MM30F060B

600V 30A FRED

August 2019

RoHS Compliant
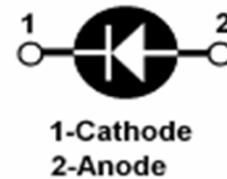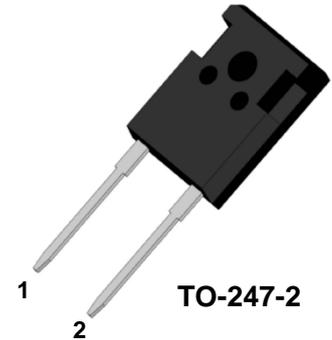
PRODUCT FEATURES

☐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

TO-247-2

1-Cathode
2-Anode

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		600	V
V_{RRM}	Maximum Repetitive Reverse Voltage			
$I_{F(AV)}$	Average Forward Current	T_C=110℃	30	A
$I_{F(RMS)}$	RMS Forward Current	T_C=110℃	42	
I_{FSM}	Non Repetitive Surge Forward Current	T_J=25℃,t=10ms, 50Hz, Sine	300	
P_D	Power Dissipation		156	W
T_J	Junction Temperature		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +125	℃
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 =600V			15	µA
		V_R =600V, T_J = 125℃			250	µA
V_F	Forward Voltage	I_F=30A		1.5	1.8	V
		I_F=30A,T_J=125℃		1.3		
trr	Reverse Recovery Time (I_F = 1A, dI_F/dt = -200A/µs, V_R = 30V)			22	27	ns
trr	Reverse Recovery Time (I_F = 0.5A, I_R=1A, I_{RR} = 0.25A)			35	45	ns

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

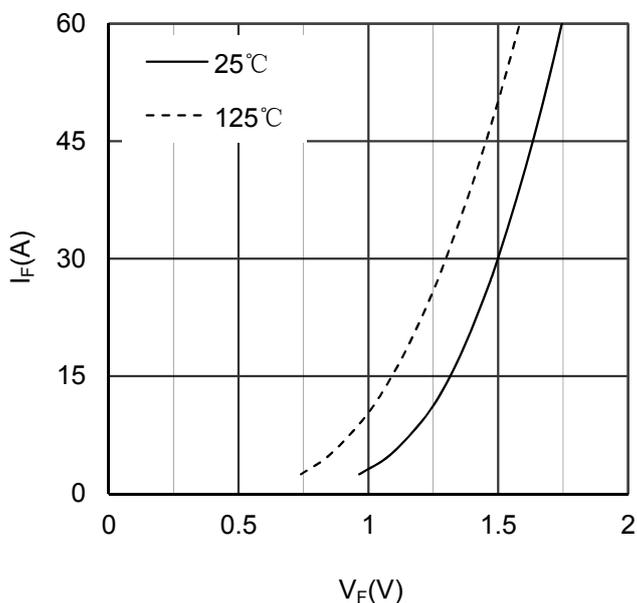| Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
trr	Reverse Recovery Time	I_F =30A,V_R =300V, dI$_F$/dt = -200A/μs		70		ns
I_{RRM}	Maximum Reverse Recovery Current			4		A
Q_{RR}	Reverse Recovery Charge			210		nC
trr	Reverse Recovery Time	I_F =30A,V_R =300V, dI$_F$/dt = -200A/μs ,T_J=125°C		156		ns
I_{RRM}	Maximum Reverse Recovery Current			8.5		A
Q_{RR}	Reverse Recovery Charge			720		nC

