MMF100S170B

1700V 100A FRED Module

December 2011 **PRELIMINARY** **RoHS Compliant**

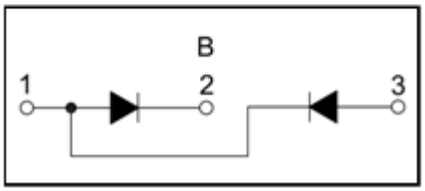
PRODUCT FEATURES

- 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°C unless otherwise specified

Symbol	Parameter	Test Conditions	Values	Unit
V_R	Maximum D.C. Reverse Voltage		1700	V
V_{RRM}	Maximum Repetitive Reverse Voltage		1700	V
$I_{F(AV)}$	Average Forward Current	T_C=80°C, Per Diode	100	A
		T_C=80°C, 20KHz, Per Diode	75	A
$I_{F(RMS)}$	RMS Forward Current	T_C=80°C, Per Diode	140	A
I_{FSM}	Non-Repetitive Surge Forward Current	t=10ms, 50Hz, Sine	1000	A
		t=8.3ms, 60Hz, Sine	1100	A
I^2t	I^2t (For Fusing)	t=10ms, 50Hz, Sine	5000	A^2s
		t=8.3ms, 60Hz, Sine	6050	A^2s
P_D	Power Dissipation		568	W
T_J	Junction Temperature		-40 to +150	°C
T_{STG}	Storage Temperature Range		-40 to +125	°C
V_{isol}	Insulation Test Voltage	AC, t=1min	3000	V
Torque	Module-to-Sink	Recommended（M6）	3～5	N·m
Torque	Module Electrodes	Recommended（M6）	3～5	N·m
$R_{\theta JC}$	Thermal Resistance	Junction-to-Case	0.22	°C /W
Weight			160	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=1700V	--	--	5	mA
		V_R=1700V, T_J=125°C	--	--	20	mA
V_F	Forward Voltage	I_F=100A	--	1.8	2.25	V
		I_F=100A, T_J=125°C	--	1.95	--	V
t_{rr}	Reverse Recovery Time	I_F=1A, V_R=30V, di_F/dt=-200A/μs	--	105	--	ns
t_{rr}	Reverse Recovery Time	V_R=850V, I_F=100A	--	500	--	ns
I_{RRM}	Max. Reverse Recovery Current	di_F/dt=-200A/μs, T_J=25°C	--	36	--	A
t_{rr}	Reverse Recovery Time	V_R=850V, I_F=100A	--	1.25	--	μs
I_{RRM}	Max. Reverse Recovery Current	di_F/dt=-200A/μs, T_J=125°C		42	--	A
t_{rr}	Reverse Recovery Time	V_R=850V, I_F=100A		450	--	ns
I_{RRM}	Max. Reverse Recovery Current	di_F/dt=-200A/μs, T_J=125°C	--	120	--	A

