



December 2008

PRELIMINARY

MMF200N120DA MMF200N120DK

1200V 200A FRED Module
RoHS Compliant

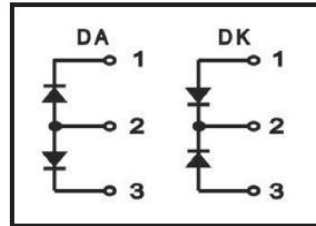
PRODUCT FEATURES

- Ultrafast Reverse Recovery Time
- Soft Reverse Recovery Characteristics
- Low Reverse Recovery Loss
- Low Forward Voltage
- High Surge Current Capability
- Low Inductance Package



APPLICATIONS

- Inversion Welder
- Uninterruptible Power Supply (UPS)
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Converter & Chopper
- Power Factor Correction (PFC) Circuit



ABSOLUTE MAXIMUM RATINGS

$T_C=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Test Conditions	Values	Unit
V_R	Maximum D.C. Reverse Voltage		1200	V
V_{RRM}	Maximum Repetitive Reverse Voltage		1200	V
$I_{F(AV)}$	Average Forward Current	$T_C=75^{\circ}\text{C}$, Per Diode	100	A
		$T_C=75^{\circ}\text{C}$, Per Moudle	200	A
		$T_C=85^{\circ}\text{C}$, 20KHz, Per Moudle	150	A
$I_{F(RMS)}$	RMS Forward Current	$T_C=75^{\circ}\text{C}$, Per Diode	150	A
I_{FSM}	Non-Repetitive Surge Forward Current	$T_J=45^{\circ}\text{C}$, $t=10\text{ms}$, 50Hz, Sine	1100	A
		$T_J=45^{\circ}\text{C}$, $t=8.3\text{ms}$, 60Hz, Sine	1200	A
I^2t	I^2t (For Fusing)	$T_J=45^{\circ}\text{C}$, $t=10\text{ms}$, 50Hz, Sine	6050	A^2s
		$T_J=45^{\circ}\text{C}$, $t=8.3\text{ms}$, 60Hz, Sine	7200	A^2s
P_D	Power Dissipation		280	W
T_J	Junction Temperature		-40 to +150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature Range		-40 to +125	$^{\circ}\text{C}$
V_{ISOL}	Insulation Test Voltage	AC, $t=1\text{min}$	3000	V
Torque	Module-to-Sink	Recommended (M5)	2.5~4	N·m
Torque	Module Electrodes	Recommended (M5)	2.5~4	N·m
$R_{\theta JC}$	Thermal Resistance	Junction-to-Case	0.44	$^{\circ}\text{C}/\text{W}$
Weight			100	g

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ELECTRICAL CHARACTERISTICS

T_C=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{RM}	Reverse Leakage Current	V _R =1200V	--	--	1	mA
		V _R =1200V, T _J =125°C	--	--	20	mA
V _F	Forward Voltage	I _F =100A	--	--	1.77	V
		I _F =100A, T _J =125°C	--	--	1.6	V
t _{rr}	Reverse Recovery Time	I _F =1A, V _R =30V, di _F /dt=-200A/μs	--	35	--	ns
t _{rr}	Reverse Recovery Time	V _R =600V, I _F =100A di _F /dt=-200A/μs, T _J =25°C	--	150	--	ns
I _{RRM}	Max. Reverse Recovery Current		--	28	--	A
t _{rr}	Reverse Recovery Time	V _R =600V, I _F =100A di _F /dt=-200A/μs, T _J =100°C	--	250	--	ns
I _{RRM}	Max. Reverse Recovery Current		--	47	--	A