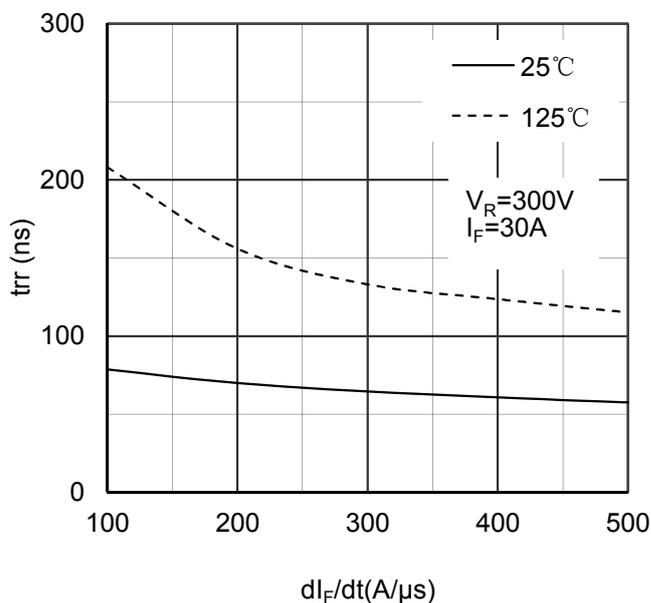Figure 1. Forward Voltage Drop vs Forward Current
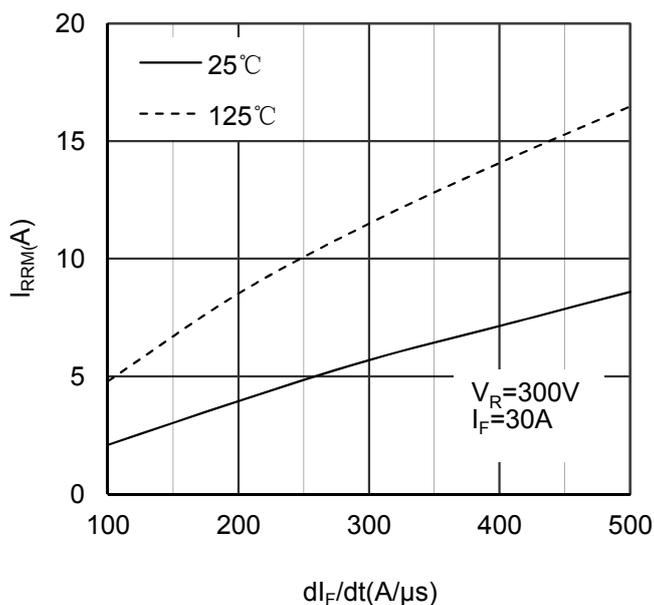
Figure 2. Reverse Recovery Time vs dI$_F$/dt
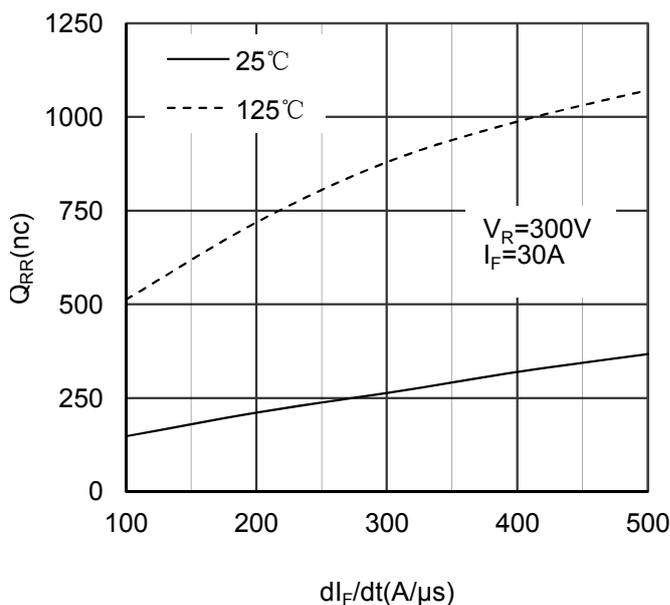
Figure 3. Reverse Recovery Current vs dI$_F$/dt
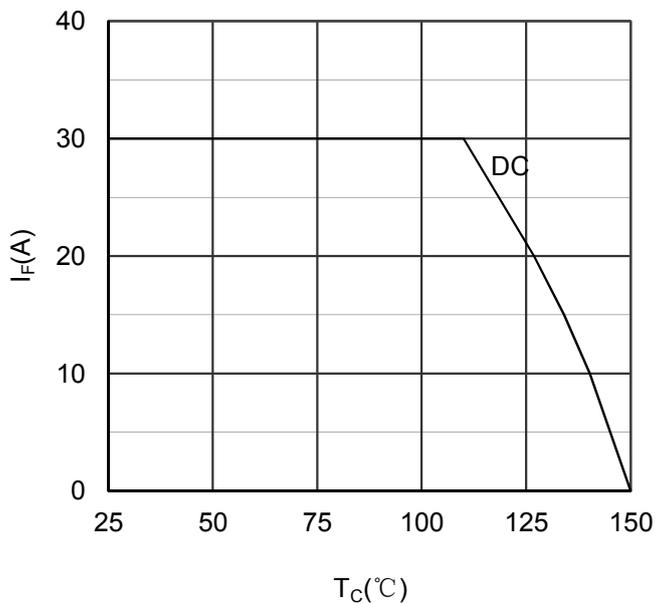
Figure 4. Reverse Recovery Charge vs dI$_F$/dt

