MMF300Y060DK1

600V 300A FRED Module

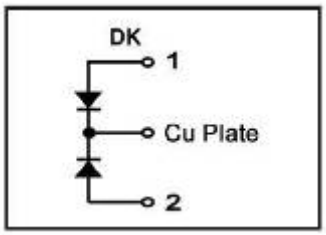
March 2009 **PRELIMINARY** **RoHS Compliant**

PRODUCT FEATURES

- Ultrafast Reverse Recovery Time
- Soft Reverse Recovery Characteristics
- Low Reverse Recovery Loss
- Low Forward Voltage
- High Surge Current Capability
- Low Inductance Package

APPLICATIONS

- Inversion Welder
- Uninterruptible Power Supply (UPS)
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Converter & Chopper
- Power Factor Correction (PFC) Circuit



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		600	V
$I_{F(AV)}$	Average Forward Current	T_C=125°C, Per Diode	150	A
		T_C=125°C, Per Moudle	300	A
		T_C=125°C, 20KHz, Per Moudle	200	A
$I_{F(RMS)}$	RMS Forward Current	T_C=125°C, Per Diode	220	A
I_{FSM}	Non-Repetitive Surge Forward Current	1/2 Cycle , 50Hz, Sine	3500	A
		1/2 Cycle , 60Hz, Sine	4000	A
I^2t	I^2t (For Fusing)	T_J=45°C, t=10ms, 50Hz, Sine	61250	A^2s
		T_J=45°C, t=8.3ms, 60Hz, Sine	80000	A^2s
P_D	Power Dissipation		2080	W
T_J	Junction Temperature		-40 to +150	°C
T_{STG}	Storage Temperature Range		-40 to +125	°C
Torque	Module-to-Sink	Recommended（M6）	3～4.7	N·m
Torque	Module Electrodes	Recommended（M6）	3～4.7	N·m
$R_{\theta JC}$	Thermal Resistance	Junction-to-Case, Per Diode	0.06	°C /W
Weight			92	g

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ELECTRICAL CHARACTERISTICS

T_C=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{RM}	Reverse Leakage Current	V_R=600V	--	--	1	mA
		V_R=600V, T_J=125°C	--	--	20	mA
V_F	Forward Voltage	I_F=150A	--	1.1	1.40	V
		I_F=150A, T_J=125°C	--	--	1.25	V
t_{rr}	Reverse Recovery Time	I_F=1A, V_R=30V, di_F/dt=-200A/μs	--	50	--	ns
t_{rr}	Reverse Recovery Time	V_R=300V, I_F=150A	--	130	--	ns
I_{RRM}	Max. Reverse Recovery Current	di_F/dt=-200A/μs, T_J=25°C	--	14	--	A
t_{rr}	Reverse Recovery Time	V_R=300V, I_F=150A	--	220	--	ns
I_{RRM}	Max. Reverse Recovery Current	di_F/dt=-200A/μs, T_J=125°C	--	22	--	A

