

MCS300.06F

Fast recovery diode module

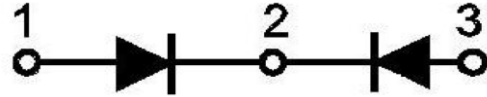
Features:

- Ultrafast reverse recovery time
- Soft reverse recovery characteristic
- Low reverse recovery loss
- High system power density



Typical applications:

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



Symbol	Characteristics	Test Conditions	Value			Unit
			Min	Typ	Max	
V_R	Maximum DC reverse voltage	$T_j = 25^\circ\text{C}$			600	V
V_{RRM}	Maximum repetitive reverse voltage	$T_j = 25^\circ\text{C}$			600	V
$I_{F(AV)}$	Forward average current	Rectangular, $d = 0,5$, $T_c = 90^\circ\text{C}$, per leg			300	A
		Rectangular, $d = 0,5$, $T_c = 90^\circ\text{C}$, per module			600	A
$I_{F(RMS)}$	Forward square root current	$T_c = 90^\circ\text{C}$, per leg			420	A
I_{RRM}	Repetitive peak current	$V_R = V_{RRM}$, per leg, $T_j = 25^\circ\text{C}$			0.2	mA
		$V_R = V_{RRM}$, per leg, $T_j = 150^\circ\text{C}$			10	mA
I_{FSM}	Forward surge current	$t = 50\text{Hz}$ (10ms), $V_R = 0\text{V}$, per leg			3000	A
$I^2 t$	$I^2 t$ for fusing coordination	$t = 10\text{ms}$, $T_j = 25^\circ\text{C}$			45000	A^2s
V_{FO}	Threshold voltage	$T_j = 125^\circ\text{C}$			0.70	V
r_T	Forward slope resistance	$T_j = 125^\circ\text{C}$			1.20	m Ω
V_{FM}	Peak forward voltage	$T_j = 25^\circ\text{C}$; $I_F = 300\text{A}$			1.60	V
P_{tot}	Total power dissipation	$T_j = 25^\circ\text{C}$			893	W
t_{rr}	Typical reverse recovery time	$I_F = 0.5\text{A}$, $I_R = -1\text{A}$, $I_{RR} = -0.25\text{A}$, per leg		150		ns
t_{rr}	Reverse recovery time	$I_F = 300\text{A}$, $V_R = 300\text{V}$, $di_F/dt = -200\text{A}/\mu\text{s}$, $T_j = 25^\circ\text{C}$		160		ns
I_{RM}	Reverse recovery current	$di_F/dt = -200\text{A}/\mu\text{s}$, $T_j = 25^\circ\text{C}$			17	A
t_{rr}	Reverse recovery time	$I_F = 300\text{A}$, $V_R = 300\text{V}$, $di_F/dt = -200\text{A}/\mu\text{s}$, $T_j = 125^\circ\text{C}$		280		ns
I_{RM}	Reverse recovery current	$di_F/dt = -200\text{A}/\mu\text{s}$, $T_j = 125^\circ\text{C}$			28	A
$R_{th(j-c)}$	Thermal resistance junction to case	Per leg			0.14	$^\circ\text{C}/\text{W}$
$R_{th(c-s)}$	Thermal resistance case to sink	Per leg			0.10	$^\circ\text{C}/\text{W}$
V_{ISO}	Isolation voltage	50Hz, RMS, $t = 1\text{min}$			3000	V
F_M	Mounting torque - copper plate (M6)		4		6	N·m
	Mounting torque - terminal (M6)		4		6	N·m
T_{stg}	Storage Temperature		-40		125	$^\circ\text{C}$
T_j	Operating Temperature		-40		150	$^\circ\text{C}$
W_t	Weight			185		g
Outline	M69GB					

