

## MRS300.06F

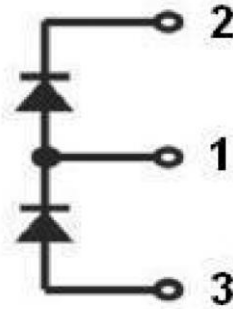
### FRED module

#### 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
$I^2t$	$I^2t$ for fusing coordination	$T_j = 45^\circ\text{C}$ , $t=10\text{ms}$ , 50Hz, sine			45000	$\text{A}^2\text{s}$
		$T_j = 45^\circ\text{C}$ , $t=8.3\text{ms}$ , 60Hz, sine			51200	$\text{A}^2\text{s}$
$P_D$	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	N·m
	Mounting torque - module electrodes (M6)		3		5	N·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				

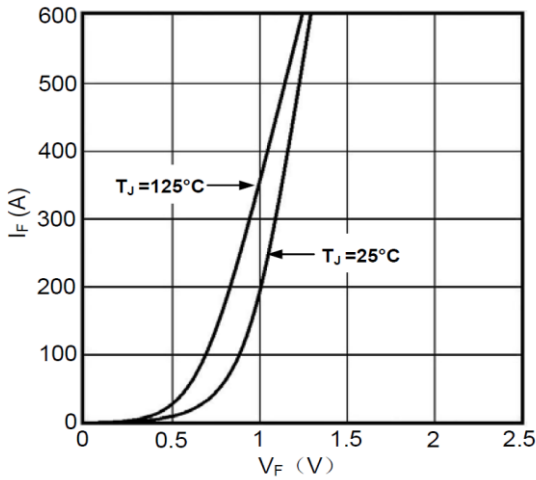


Figure1. Forward Voltage Drop vs Forward Current

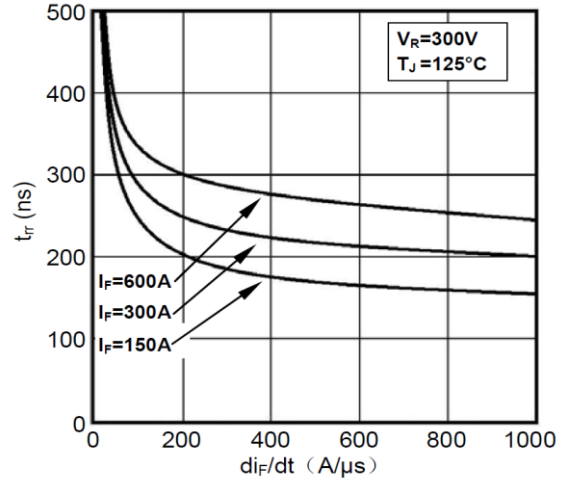


Figure2. Reverse Recovery Time vs  $di_F/dt$

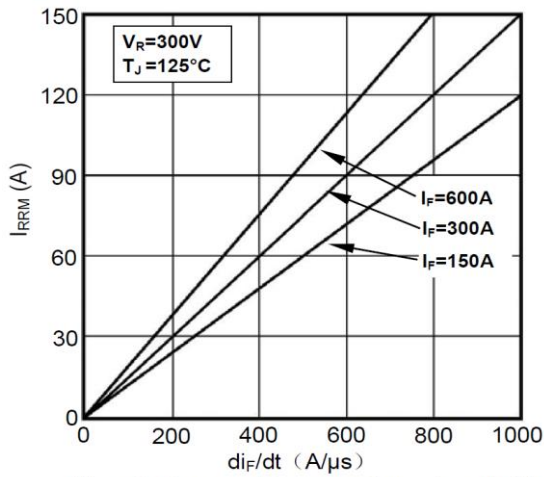


Figure3. Reverse Recovery Current vs  $di_F/dt$

