

# STARPOWER

SEMICONDUCTOR

**FRED**

## FD200HFH60C1S

**Molding Type Module**

**600V/200A 2 in one-package**

### General Description

STARPOWER Diode Power Module provides low forward voltage as well as low reverse recovery loss. They are designed for the applications such as SMPS.

### Features

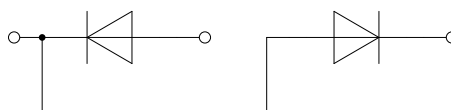
- Fast soft diode
- Low forward voltage drop
- Small temperature coefficient
- Low reverse recovery losses
- High ruggedness
- Low inductance
- Isolated copper baseplate using DBC technology



### Typical Applications

- SMPS
- PFC
- Electric welders
- DC choppers

### Equivalent Circuit Schematic



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

Symbol	Description	Value	Unit
$V_{RRM}$	Repetitive Peak Reverse Voltage	600	V
$V_{RSM}$	Non-repetitive Peak Reverse Voltage	600	V
$I_{FAV}$	Average Forward Current $T_C=100^\circ\text{C}$ , Diode $T_C=100^\circ\text{C}$ , Module	100	A
		200	A
$I_{FSM}$	Surge Forward Current $V_R=0\text{V}, t_p=10\text{ms}, T_j=25^\circ\text{C}$ $V_R=0\text{V}, t_p=8.3\text{ms}, T_j=25^\circ\text{C}$	1600	A
		1760	A
$I^2t$	$I^2t$ -value $V_R=0\text{V}, t_p=10\text{ms}, T_j=25^\circ\text{C}$ $V_R=0\text{V}, t_p=8.3\text{ms}, T_j=25^\circ\text{C}$	12800	$\text{A}^2\text{s}$
		12907	$\text{A}^2\text{s}$
$P_D$	Maximum Power Dissipation @ $T_j=150^\circ\text{C}$	579	W
$T_j$	Junction Temperature	-40 to +150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-40 to +125	$^\circ\text{C}$

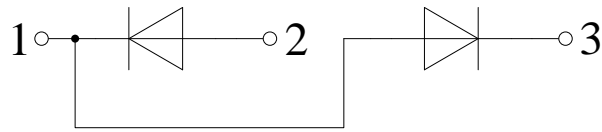
**Electrical Characteristics of Diode**  $T_C=25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$V_F$	Diode Forward Voltage	$I_F=100\text{A}$	$T_j=25^\circ\text{C}$	1.35	1.55	V
			$T_j=125^\circ\text{C}$	1.30	1.50	
$I_R$	Diode Reverse Current	$V_R=V_{RRM}$	$T_j=25^\circ\text{C}$		0.5	mA
			$T_j=125^\circ\text{C}$		1.0	
$t_{rr}$	Reverse Recovery Time	$I_F=100\text{A}$ $V_R=300\text{V}$ $di/dt=-200\text{A}/\mu\text{s}$	$T_j=25^\circ\text{C}$	78		ns
			$T_j=125^\circ\text{C}$	145		
$I_{RM}$	Peak Reverse Recovery Current	$I_F=100\text{A}$ $V_R=300\text{V}$ $di/dt=-200\text{A}/\mu\text{s}$	$T_j=25^\circ\text{C}$	7.8		A
			$T_j=125^\circ\text{C}$	15.2		
$Q_r$	Reverse Recovery Charge	$I_F=100\text{A}$ $V_R=300\text{V}$ $di/dt=-200\text{A}/\mu\text{s}$	$T_j=25^\circ\text{C}$	402		nC
			$T_j=125^\circ\text{C}$	1150		