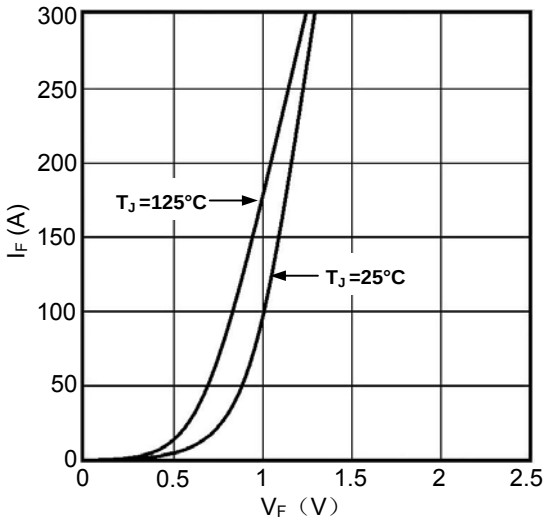


Figure1. Forward Voltage Drop vs Forward Current

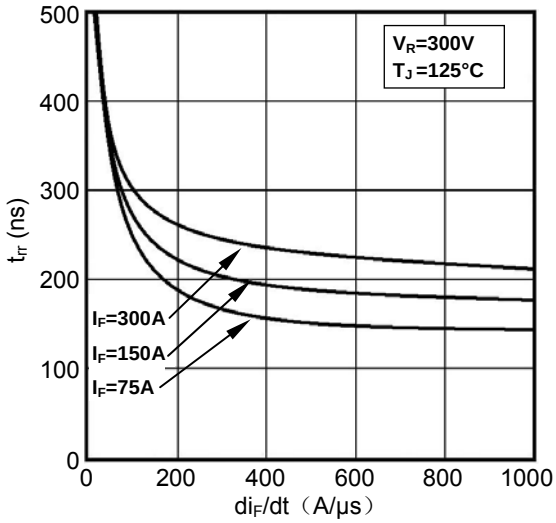


Figure2. Reverse Recovery Time vs di_F/dt

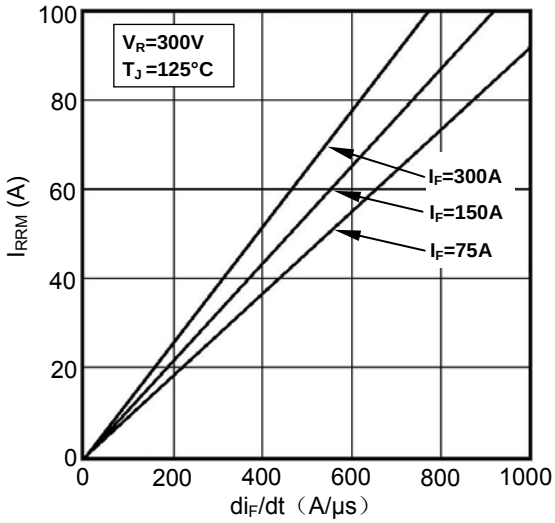


Figure3. Reverse Recovery Current vs di_F/dt

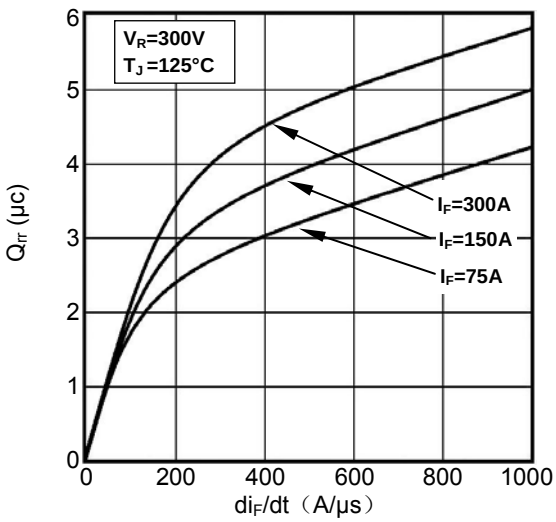


