

S2F240N40NI

400V Non-isolation FRD Module

Features

- Repetitive Reverse Voltage: $V_{RRM} = 400V$
- Low Forward Voltage: $V_F(\text{typ.}) = 1.2V$ @ $I_F = 240A$
- Average Forward Current: $I_{F(AV)} = 240A$ @ $T_C = 100^\circ C$
- Ultrafast Reverse Recovery Time: $t_{rr}(\text{typ.}) = 105ns$
- Extensive Characterization of Recovery Parameters
- Reduced EMI and RFI
- Non-isolation Type Package
- $175^\circ C$ Operating Junction Temperature
- Built-in Dual FRD Construction

Applications

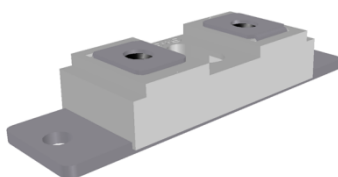
- High Speed & High Power converters, Inverter Welders
- Various Switching and Telecommunication Power Supply

Description

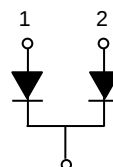
The Ultrafast Recovery Diode Module Devices are optimized to reduce losses and EMI/RFI in high frequency power conditioning electrical systems.

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

Package Type & Internal Circuit



3SM-NI



Common Heat Sink

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

Symbol	Parameter	Ratings	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	400	V
V_R	DC Blocking Voltage	320	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	2800	A
I^2t	I^2t For Fusing 60Hz Sine Wave	32.5×10^3	A^2S
P_D	Maximum Power Dissipation	750	W
T_J	Junction Temperature	$-55 \sim +175$	$^\circ C$
T_{STG}	Storage Temperature Range	$-55 \sim +150$	$^\circ C$
	Mounting Torque (M6)	5.0	N.m
	Terminal Torque (M6)	3.0	N.m
	Weight	95	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	$I_F=240\text{A}$	-	1.2	1.35	V
		$I_F=240\text{A}$, $T_C=100^{\circ}\text{C}$	-	1.05	-	V
I_{RM}	Reverse Leakage Current	$V_R=400\text{V}$	-	-	0.5	mA
		$V_R=400\text{V}$, $T_C=100^{\circ}\text{C}$	-	-	1	mA
t_{rr}	Reverse Recovery Time	$I_F=1\text{A}$, $di/dt=-200\text{A/us}$	-	34	-	ns
t_{rr}	Reverse Recovery Time	$I_F=240\text{A}$, $di/dt=-200\text{A/us}$	-	105	125	ns
I_{rr}	Reverse Recovery Current		-	18.5	-	A
t_{rr}	Reverse Recovery Time	$I_F=240\text{A}$, $di/dt=-200\text{A/us}$, $T_C=100^{\circ}\text{C}$	-	160	-	ns
I_{rr}	Reverse Recovery Current		-	28.0	-	A

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
$R_{th(J-C)}$	Thermal Resistance, Junction to case	0.17	$^{\circ}\text{C/W}$

Typical Performance Characteristics

Fig. 1. Typical Characteristics: V_F vs. I_F

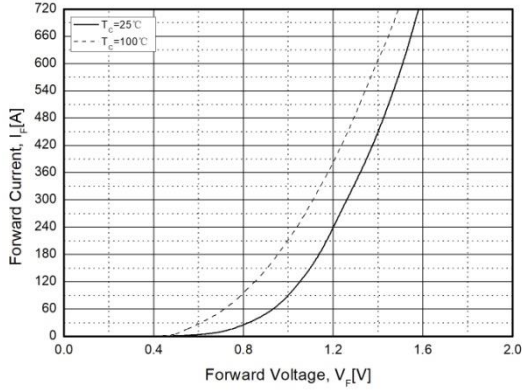


Fig. 2. Typical Reverse Recovery Time vs. di/dt

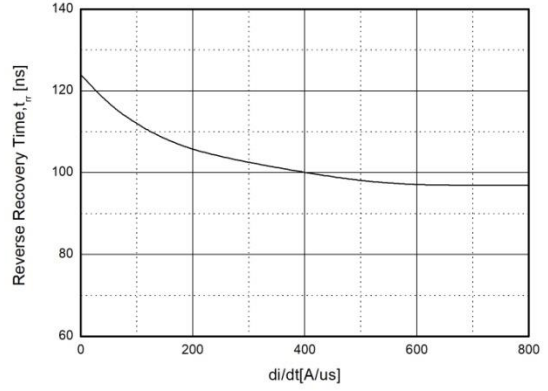


Fig. 3. Transient Thermal Impedance Characteristics (R_{thjc})