**Thermal Characteristics**

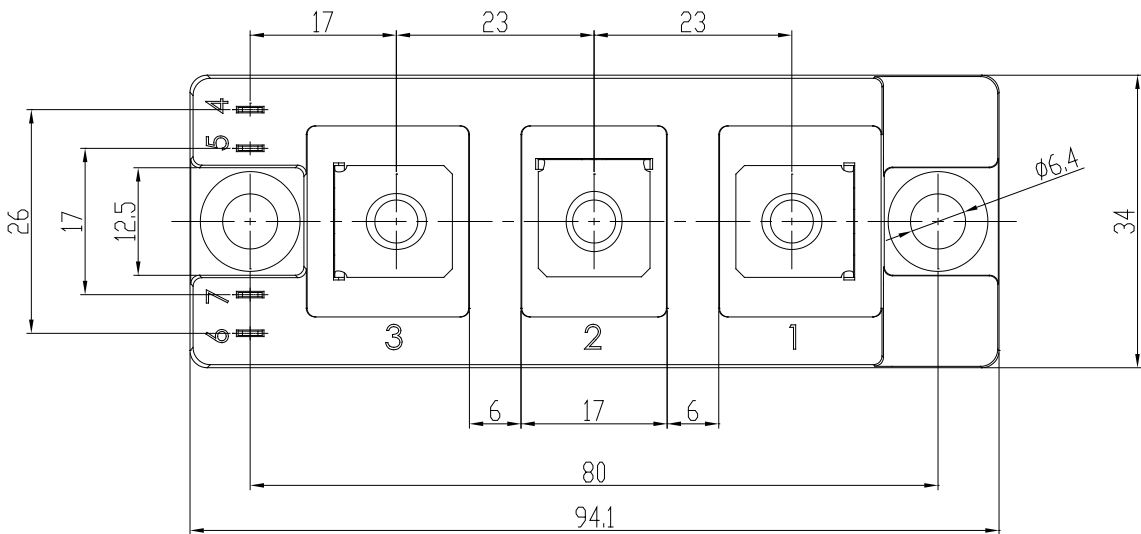
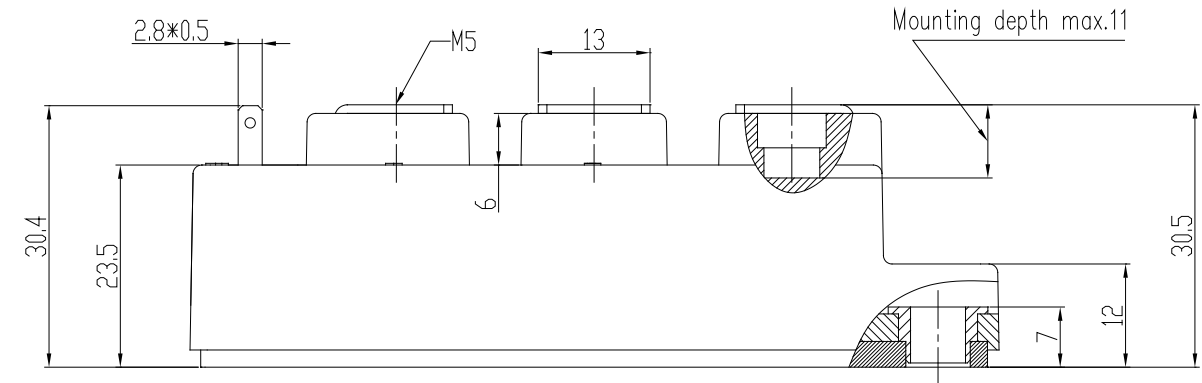
Symbol	Parameter	Min.	Typ.	Max.	Unit
$L_{CE}$	Stray Inductance			30	nH
$R_{CC'+EE'}$	Module Lead Resistance, Terminal to Chip		0.75		m $\Omega$
$R_{thJC}$	Junction-to-Case (per Diode)			0.315	K/W
$R_{thCH}$	Case-to-Heatsink (per Module)		0.050		K/W
M	Terminal Connection Torque, Screw M5	2.5		5.0	N.m
	Mounting Torque, Screw M6	3.0		5.0	
G	Weight of Module		150		g

**Equivalent Circuit Schematic**



**Package Dimensions**

Dimensions in Millimeters



## Terms and Conditions of Usage

The data contained in this product datasheet is exclusively intended for technically trained staff. you and your technical departments will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to such application.

This product data sheet is describing the characteristics of this product for which a warranty is granted. Any such warranty is granted exclusively pursuant the terms and conditions of the supply agreement. There will be no guarantee of any kind for the product and its characteristics.

Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of our product, please contact the sales office, which is responsible for you (see [www.powersemi.cc](http://www.powersemi.cc)), For those that are specifically interested we may provide application notes.

Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact the sales office, which is responsible for you.

Should you intend to use the Product in aviation applications, in health or live endangering or life support applications, please notify.

If and to the extent necessary, please forward equivalent notices to your customers.  
Changes of this product data sheet are reserved.