

**MACMIC**

July 2011

PRELIMINARY

MM60F120B

1200V 60A FRED

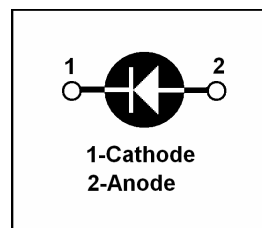
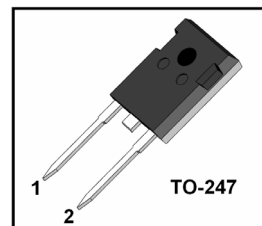
RoHS Compliant

PRODUCT FEATURES

- Ultrafast Recovery Time
- Soft Recovery Characteristics
- Low Recovery Loss
- Low Forward Voltage
- High Surge Current Capability
- Low Leakage Current

APPLICATIONS

- Freewheeling, Snubber, Clamp
- Inversion Welder
- PFC
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Converter & Chopper
- UPS



DESCRIPTION

FRED from MacMic utilizes advanced processing techniques to achieve ultrafast recovery times and higher forward current. Its soft recovery characteristics and high reliability suit for wide industrial applications.

ABSOLUTE MAXIMUM RATINGS

T_C=25°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 =110°C	60	A
I _{F(RMS)}	RMS Forward Current	T _C =110°C	84	A
I _{FSM}	Non-Repetitive Surge Forward Current	T _J =45°C, t=10ms, 50Hz, Sine	500	A
P _D	Power Dissipation		312	W
T _J	Junction Temperature		-40 to +150	°C
T _{STG}	Storage Temperature Range		-40 to +150	°C
Torque	Module-to-Sink	Recommended (M3)	1.1	N·m
R _{θJC}	Thermal Resistance	Junction-to-Case	0.4	°C /W
Weight			6.0	g

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	--	--	500	μA
		V _R =1200V, T _J =125°C	--	--	5	mA
V _F	Forward Voltage	I _F =60A	--	2.10	--	V
		I _F =60A, T _J =125°C	--	1.75	--	V
t _{rr}	Reverse Recovery Time	I _F =1A, V _R =30V, di _F /dt=-200A/μs	--	40	--	ns
t _{rr}	Reverse Recovery Time	V _R =600V, I _F =60A	--	90	--	ns
I _{RRM}	Max. Reverse Recovery Current	di _F /dt=-200A/μs, T _J =25°C	--	7.5	--	A
t _{rr}	Reverse Recovery Time	V _R =600V, I _F =60A	--	320	--	ns
I _{RRM}	Max. Reverse Recovery Current	di _F /dt=-200A/μs, T _J =125°C	--	14	--	A