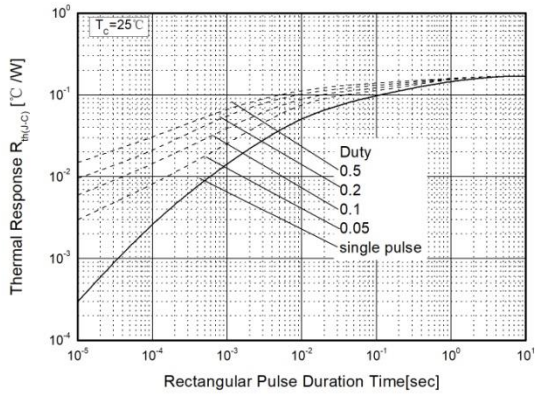
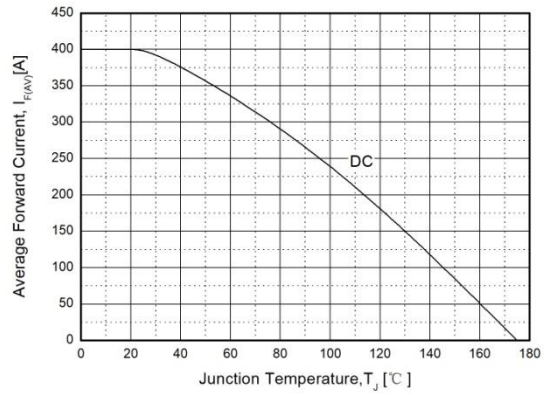
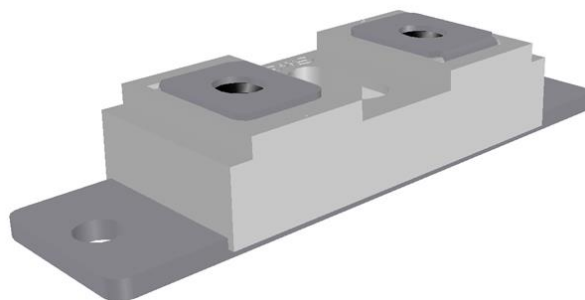


Fig. 4. Forward Current Derating Curve

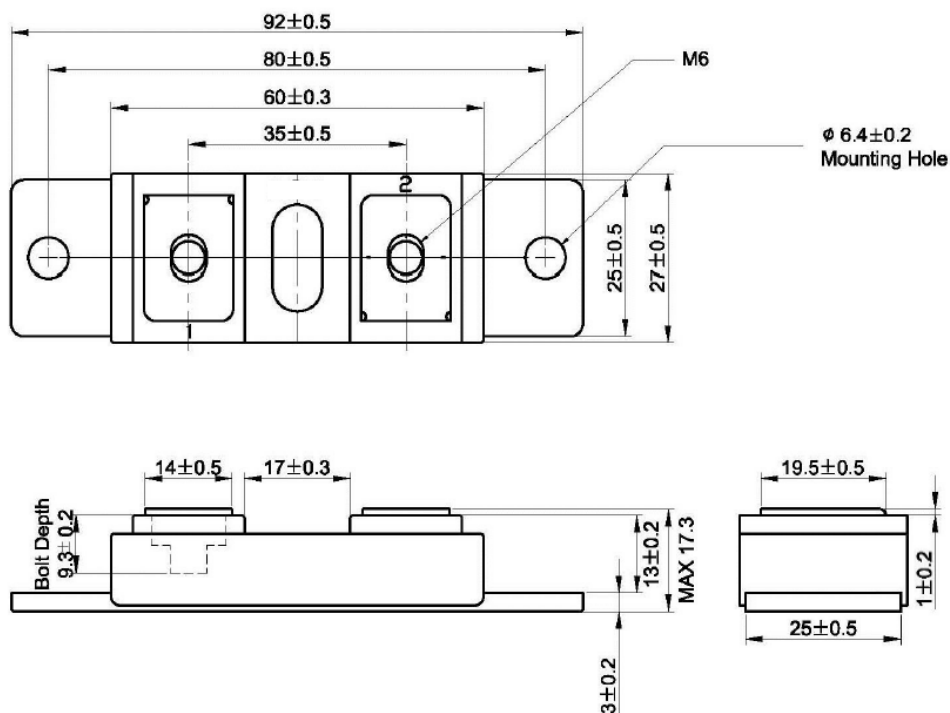


Package Dimensions

3SM-NI



(Dimensions in Millimeters)



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