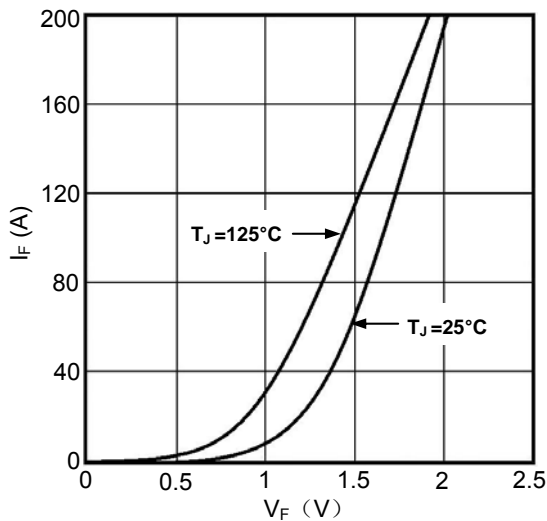


Figure1. Forward Voltage Drop vs Forward Current

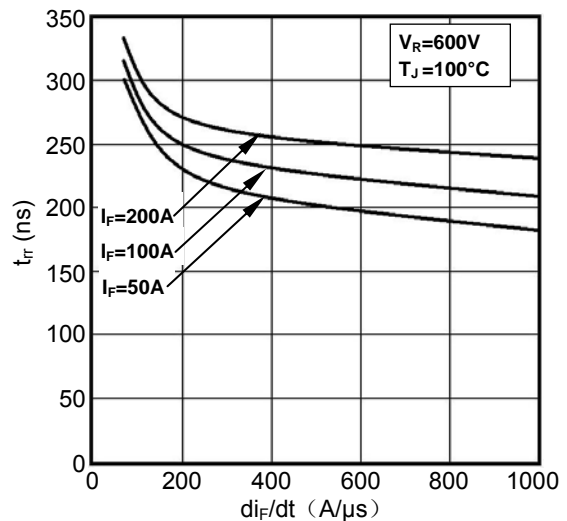


Figure2. Reverse Recovery Time vs di_F/dt

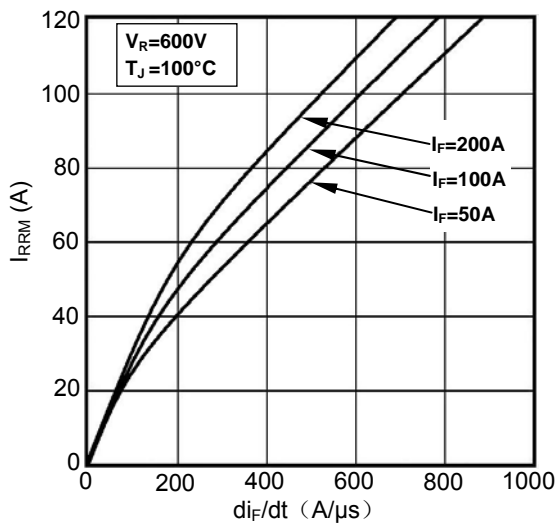


Figure3. Reverse Recovery Current vs di_F/dt

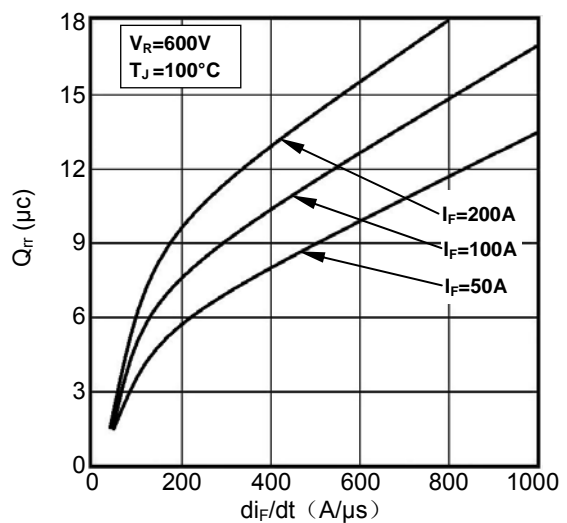


