MM15F70K

700V 15A FRED

MACMIC

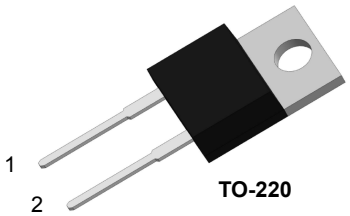
June 2015 Version 01 RoHS Compliant

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-220



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		700	V
V_{RRM}	Maximum Repetitive Reverse Voltage			
$I_{F(AV)}$	Average Forward Current	T_C=110℃	15	A
$I_{F(RMS)}$	RMS Forward Current	T_C=110℃	21	
I_{FSM}	Non Repetitive Surge Forward Current	T_J=25℃,t=10ms, 50Hz, Sine	120	
P_D	Power Dissipation		83	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		1.5	℃ /W
Weight			2.5	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 =700V			10	μA
		V_R =700V, T_J = 125℃			1	mA
V_F	Forward Voltage	I_F=15A		1.3	1.5	V
		I_F=15A,T_J=125℃		1.2		
trr	Reverse Recovery Time (I_F = 1A, dI_F/dt = -200A/μs, V_R = 30V)			23	27	ns
trr	Reverse Recovery Time (I_F = 0.5A, I_R=1A, I_{RR} = 0.25A)			33	45	ns
trr	Reverse Recovery Time	I_F =15A,V_R =350V,		140		ns
I_{RRM}	Maximum Reverse Recovery Current	dI_F/dt = -200A/μs		5		A
trr	Reverse Recovery Time	I_F = 15A,V_R =350V,		205		ns
I_{RRM}	Maximum Reverse Recovery Current	dI_F/dt = -200A/μs ,T_J=125℃		9		A

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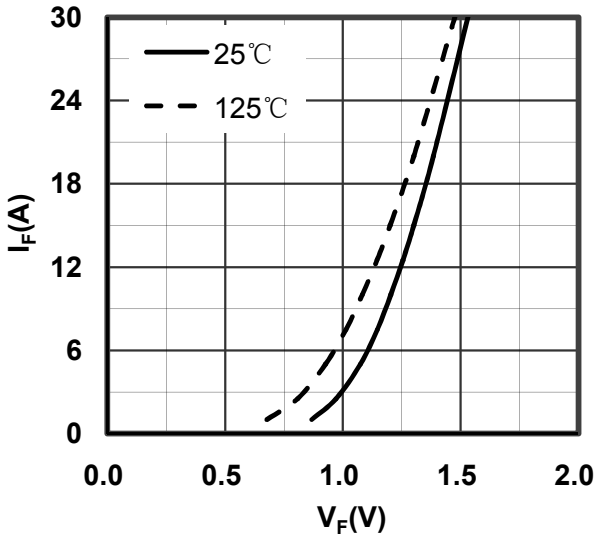


