MM30FC120B

1200V 30A FRED

November 2017

RoHS Compliant

PRODUCT FEATURES

☐Ultrafast Recovery Time

☐Low Recovery Loss

☐Soft Reverse Recovery Characteristics

☐Low Leakage Current

☐Low Forward Voltage

☐High Surge Current Capability

APPLICATIONS

☐Freewheeling, Snubber, Clamp

☐Inversion Welder

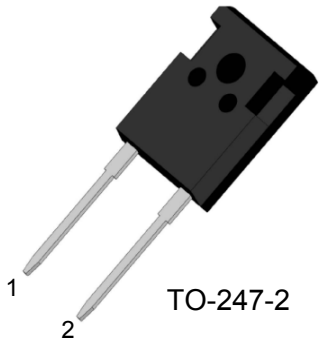
☐PFC

☐Plating Power Supply

☐Ultrasonic Cleaner and Welder

☐Converter & Chopper

☐UPS



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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.

1-Cathode
2-Anode

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			
$I_{F(AV)}$	Average Forward Current	T_C=105℃	30	A
$I_{F(RMS)}$	RMS Forward Current	T_C=105℃	42	
I_{FSM}	Non Repetitive Surge Forward Current	T_J=25℃,t=10ms, 50Hz, Sine	220	
P_D	Power Dissipation		188	W
T_J	Junction Temperature		-55 to +175	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃
Torque	To Heat Sink	Recommended（M3）	1.1	Nm
R_{thJC}	Junction to Case Thermal Resistance		0.8	℃ /W
Weight			6	g

ELECTRICAL CHARACTERISTICS (T_C=25°C unless otherwise specified)

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
I_{RM}	Maximum Reverse Leakage Current	V_R =1200V			10	μA
		V_R =1200V, T_J = 150℃			500	
V_F	Forward Voltage	I_F=30A		2.8	3.5	V
		I_F=30A,T_J=150℃		2.2		
trr	Reverse Recovery Time (I_F = 1A, dI_F/dt = -200A/μs, V_R = 30V)			26	35	ns
trr	Reverse Recovery Time (I_F = 0.5A, I_R=1A, I_{RR} = 0.25A)			40	60	ns

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ELECTRICAL CHARACTERISTICS *(T_C =25°C unless otherwise specified)*

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
trr	Reverse Recovery Time	I_F =30A,V_R =600V, dI_F/dt = -200A/μs		250		ns
I_{RRM}	Maximum Reverse Recovery Current			5.5		A
Q_{RR}	Reverse Recovery Charge			600		nC
trr	Reverse Recovery Time	I_F =30A,V_R =600V, dI_F/dt = -200A/μs ,T_J=150℃		430		ns
I_{RRM}	Maximum Reverse Recovery Current			9.1		A
Q_{RR}	Reverse Recovery Charge			1850		nC
trr	Reverse Recovery Time	I_F =30A,V_R =600V, dI_F/dt = -1000A/μs , T_J=150℃		210		ns
I_{RRM}	Maximum Reverse Recovery Current			26		A
Q_{RR}	Reverse Recovery Charge			2760		nC

