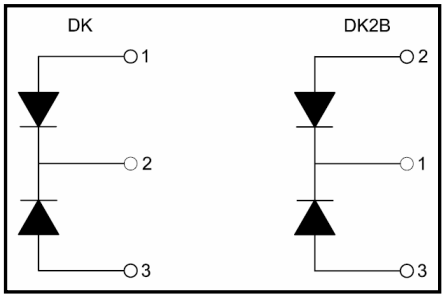
MMF300S120DK
MMF300S120DK2B

1200V 300A FRED Module

June 2011 **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		1200	V
V_{RRM}	Maximum Repetitive Reverse Voltage		1200	V
$I_{F(AV)}$	Average Forward Current	T_C=110°C, Per Diode	300	A
		T_C=120°C, 20KHz, Per Diode	200	A
$I_{F(RMS)}$	RMS Forward Current	T_C=110°C, Per Diode	420	A
I_{FSM}	Non-Repetitive Surge Forward Current	T_J=45°C, t=10ms, 50Hz, Sine	2700	A
		T_J=45°C, t=8.3ms, 60Hz, Sine	2850	A
I^2t	I^2t (For Fusing)	T_J=45°C, t=10ms, 50Hz, Sine	36450	A^2s
		T_J=45°C, t=8.3ms, 60Hz, Sine	40612	A^2s
P_D	Power Dissipation		893	W
T_J	Junction Temperature		-40 to +150	°C
T_{STG}	Storage Temperature Range		-40 to +125	°C
V_{isol}	Insulation Test Voltage	AC, t=1min	3000	V
Torque	Module-to-Sink	Recommended（M6）	3～5	N·m
Torque	Module Electrodes	Recommended（M6）	3～5	N·m
$R_{\theta JC}$	Thermal Resistance	Junction-to-Case	0.14	°C /W
Weight			160	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=1200V	--	--	2	mA
		V_R=1200V, T_J=125°C	--	--	10	mA
V_F	Forward Voltage	I_F=300A	--	2.8	3.1	V
		I_F=300A, T_J=125°C	--	2.1	2.4	V
t_{rr}	Reverse Recovery Time	I_F=1A, V_R=30V, di_F/dt=-200A/μs	--	65	--	ns
t_{rr}	Reverse Recovery Time	V_R=600V, I_F=300A	--	135	--	ns
I_{RRM}	Max. Reverse Recovery Current	di_F/dt=-200A/μs, T_J=25°C	--	10	--	A
t_{rr}	Reverse Recovery Time	V_R=600V, I_F=300A	--	385	--	ns
I_{RRM}	Max. Reverse Recovery Current	di_F/dt=-200A/μs, T_J=125°C	--	25	--	A