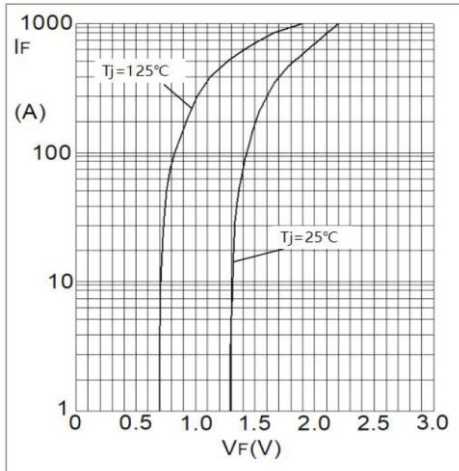


Fig1. Forward Characteristics

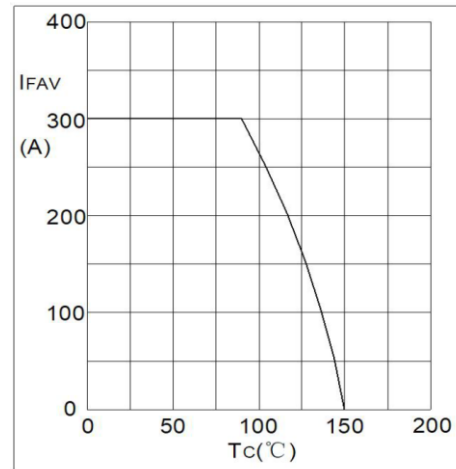


Fig2. Forward Current Derating Curve

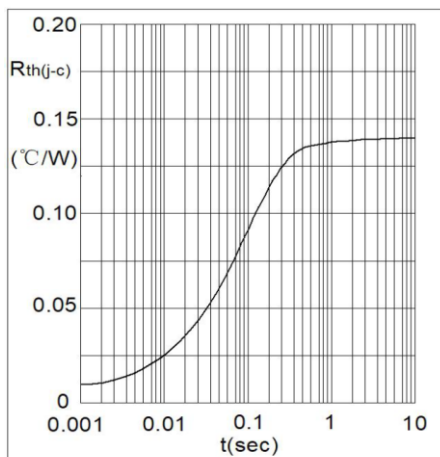


Fig3. Transient Thermal Impedance

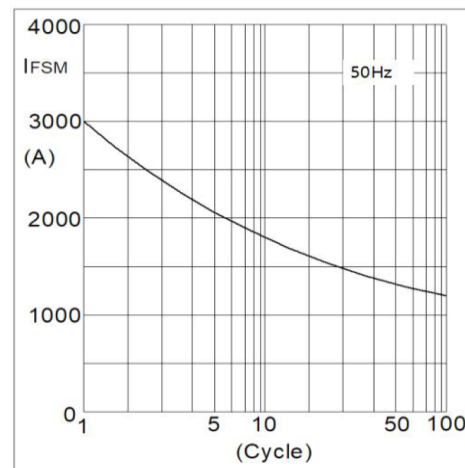


Fig4. Max Non-Repetitive Forward Surge Current