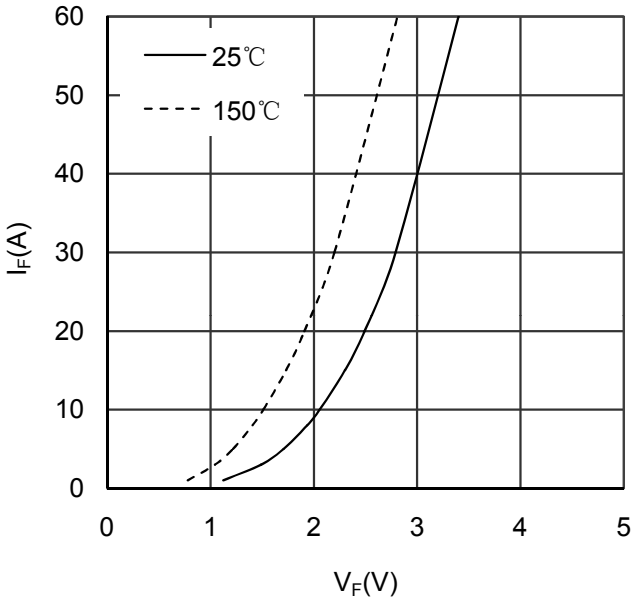


Figure 1. Forward Voltage Drop vs Forward Current

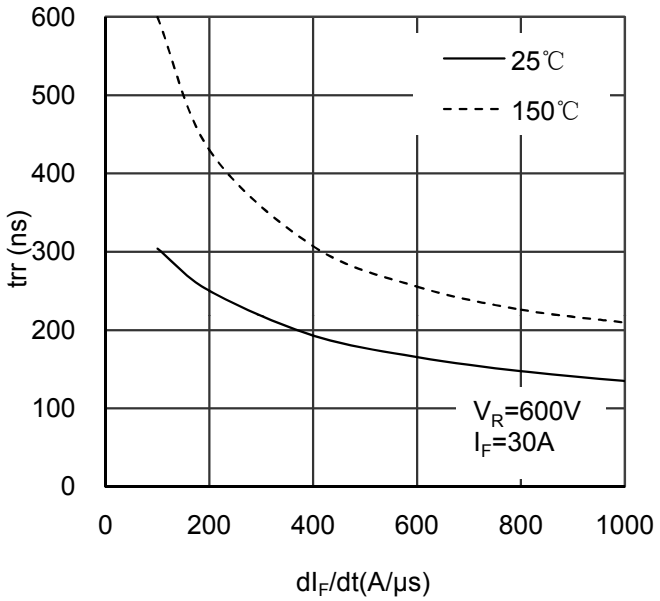


Figure 2. Reverse Recovery Time vs dI_F/dt

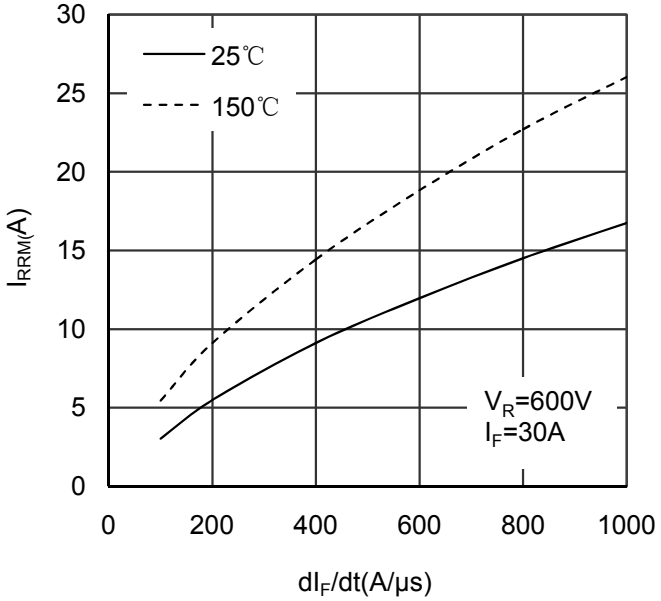


Figure 3. Reverse Recovery Current vs dI_F/dt

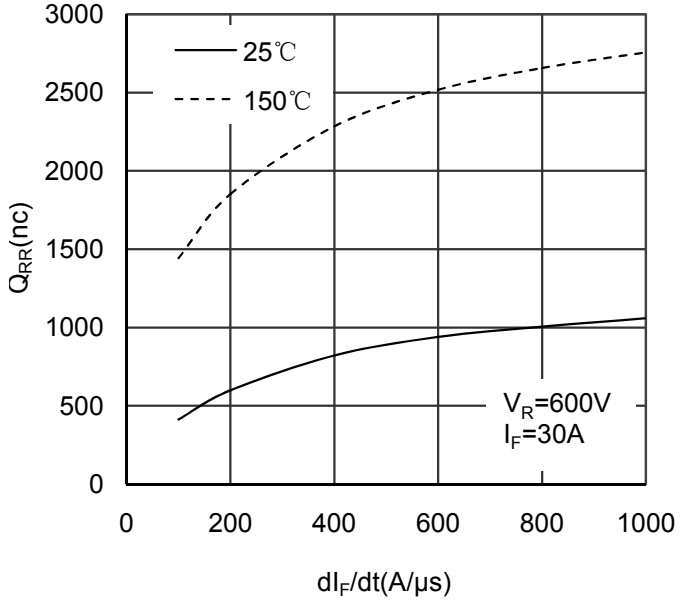


Figure 4. Reverse Recovery Charge vs dI_F/dt