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T$_C$(℃)

Figure 5.Forward current vs Case temperature
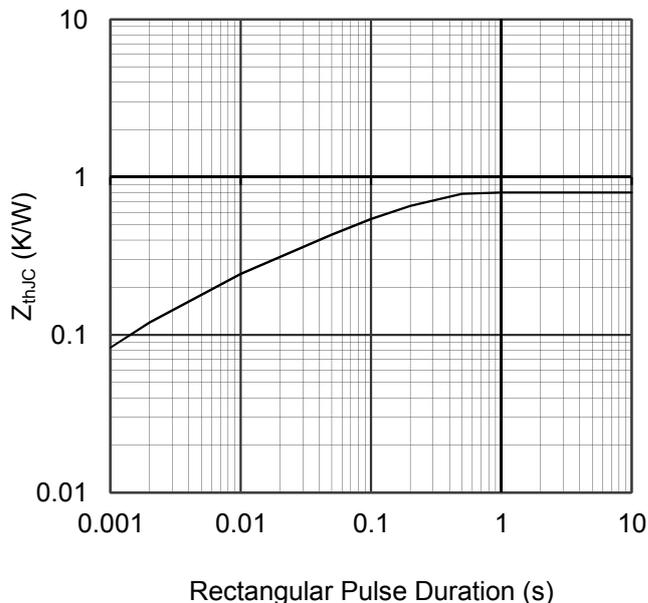

Rectangular Pulse Duration (s)
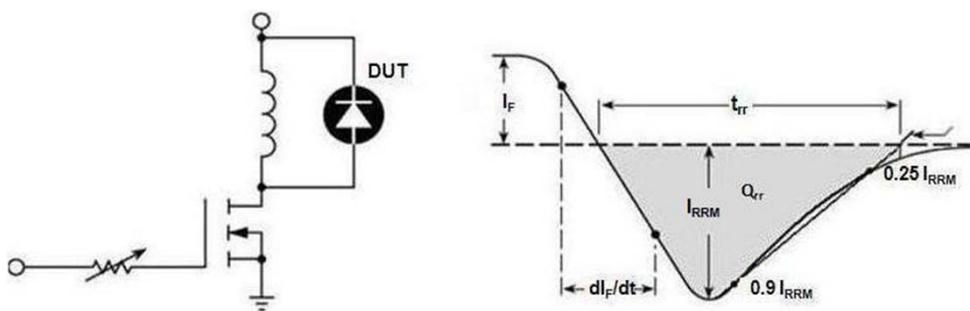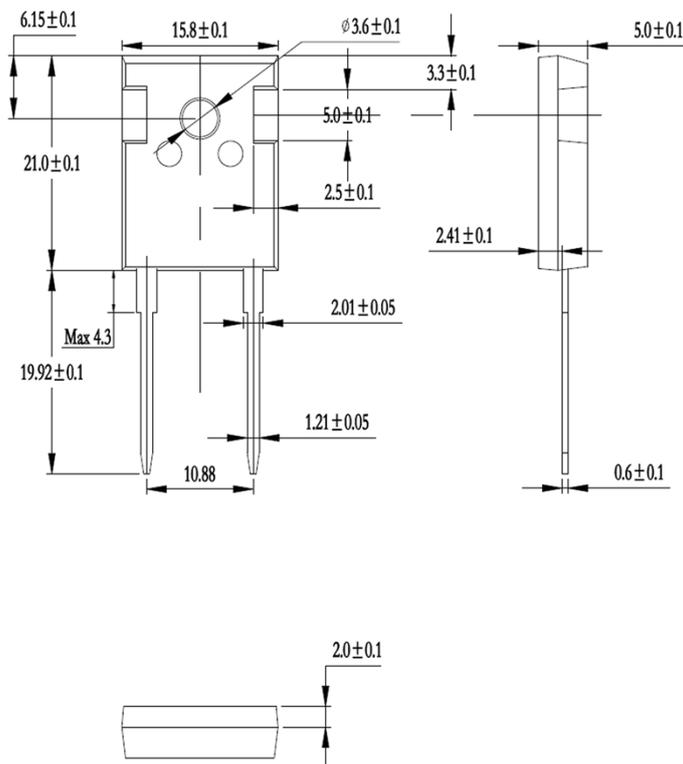
Figure 6.Transient Thermal Impedance

Figure 7. Diode Reverse Recovery Test Circuit and Waveform

Dimensions in (mm)

Figure 8. Package Outline

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