

MRF300.06

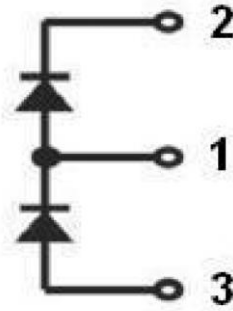
FRED module

Features:

- Ultrafast reverse recovery time
- Soft reverse recovery characteristics
- Low reverse recovery loss
- Low forward voltage
- High surge current capability
- Low inductance package

Typical applications:

- Inversion welder
- Uninterruptible power supply (UPS)
- Plating power supply
- Ultrasonic cleaner and welder
- Converter & chopper
- Power factor correction (PFC) circuit



Symbol	Characteristics	Test Conditions	Value			Unit
			Min	Typ	Max	
V_R	Maximum DC reverse voltage				600	V
V_{RRM}	Maximum repetitive reverse voltage				600	V
$I_{F(AV)}$	Forward average current	$T_c = 110^\circ\text{C}$, per diode			300	A
		$T_c = 120^\circ\text{C}$, 20KHz, per module			400	A
$I_{F(RMS)}$	RMS forward current	$T_c = 110^\circ\text{C}$, per diode			420	A
I_{FSM}	Non-repetitive forward surge current	$T_j = 45^\circ\text{C}$, $t=10\text{ms}$, 50Hz, sine			3000	A
		$T_j = 45^\circ\text{C}$, $t=8.3\text{ms}$, 60Hz, sine			3200	A
$I^2 t$	$I^2 t$ for fusing coordination	$T_j = 45^\circ\text{C}$, $t=10\text{ms}$, 50Hz, sine			45000	A^2s
		$T_j = 45^\circ\text{C}$, $t=8.3\text{ms}$, 60Hz, sine			51200	A^2s
P_D	Power dissipation				893	W
T_j	Operating Temperature		-40		+150	$^\circ\text{C}$
T_{stg}	Storage Temperature		-40		+125	$^\circ\text{C}$
V_{ISO}	Insulation test voltage	AC, $t=1\text{min}$			3000	V
F_M	Mounting torque - module to sink (M6)		3		5	$\text{N}\cdot\text{m}$
	Mounting torque - module electrodes (M6)		3		5	$\text{N}\cdot\text{m}$
$R_{th(j-c)}$	Thermal resistance junction to case				0.14	$^\circ\text{C}/\text{W}$
I_{RM}	Reverse leakage current	$V_R=600\text{V}$			2	mA
		$V_R=600\text{V}$, $T_j=125^\circ\text{C}$			10	mA
V_F	Forward voltage	$I_F=300\text{A}$		1.15	1.65	V
		$I_F=300\text{A}$, $T_j=125^\circ\text{C}$			1.45	V
t_{rr}	Reverse recovery time	$I_F=300\text{A}$		55		ns
t_{rr}	Reverse recovery time	$V_R=300\text{V}$, $I_F=300\text{A}$, $di_F/dt=200\text{A}/\mu\text{s}$, $T_j=25^\circ\text{C}$		150		ns
I_{RRM}	Max reverse recovery current	$T_j=25^\circ\text{C}$		17.5		A
t_{rr}	Reverse recovery time	$V_R=300\text{V}$, $I_F=300\text{A}$, $di_F/dt=200\text{A}/\mu\text{s}$, $T_j=125^\circ\text{C}$		245		ns
I_{RRM}	Max reverse recovery current	$T_j=125^\circ\text{C}$		30		A
W_t	Weight			155		g
Outline	M2B					