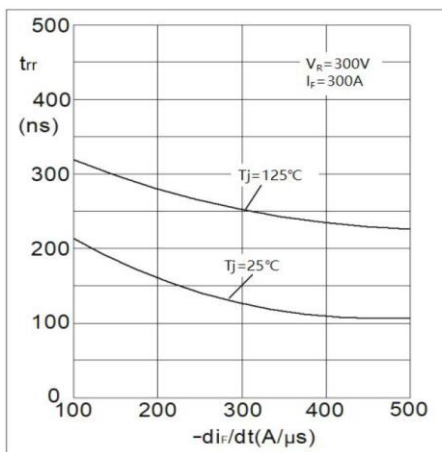


Fig5. Reverse Recovery Time VS di_F/dt

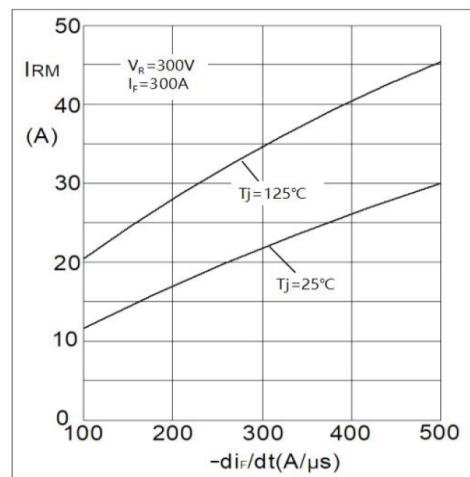


Fig6. Reverse Recovery Current VS di_F/dt

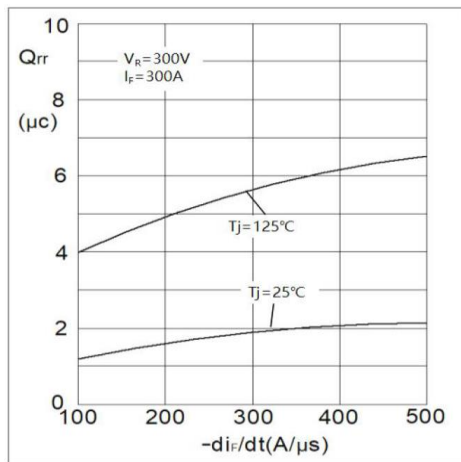
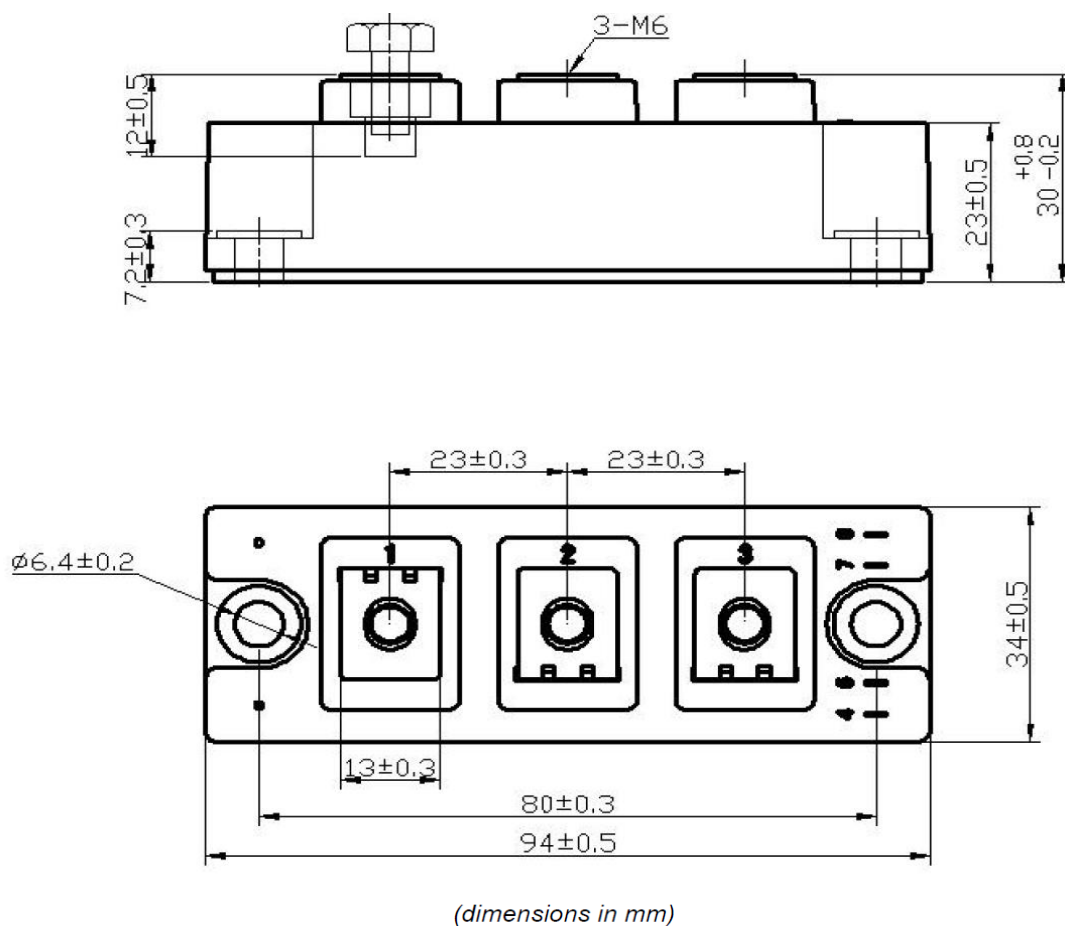


Fig7. Reverse Recovery Charge VS di_F/dt



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