

# 120H60S

## 600V FRD Full Bridge Module

### Features

- Repetitive Reverse Voltage:  $V_{RRM} = 600V$
- Low Forward Voltage:  $V_F(\text{typ.}) = 1.5V @ I_F=120A$
- Average Forward Current:  $I_{F(AV)} = 120A @ T_C=100^\circ C$
- Reverse Recovery Time:  $t_{rr}(\text{typ.}) = 90ns$
- Extensive Characterization of Recovery Parameters
- Reduced EMI and RFI
- Isolation Type Package
- $150^\circ C$  Operating Junction Temperature
- Built-in Full Bridge FRD Construction

### Applications

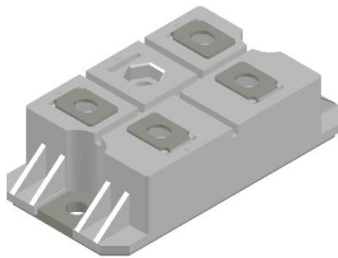
- High Speed & High Power Converters, Inverter Welders
- Various Switching and Telecommunication Power Supply
- Cutting Machine

### Description

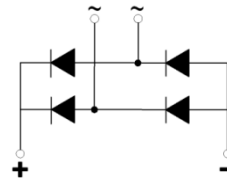
The Fast Recovery Diode module devices used Full Bridge Structure, and optimized to reduce losses and EMI/RFI in high frequency power conditioning electrical systems.

The Fast Recovery Diode module is ideally suited for power converters, inverter welders, motor drives and other applications where switching losses are significant portion of the total losses.

### Package Type & Internal Circuit



5SMDS-1



Equivalent Circuit

### Absolute Maximum Ratings (Per diode at $T_C=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Unit
$V_{RRM}$	Repetitive Peak Reverse Voltage	600	V
$V_R$	DC Blocking Voltage	480	V
$I_{F(AV)}$	Average Rectified Forward Current	$T_C = 25^\circ C$	A
		$T_C = 100^\circ C$	
$I_{FSM}$	Non-repetitive Peak Surge Current 60Hz Single Half-sine Wave	1950	A
$I^2t$	$I^2t$ For Fusing 60Hz Sine Wave	$15.8 * 10^3$	$A^2s$
$P_D$	Maximum Power Dissipation	360	W
$V_{iso}$	Isolation Voltage @AC 1 Minutes	2500	V
$T_J$	Junction Temperature	-55 ~ +150	$^\circ C$
$T_{STG}$	Storage Temperature	-55 ~ +150	$^\circ C$
	Mounting Torque (M5)	4.0	N.m
	Terminal Torque (M5)	2.0	N.m
	Weight	137	g

**Electrical Characteristics** (Per diode @  $T_C=25\text{ }^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_F$	Forward Voltage Drop	$I_F=100\text{A}$	-	1.5	1.8	V
		$I_F=100\text{A}, T_C=100^\circ\text{C}$	-	1.25	-	V
$I_{RM}$	Reverse Leakage Current	$V_R=600\text{V}$	-	-	0.5	mA
		$V_R=600\text{V}, T_C=100^\circ\text{C}$	-	-	1	mA
$t_{rr}$	Reverse Recovery Time	$I_F=1\text{A}, di/dt=-200\text{A/us}$	-	35	-	ns
$t_{rr}$	Reverse Recovery Time	$I_F=100\text{A}, di/dt=-200\text{A/us}$	-	90	110	ns
$I_{rr}$	Reverse Recovery Current		-	12	-	A
$t_{rr}$	Reverse Recovery Time	$I_F=100\text{A}, di/dt=-200\text{A/us}, T_C=100^\circ\text{C}$	-	220	-	ns
$I_{rr}$	Reverse Recovery Current		-	22	-	A

**Thermal Characteristics**

Symbol	Parameter	Ratings	Unit
$R_{th(J-C)}$	Thermal Resistance, Junction to case	0.34	$^\circ\text{C/W}$