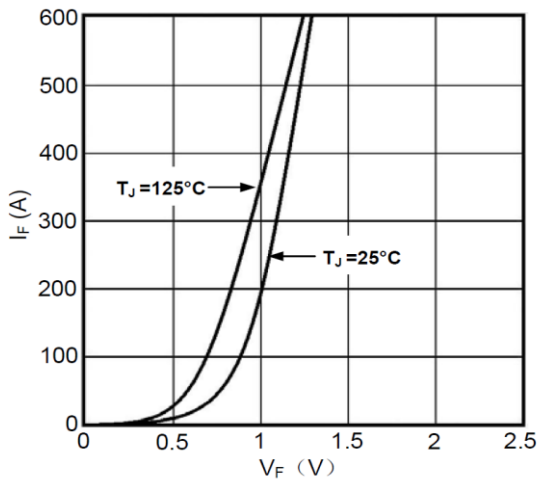


Figure1. Forward Voltage Drop vs Forward Current

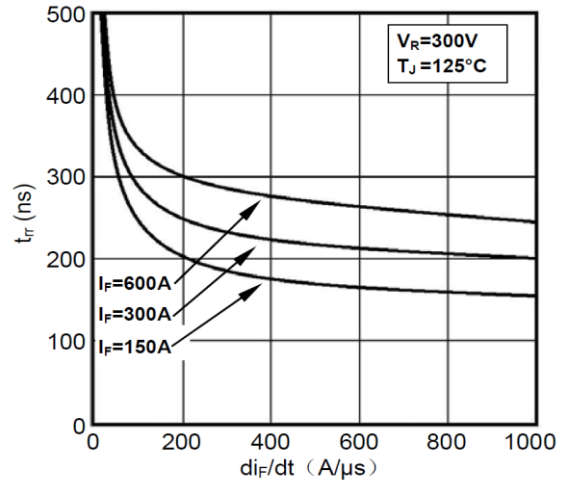


Figure2. Reverse Recovery Time vs di_F/dt

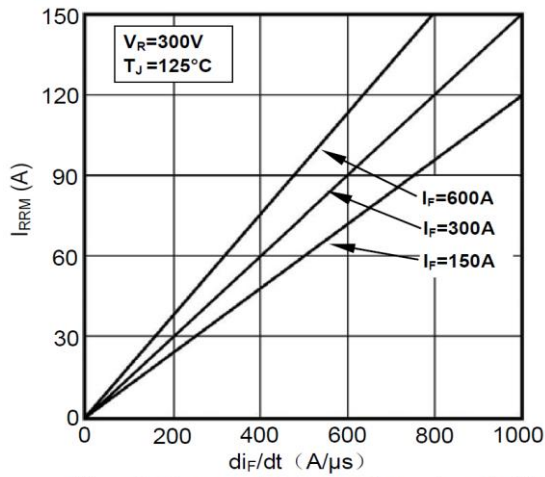


Figure3. Reverse Recovery Current vs di_F/dt

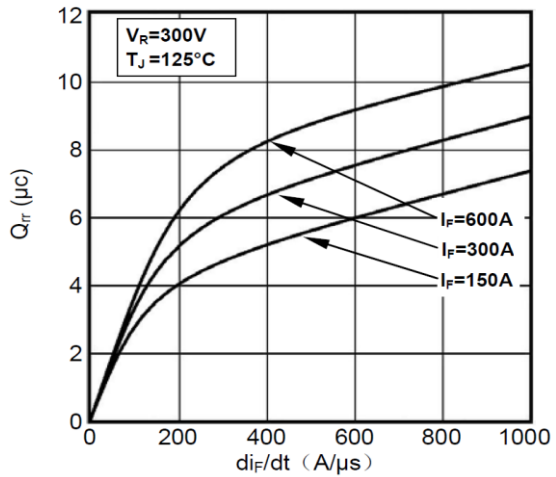


Figure4. Reverse Recovery Charge vs di_F/dt

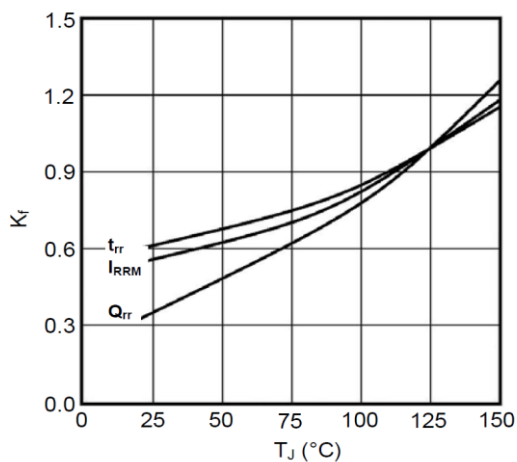


Figure5. Dynamic Parameters vs Junction Temperature

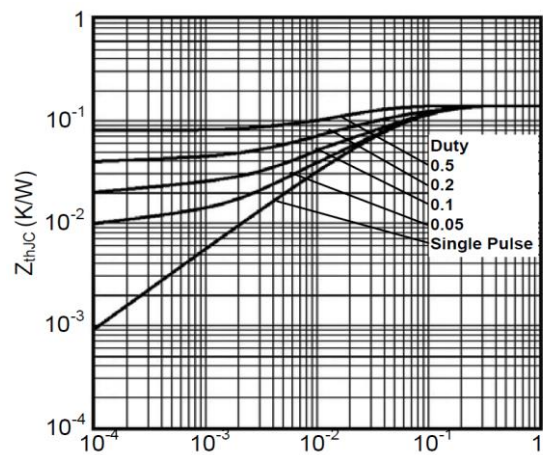
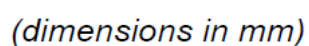


Figure6. Transient Thermal Impedance



3