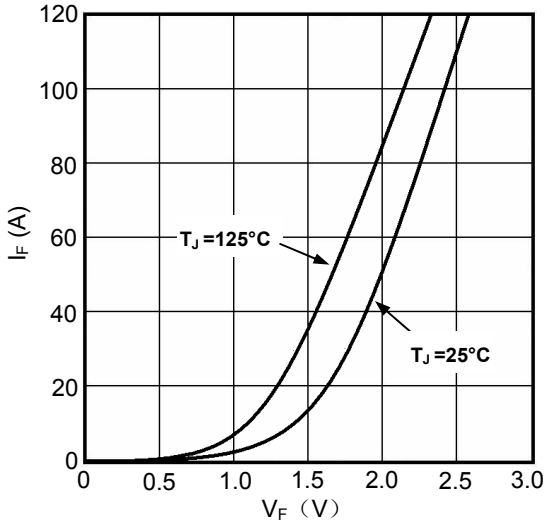


Figure 1. Forward Voltage Drop vs Forward Current

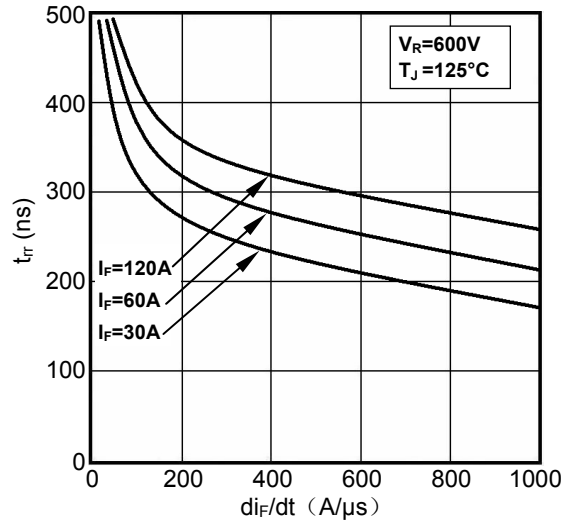


Figure 2. Reverse Recovery Time vs di_F/dt

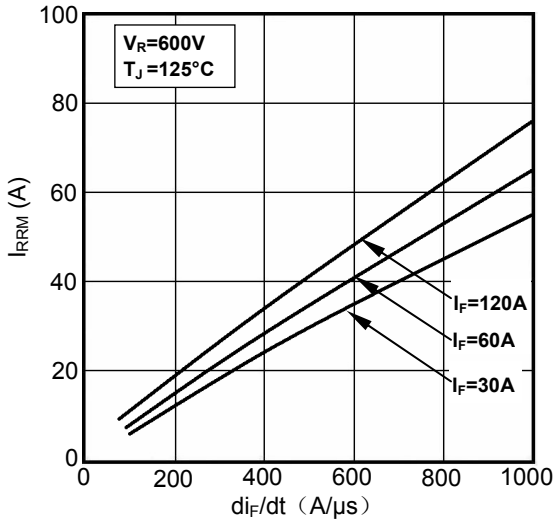


Figure 3. Reverse Recovery Current vs di_F/dt

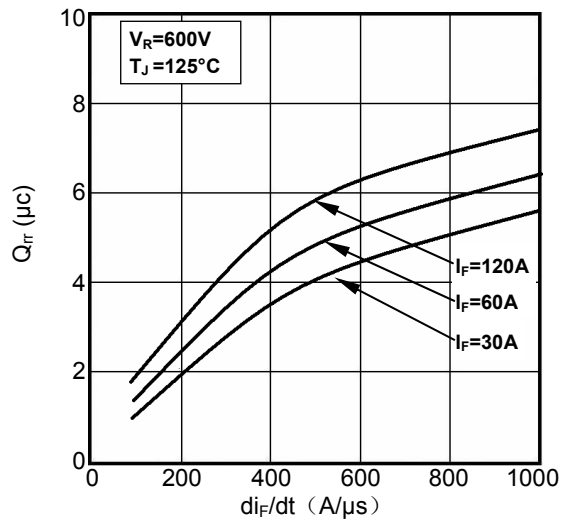


Figure 4. Reverse Recovery Charge vs di_F/dt

