MM30F120K

1200V 30A FRED

RoHS Compliant

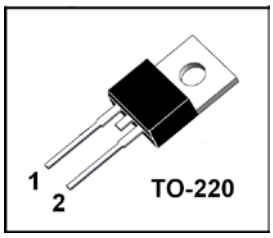
January 2011 **PRELIMINARY**

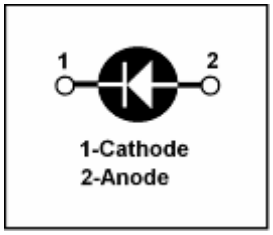
PRODUCT FEATURES

- 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	30	A
$I_{F(RMS)}$	RMS Forward Current	T_C=110°C	42	A
I_{FSM}	Non-Repetitive Surge Forward Current	T_J=45°C, t=10ms, 50Hz, Sine	300	A
P_D	Power Dissipation		115	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
$R_{\theta JC}$	Thermal Resistance	Junction-to-Case	1.1	°C /W
Weight			7.0	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	--	--	100	μA
		V_R=1200V, T_J=125°C	--	--	1	mA
V_F	Forward Voltage	I_F=30A	--	2.15	2.50	V
		I_F=30A, T_J=125°C	--	1.75	--	V
t_{rr}	Reverse Recovery Time	I_F=1A, V_R=30V, di_F/dt=-200A/μs	--	30	--	ns
t_{rr}	Reverse Recovery Time	V_R=600V, I_F=30A	--	160	--	ns
I_{RRM}	Max. Reverse Recovery Current	di_F/dt=-200A/μs, T_J=25°C	--	5	--	A
t_{rr}	Reverse Recovery Time	V_R=600V, I_F=30A	--	300	--	ns
I_{RRM}	Max. Reverse Recovery Current	di_F/dt=-200A/μs, T_J=125°C	--	11	--	A

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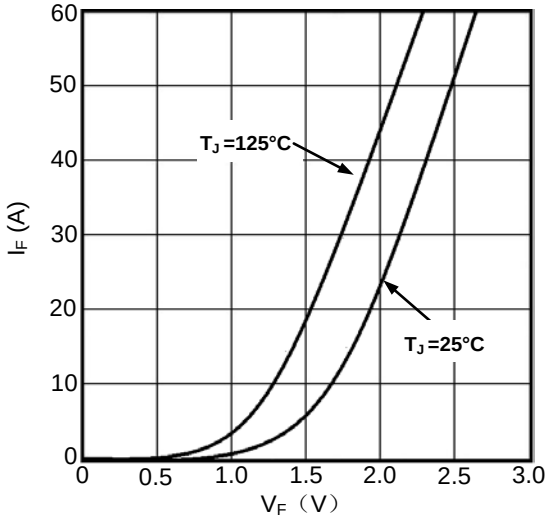