### Typical Performance Characteristics

Fig. 1. Typical Characteristics:  $V_F$  vs.  $I_F$

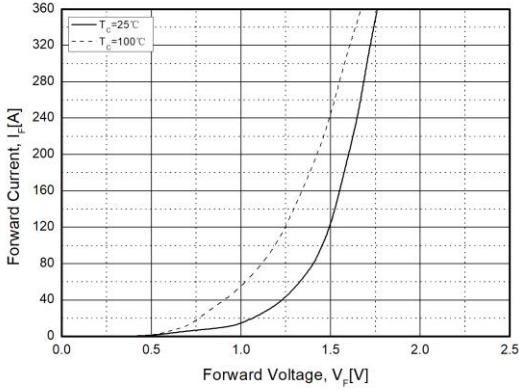


Fig. 2. Typical Reverse Recovery Time vs.  $di/dt$

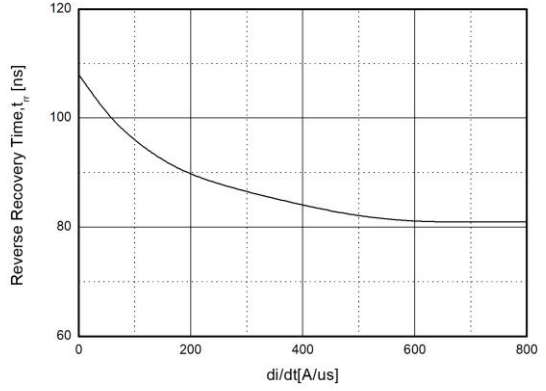


Fig. 3. Transient Thermal Impedance Characteristics ( $R_{th(J-C)}$ )

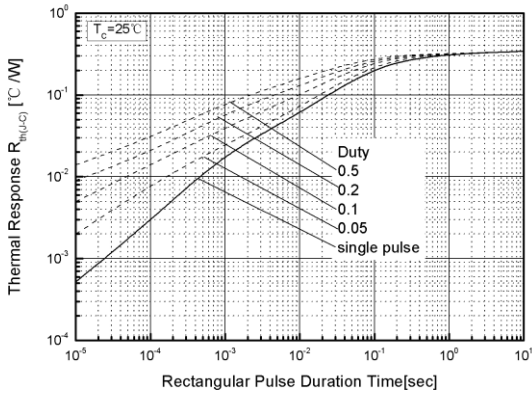
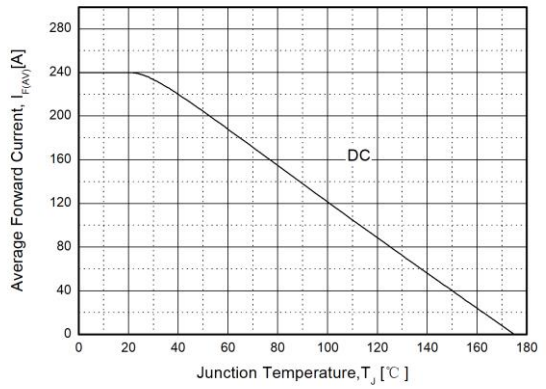
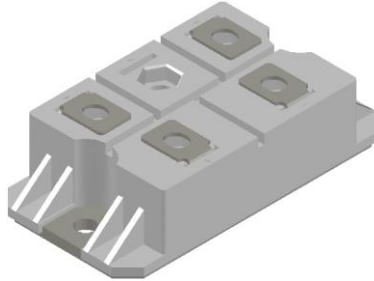


Fig. 4. Forward Current Derating Curve

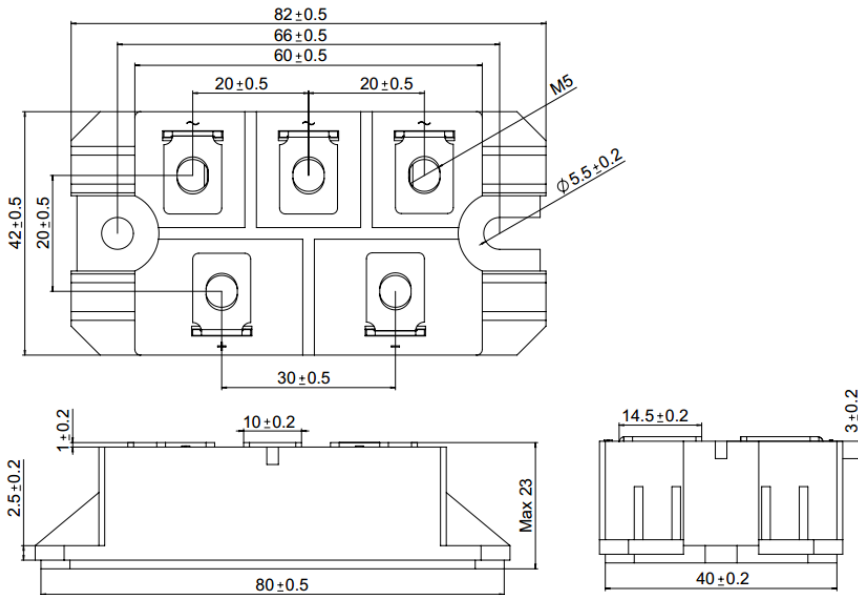


## Package Dimensions

### 5SMDS-1




(Dimensions in Millimeters)



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