Figure 1. Forward Voltage Drop vs Forward Current

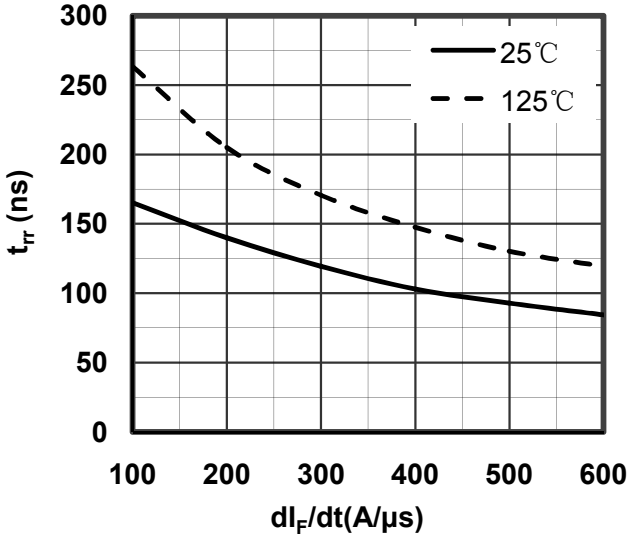


Figure 2. Reverse Recovery Time vs dI_F/dt

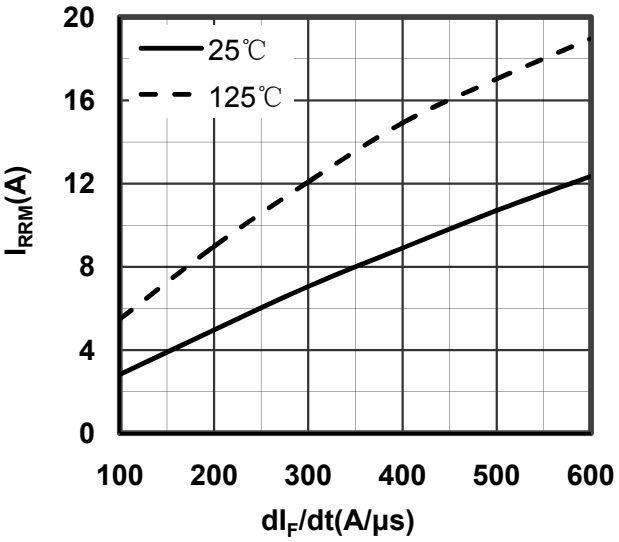


Figure 3. Reverse Recovery Current vs dI_F/dt

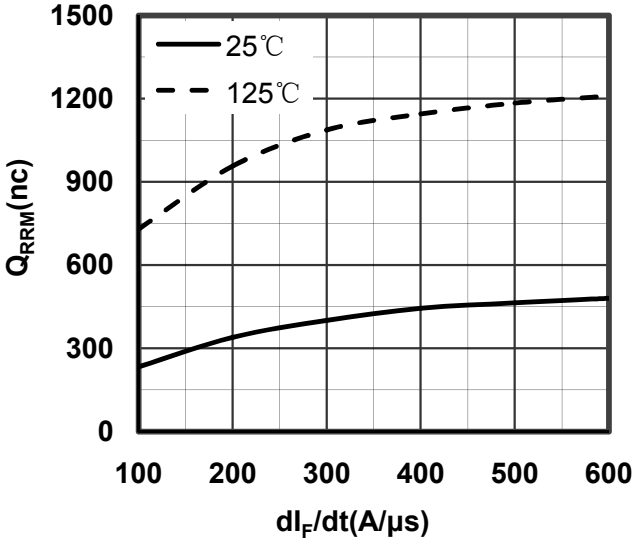


Figure 4. Reverse Recovery Charge vs dI_F/dt

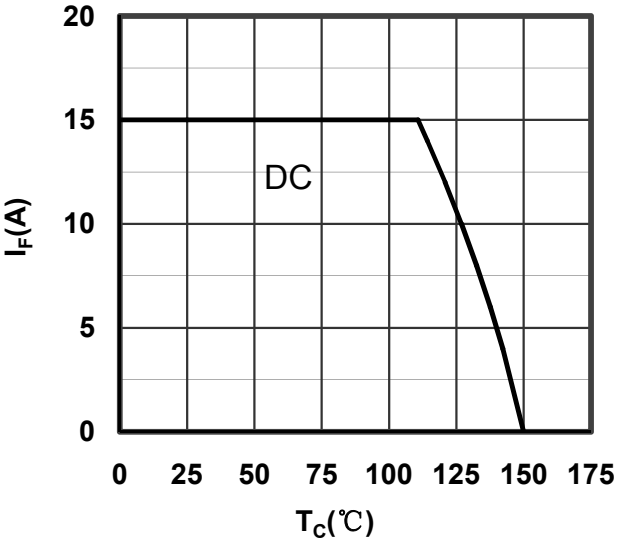


Figure 5.Forward current vs Case temperature