Figure4. Reverse Recovery Charge vs di_F/dt

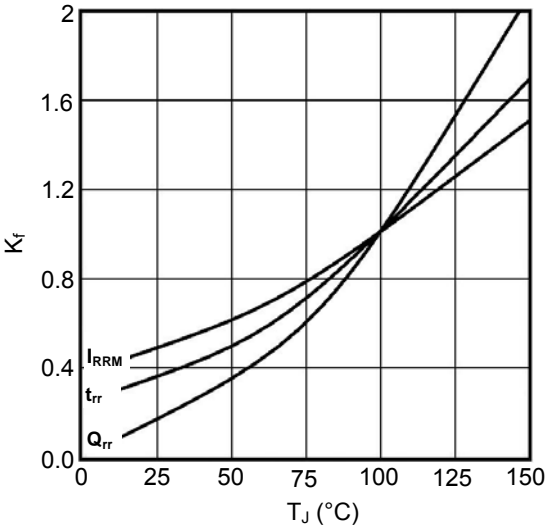


Figure5. Dynamic Parameters vs Junction Temperature

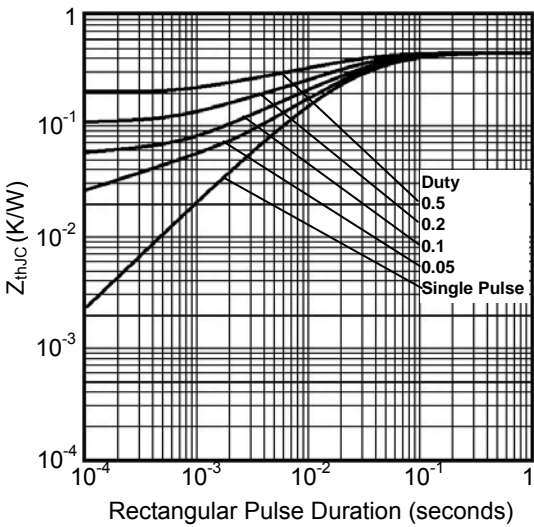
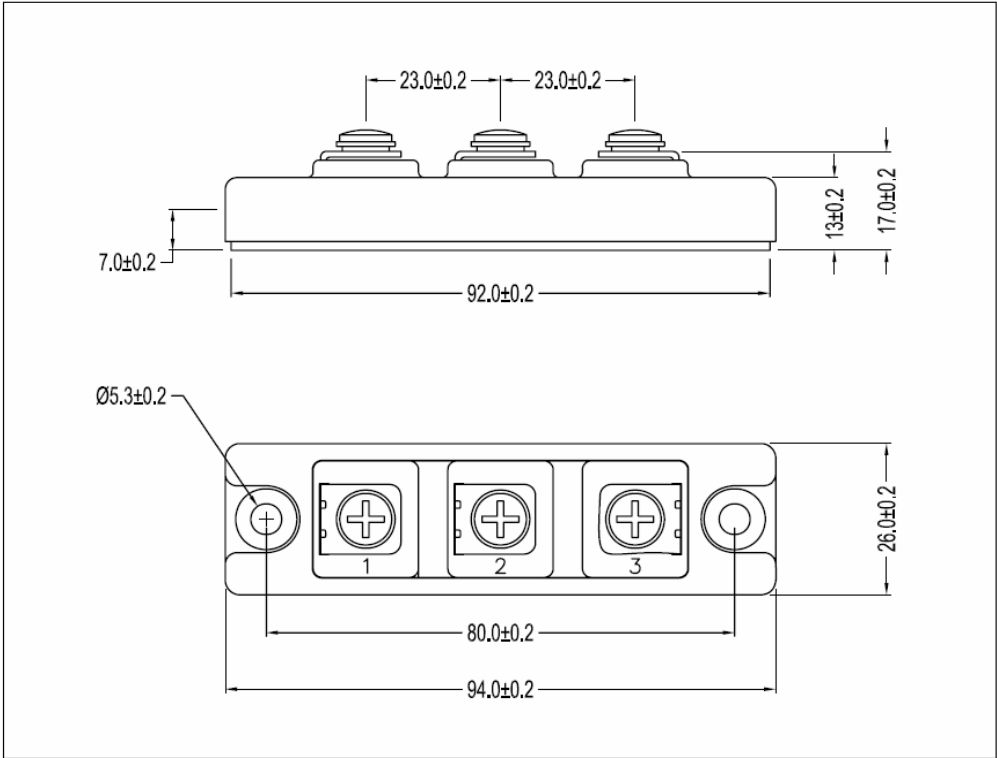


Figure6. Transient Thermal Impedance



Dimensions (mm)
Figure7. Package Outline