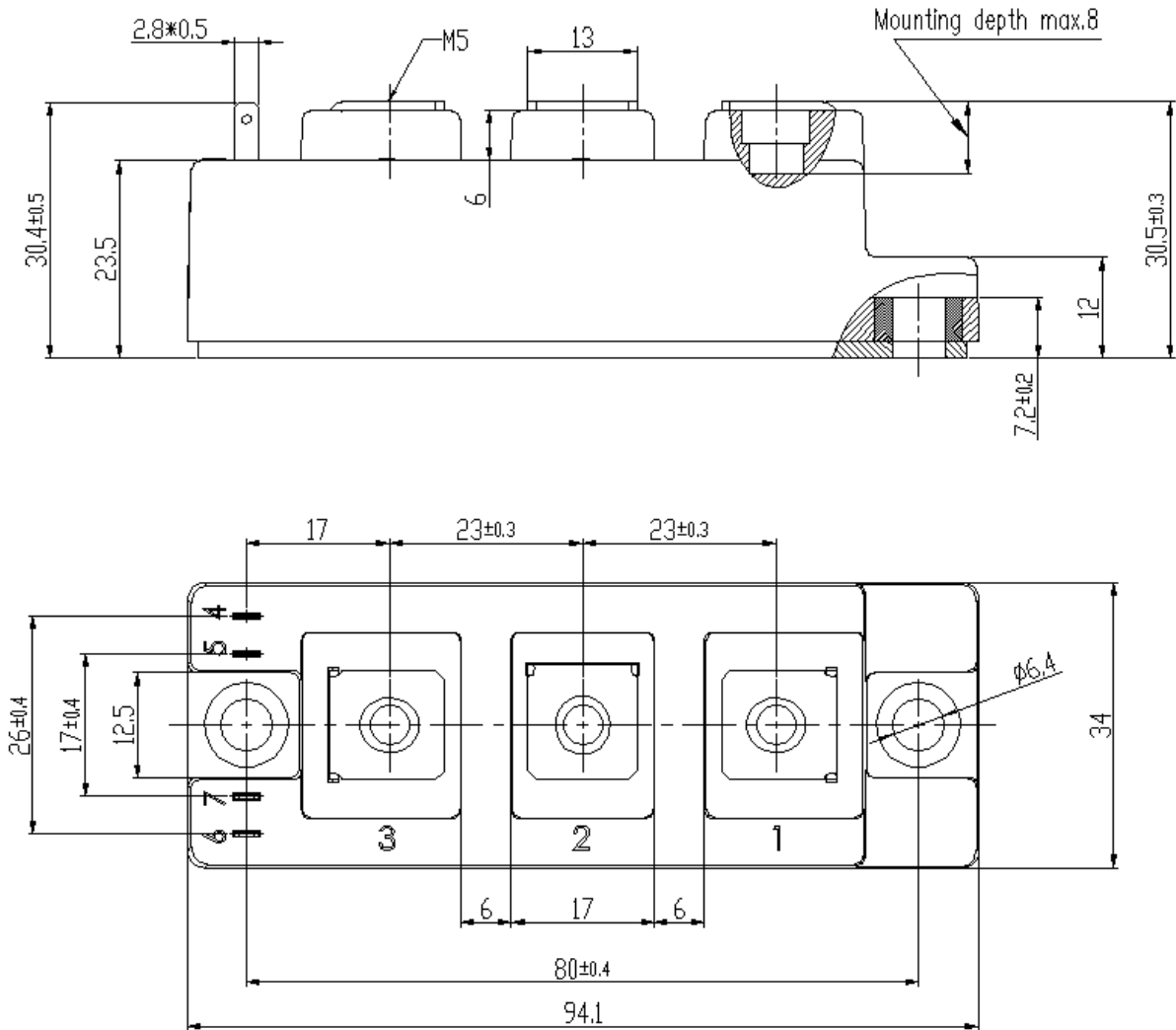


Fig 2. Diode Transient Thermal Impedance

**Package Dimensions**

Dimensions in Millimeters



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