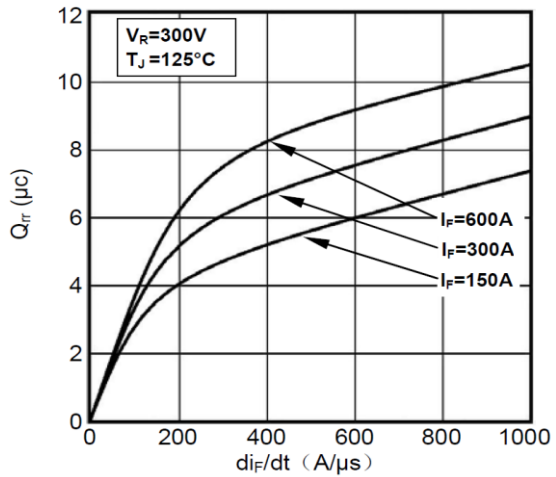


Figure4. Reverse Recovery Charge vs  $di_F/dt$

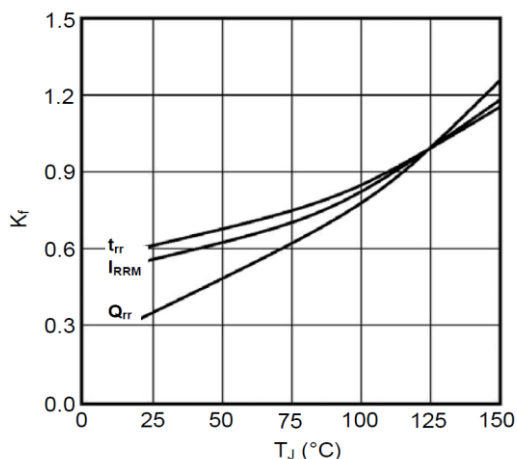


Figure5. Dynamic Parameters vs Junction Temperature

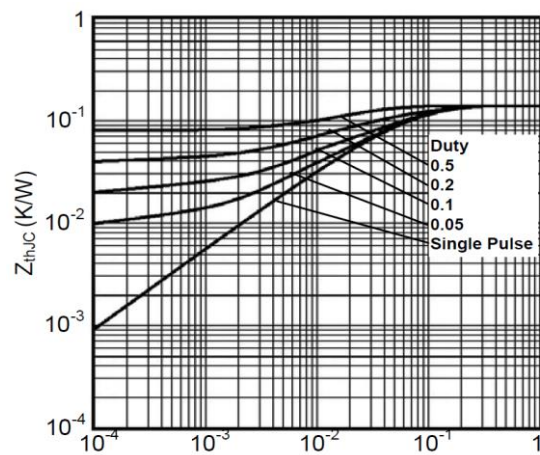


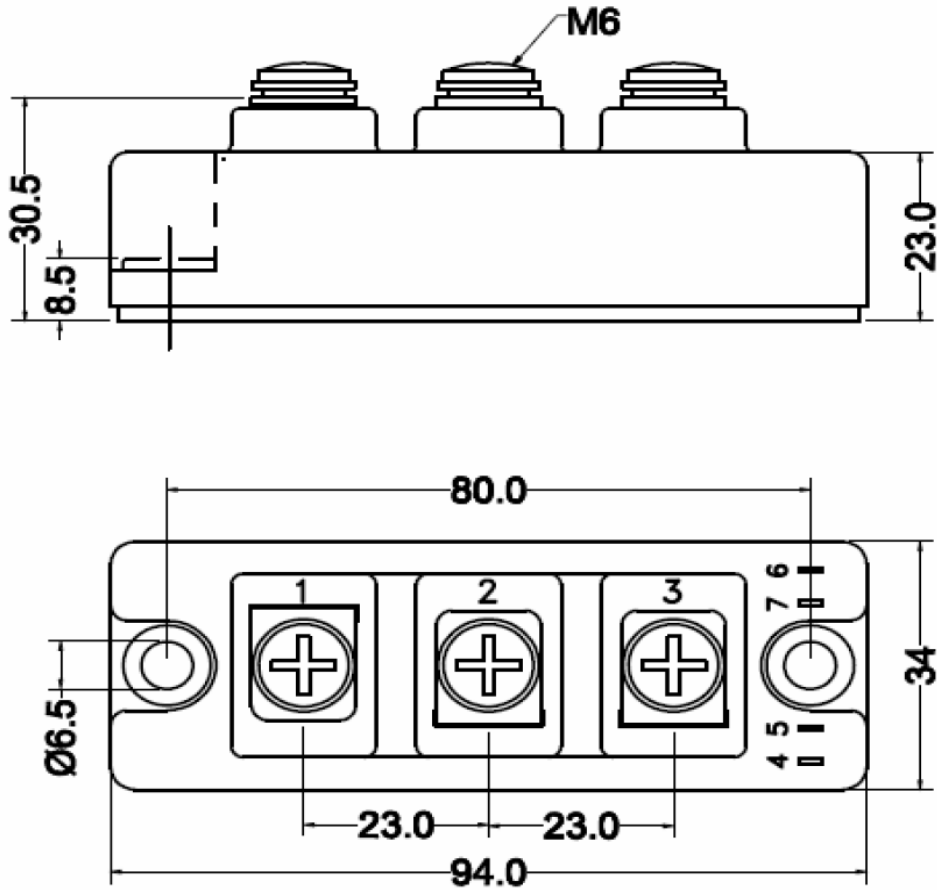
Figure6. Transient Thermal Impedance

### S.CO.M.E.S. Srl

Via Enrico Mattei, 6/8 - 26283 - Castiglione d'Adda (LO) - Italy

Phone: +39 0377 901243 Fax: +39 0377 900206

Scomes Srl reserves the right to change any specification without notice



*(dimensions in mm)*

**S.CO.M.E.S. Srl**

Via Enrico Mattei, 6/8 - 26283 - Castiglione d'Adda (LO) - Italy

Phone: +39 0377 901243 Fax: +39 0377 900206

*Scomes Srl reserves the right to change any specification without notice*