Fig1. Forward Voltage Drop vs Forward Current

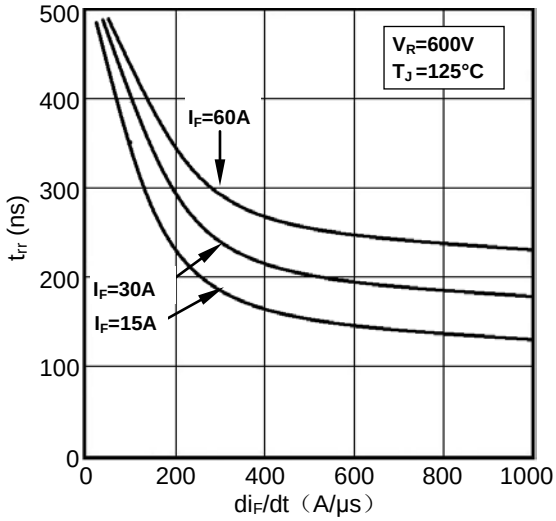


Fig2. Reverse Recovery Time vs di$_F$/dt

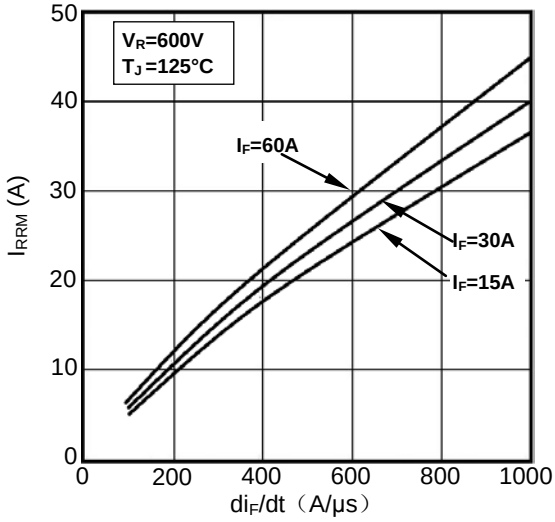


Fig3. Reverse Recovery Current vs di$_F$/dt

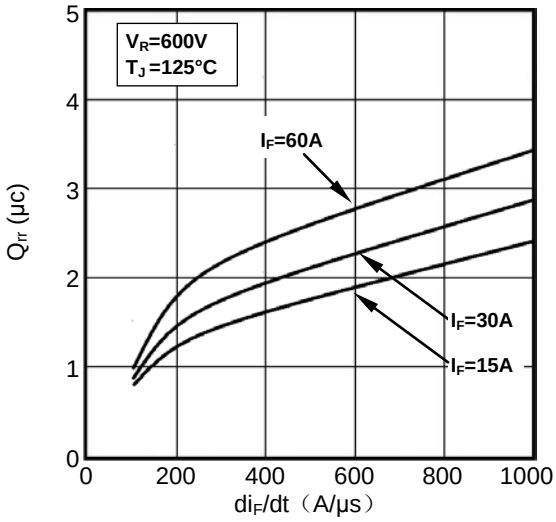


Fig4. Reverse Recovery Charge vs di$_F$/dt

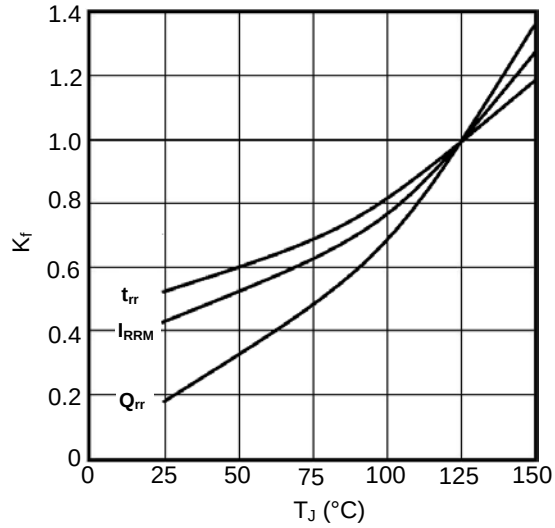


Fig5. Dynamic Parameters vs Junction Temperature

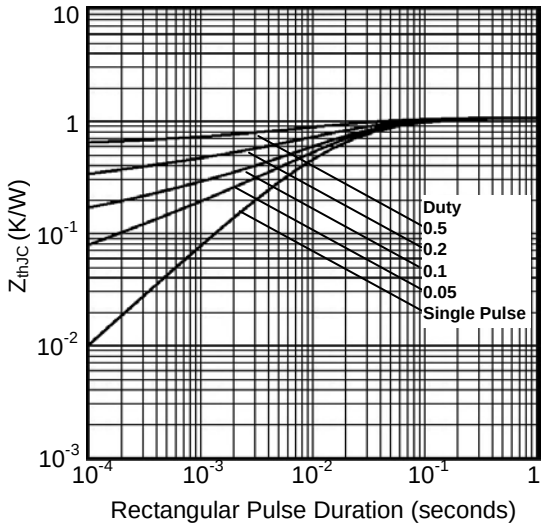


Fig6. Transient Thermal Impedance

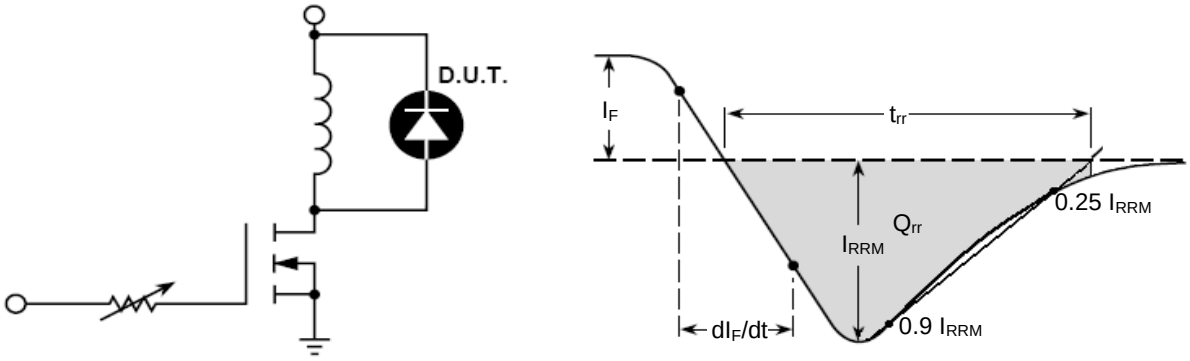
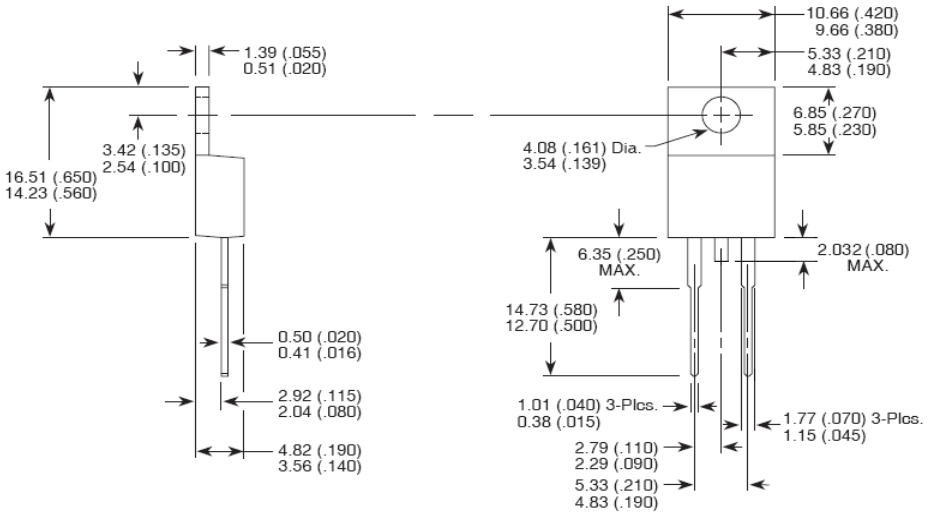


Fig7. Diode Reverse Recovery Test Circuit and Waveform



Dimensions in Millimeters and (Inchs)
Fig8. Package Outline