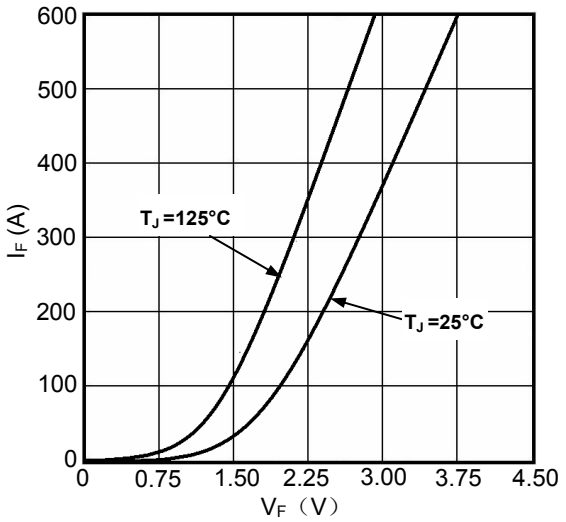


Figure1. Forward Voltage Drop vs Forward Current

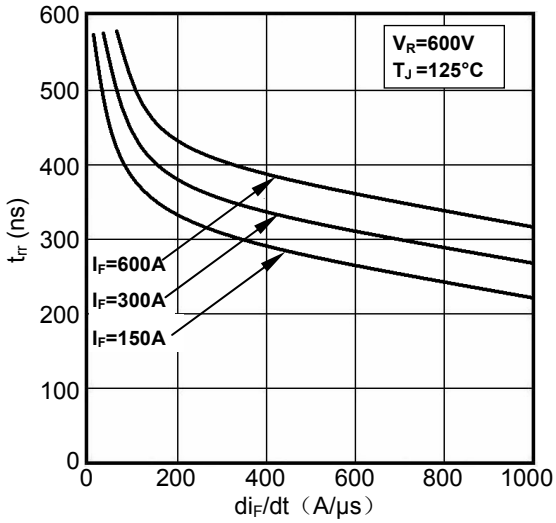


Figure2. Reverse Recovery Time vs di_F/dt

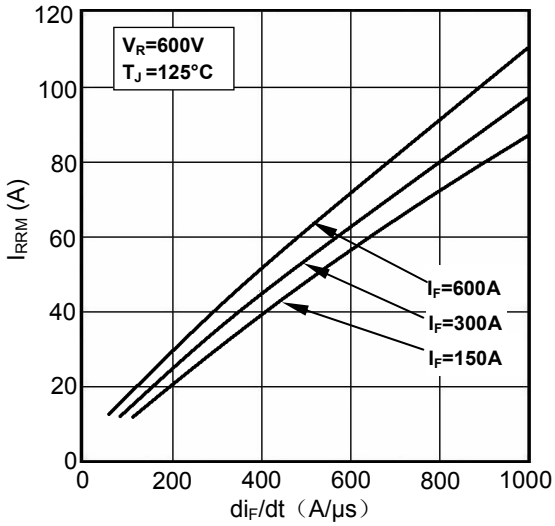


Figure3. Reverse Recovery Current vs di_F/dt

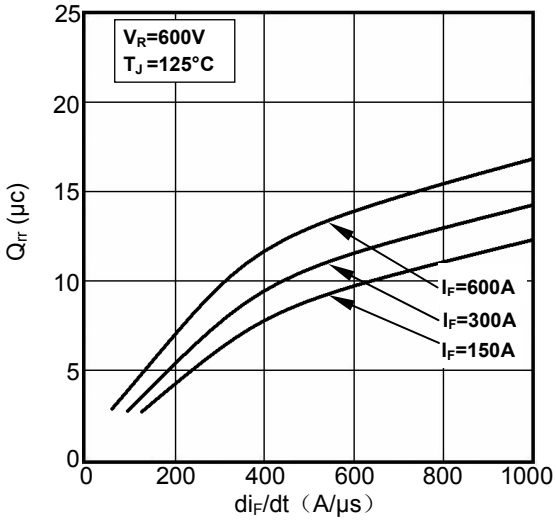