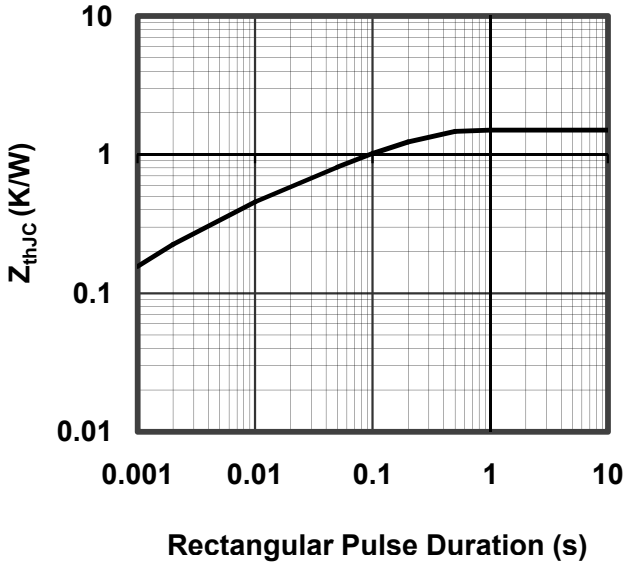


Figure 6.Transient Thermal Impedance

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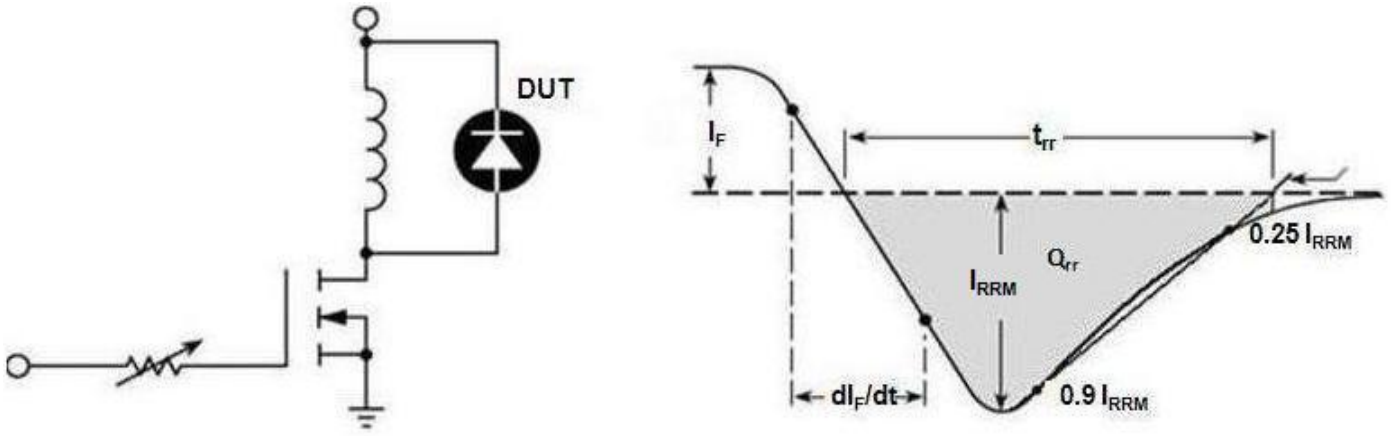
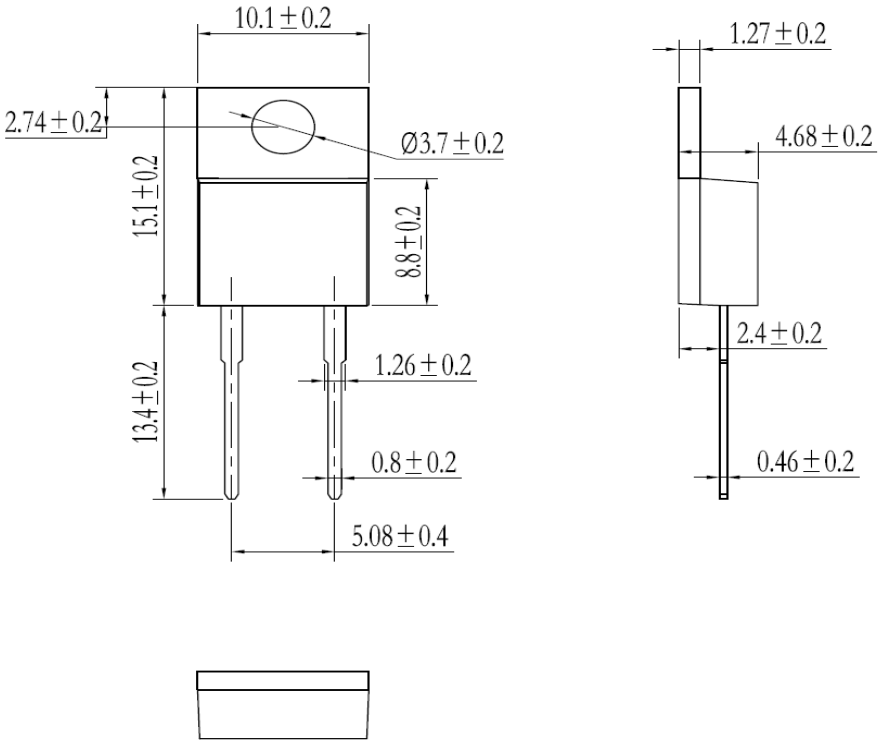


Figure 7. Diode Reverse Recovery Test Circuit and Waveform



Dimensions in (mm)
Figure 8. Package Outline

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