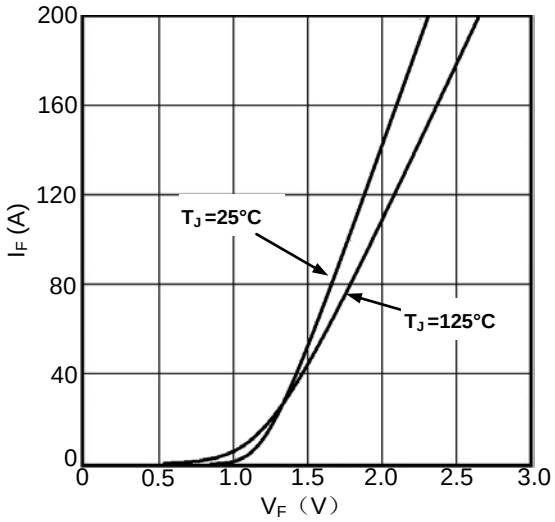

Figure1. Forward Voltage Drop vs Forward Current

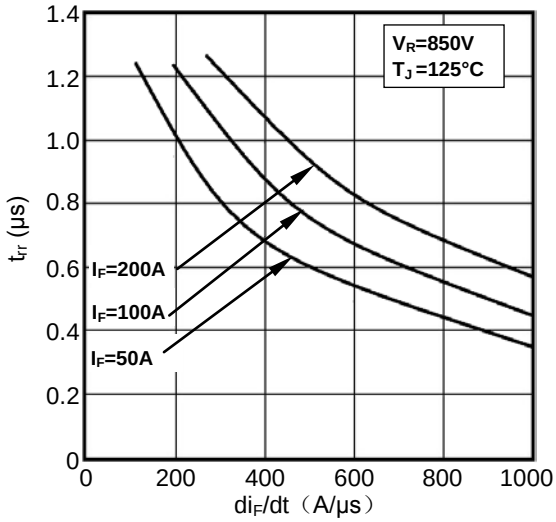

Figure2. Reverse Recovery Time vs di_F/dt

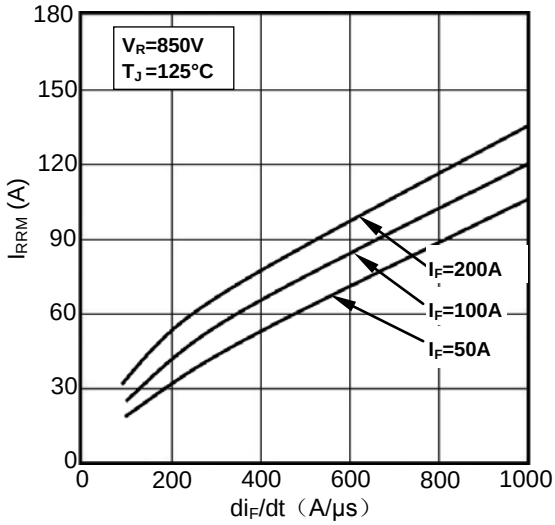

Figure3. Reverse Recovery Current vs di_F/dt

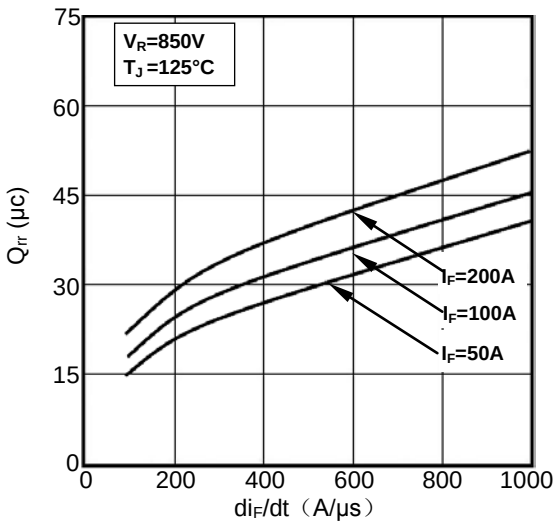

Figure4. Reverse Recovery Charge vs di_F/dt

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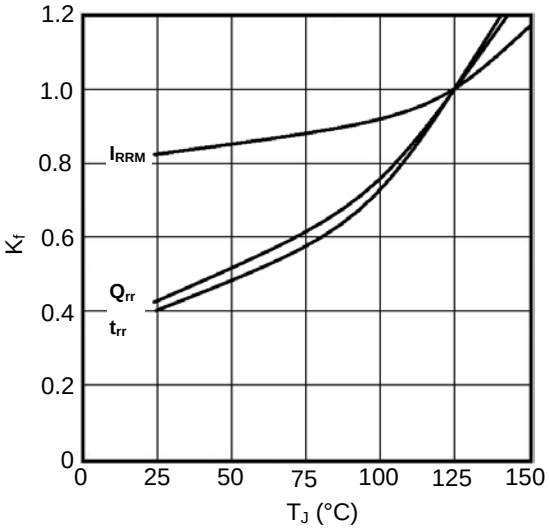