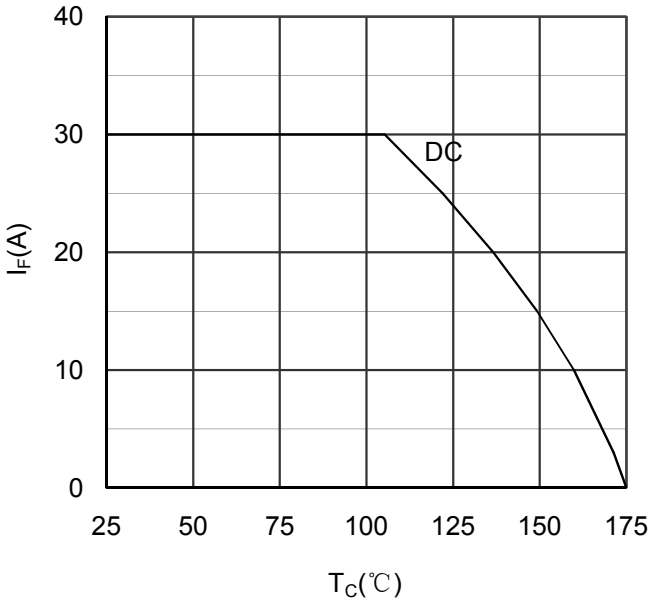


Figure 5.Forward current vs Case temperature

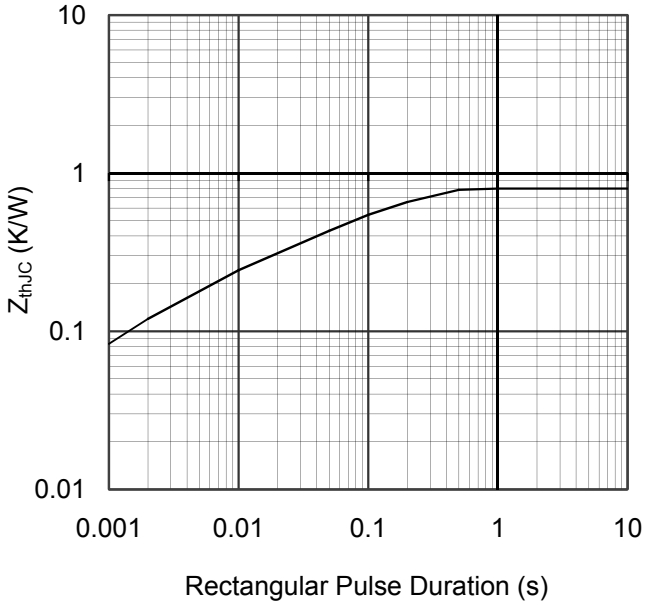


Figure 6.Transient Thermal Impedance

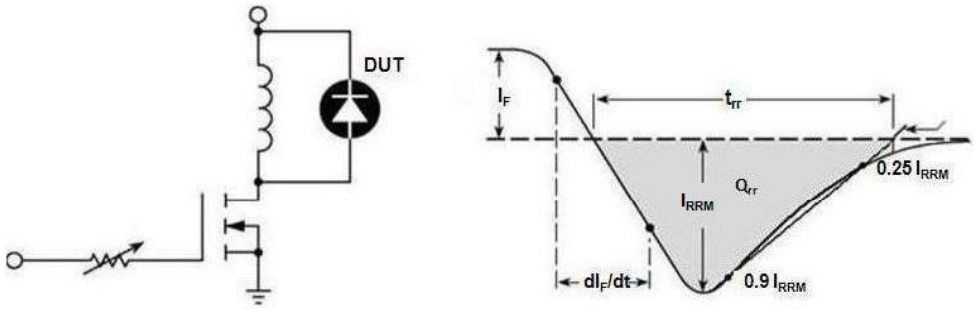
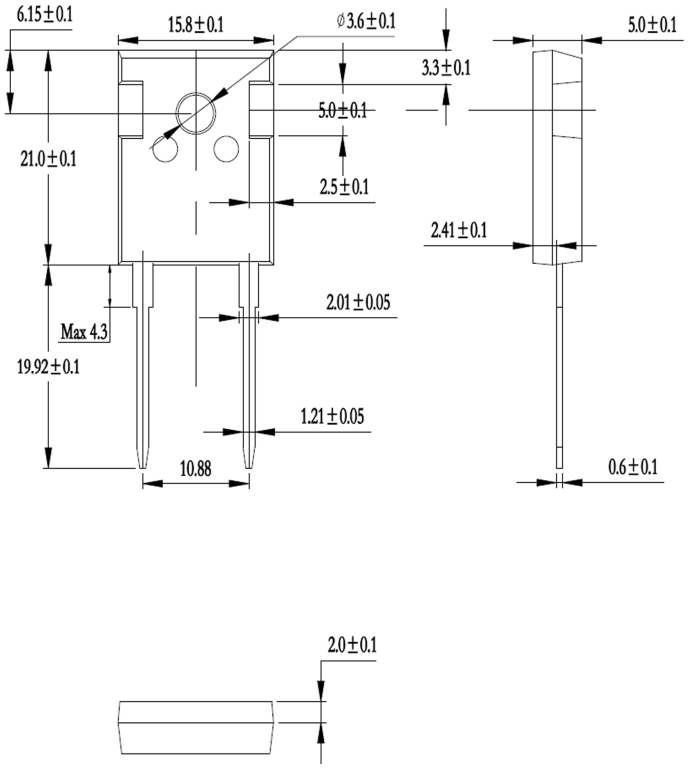


Figure 7. Diode Reverse Recovery Test Circuit and Waveform



Dimensions in (mm)

Figure 8. Package Outline