Figure4. Reverse Recovery Charge vs di_F/dt

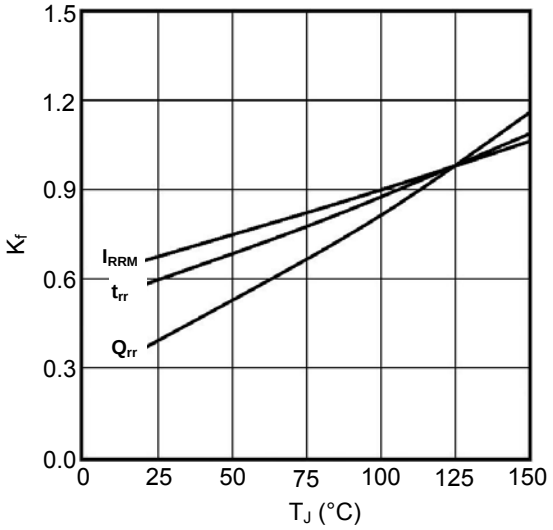


Figure5. Dynamic Parameters vs Junction Temperature

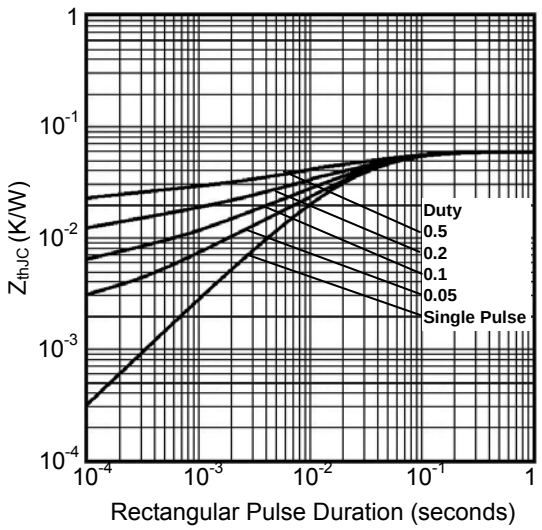
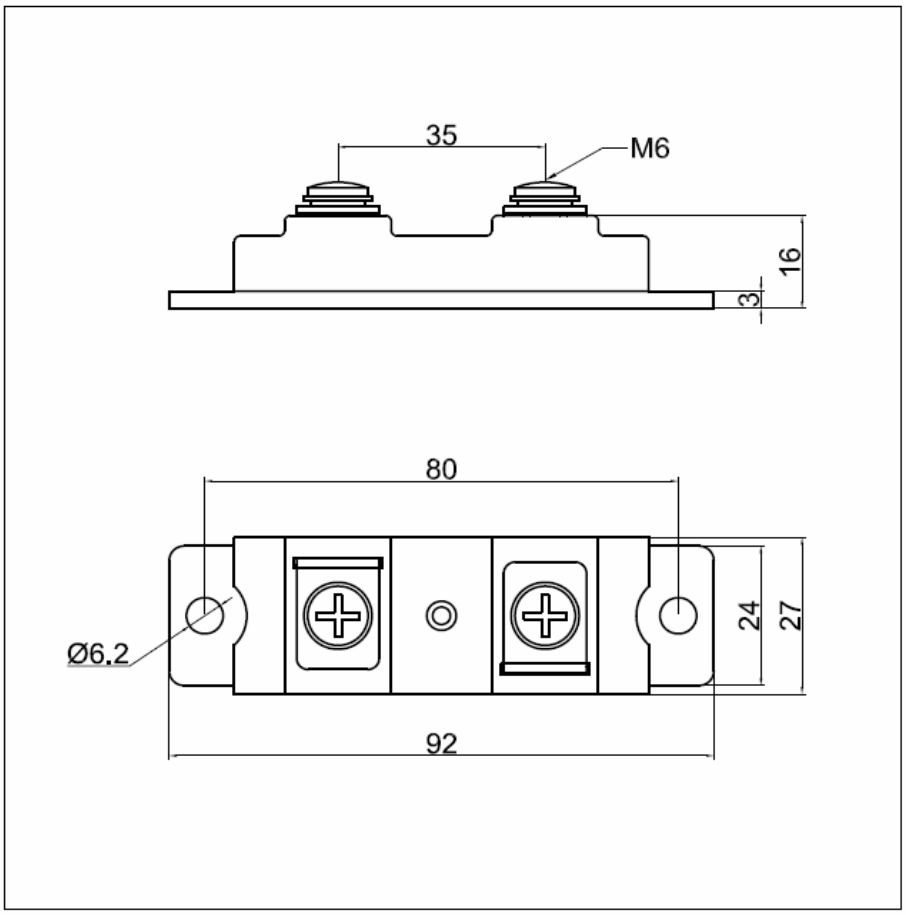


Figure6. Transient Thermal Impedance



Dimensions (mm)

Figure7. Package Outline