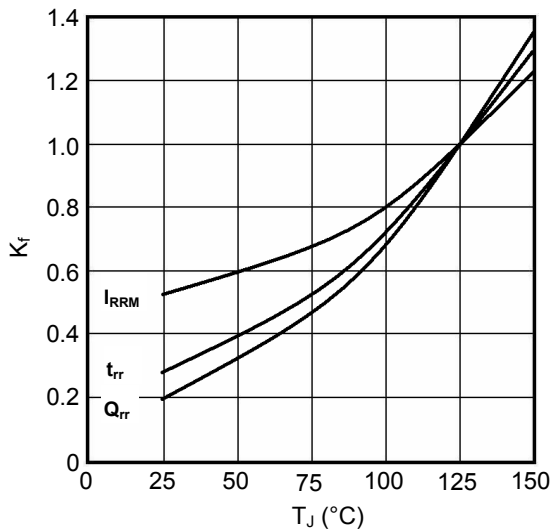


Figure 5. Dynamic Parameters vs Junction Temperature

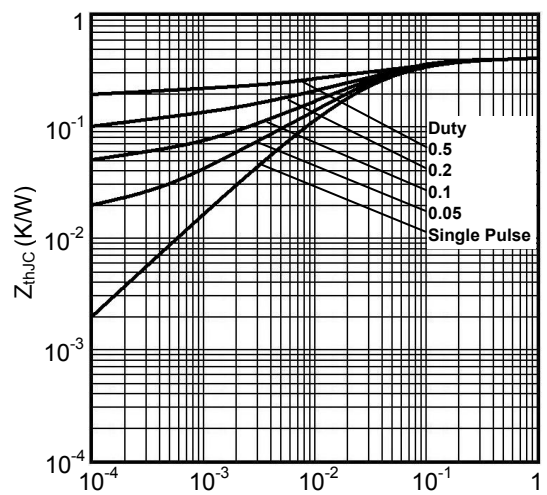


Figure 6. Transient Thermal Impedance

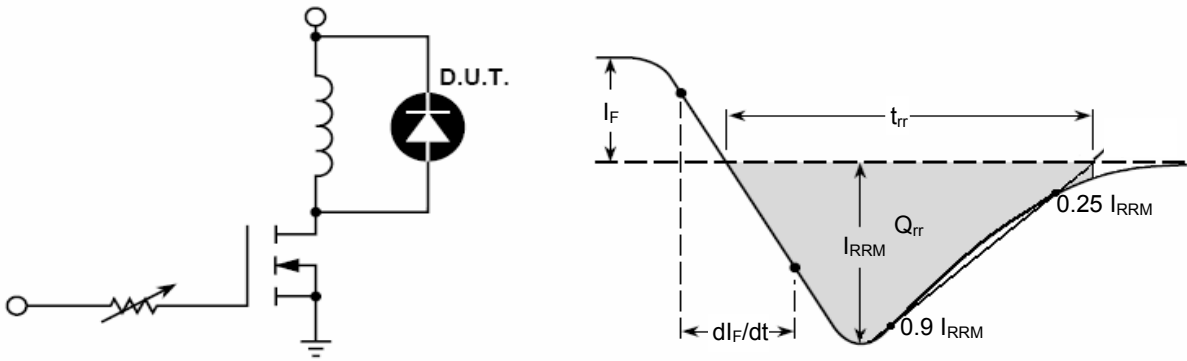
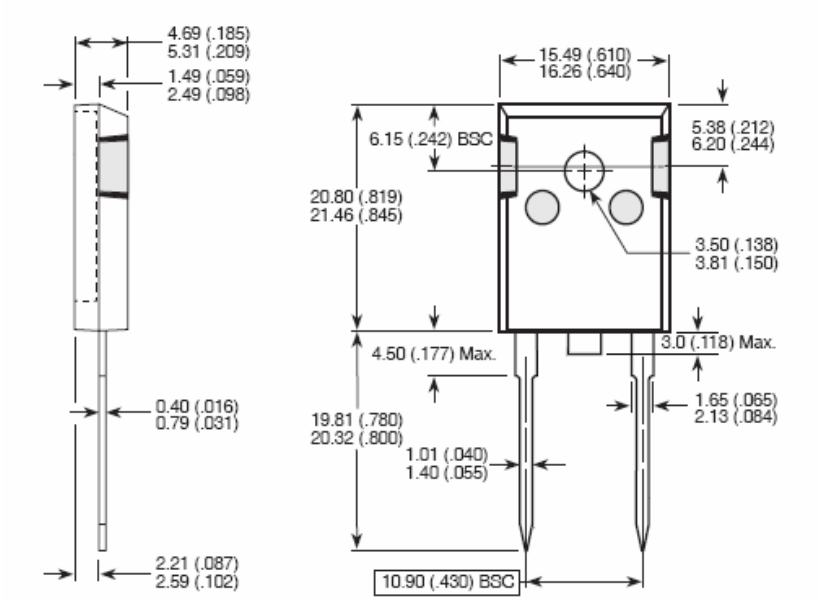


Fig7. Diode Reverse Recovery Test Circuit and Waveform



Dimensions in Millimeters and (Inchs)
Fig8. Package Outline