Figure5. Dynamic Parameters vs Junction Temperature

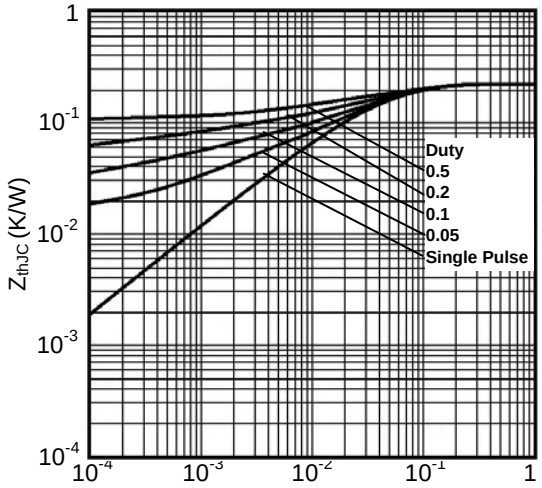
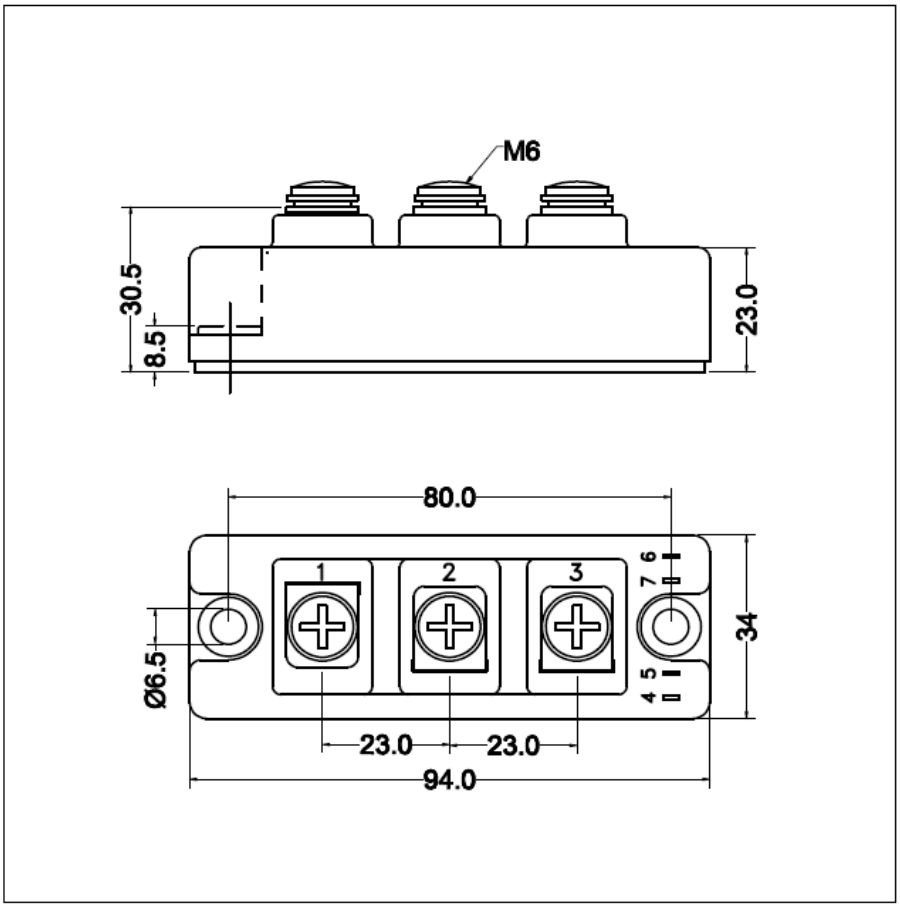


Figure6. Transient Thermal Impedance



Dimensions (mm)

Figure7. Package Outline

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