Figure4. Reverse Recovery Charge vs di_F/dt

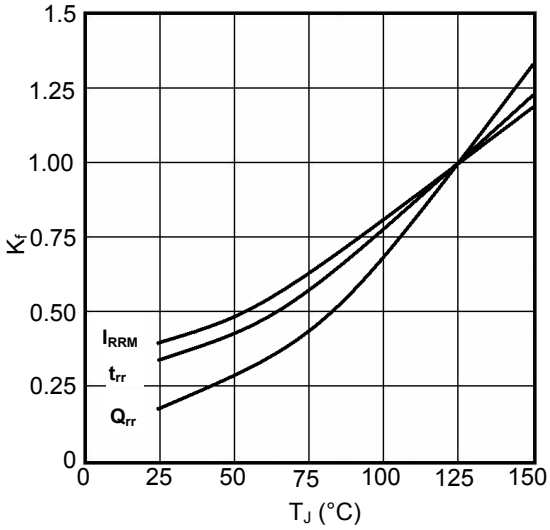


Figure5. Dynamic Parameters vs Junction Temperature

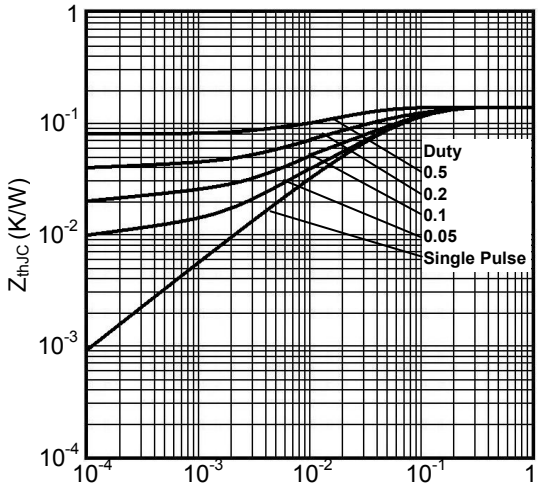
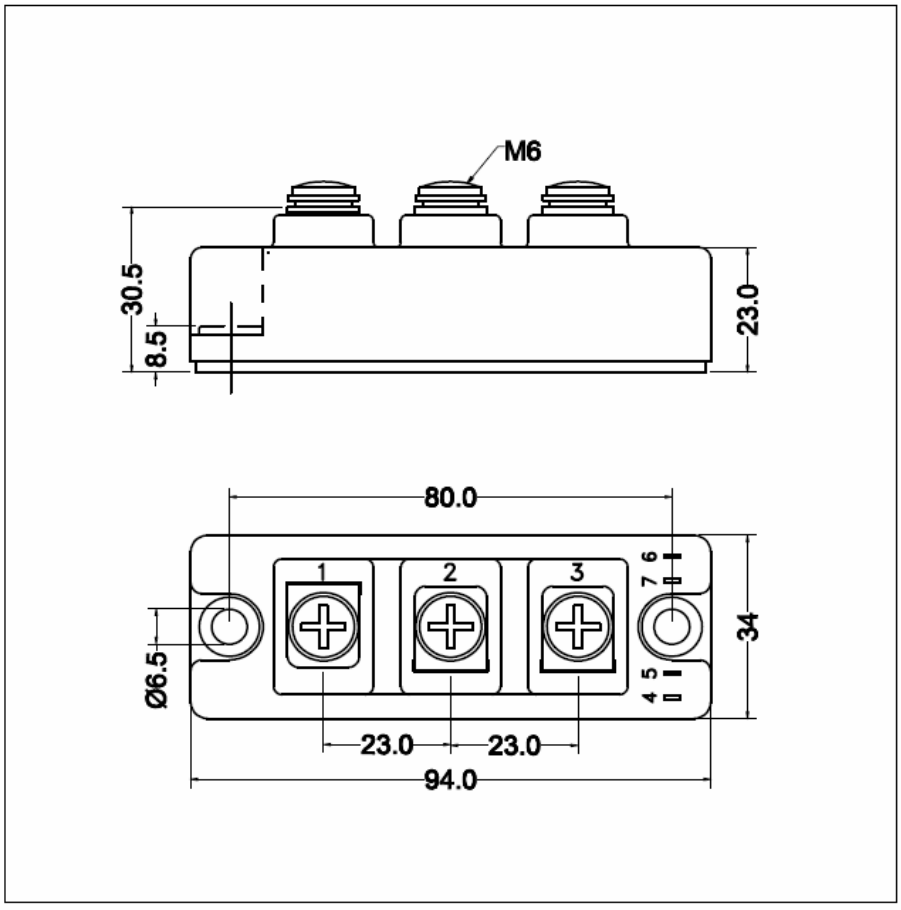


Figure6. Transient Thermal Impedance



Dimensions (mm)

Figure7. Package Outline