MG200HF12MIC2

RoHS COMPLIANT

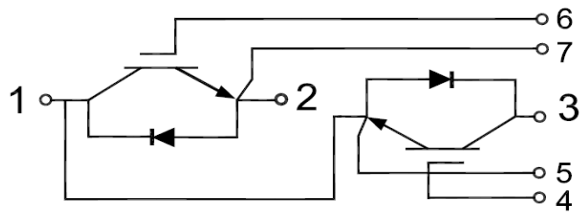
IGBT Modules

V_{CES}	1200V
I_C	200A

Applications

- Welding Machine
- Power Supplies
- Others

Circuit



Features

- Short circuit rated 10μs
- Low stray Inductance
- Low switching losses
- $V_{CE(sat)}$ with positive temperature coefficient
- Fast switching and short tail current
- Free wheeling diodes with fast and soft reverse recovery reverse recovery

Absolute Maximum Ratings （T_C = 25℃ unless otherwise specified）

Symbol	Description		Values	Units
V_{CES}	Collector - Emitter Voltage		1200	V
V_{GES}	Gate-Emitter Voltage		±20	V
I_C	DC Collector Current	T_C=25℃	300	A
		T_C=80℃	200	A
I_{CM}	Repetitive Peak Collector Current	T_C=25°C, t_p=1ms	400	A
Ptot	Power Dissipation Per IGBT		1360	W
T_J	Junction Temperature Range		40 to +150	°C
T_{STG}	Storage Temperature Range		40 to +125	°C
Viso	Insulation Test Voltage	AC, t=1min	3000	V
Mounting Torque	Power Terminals Screw: M6		5±15%	N*m
	Mounting Screw:M6		5±15%	N*m

Notes :

(1) Repetitive Rating: Pulse width limited by max. junction temperature

Electrical Characteristics of IGBT (T_J = 25℃ unless otherwise specified)

Symbol	Item	Conditions	Values			Units
			Min.	Typ.	Max.	
OFF Characteristics						
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	V_{GE}=0V, I_C=1mA	1200			V
I_{CES}	Collector Leakage Current	V_{CE}=1200V,V_{GE}=0V, T_J=25°C			0.5	mA
		V_{CE}=1200V, V_{GE}=0V, T_J=125°C			1	mA
I_{GES}	Gate Leakage Current	V_{CE}=0V, V_{GE}=±20V	-200		200	nA
ON Characteristics						
$V_{GE(th)}$	Gate - Emitter Threshold Voltage	V_{CE}=V_{GE}, I_C=4mA	5	5.8	6.8	V
$V_{CE(sat)}$	Collector – Emitter Saturation Voltage	I_C=200A, V_{GE}=15V, T_J=25°C		1.8	2.0	V
		I_C=200A V_{GE}=15V, T_J=125°C		2.0	2.2	V
Dynamic Characteristics						
C_{ies}	Input Capacitance	V_{CE}=25V, V_{GE}=0V, f =1MHz		12.6		nF
C_{res}	Reverse Transfer Capacitance			0.62		nF
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{CC}=600V, I_C=200A R_G =3.5Ω,V_{GE}=±15V T_J=25°C Inductive Load		135		ns
t_r	Rise Time			38		ns
$t_{d(off)}$	Turn-off Delay Time			282		ns
T_f	Fall Time			165		ns
$t_{d(on)}$	Turn-on Delay Time	V_{CC}=600V, I_C=200A R_G =3.5Ω,V_{GE}=±15V T_J=125°C Inductive Load		150		ns
t_r	Rise Time			41		ns
$t_{d(off)}$	Turn-off Delay Time			354		ns
T_f	Fall Time			274		ns
E_{on}	Turn-on Switching Loss	V_{CC}=600V, R_G =3.5Ω I_C=200A, T_J=25°C		8.5		mJ
		V_{CC}=600V, R_G =3.5Ω I_C=200A, T_J=125°C		12.3		mJ
E_{off}	Turn-off Switching Loss	V_{CC}=600V, R_G =3.5Ω I_C=200A, T_J=25°C		12.5		mJ
		V_{CC}=600V, R_G =3.5Ω I_C=200A, T_J=125°C		19		mJ
Q_{ge}	Gate Charge	V_{CC}=600V,I_C=200A, V_{GE}=±15V		420		nC
SCSOA	Short Circuit Safe Operating Area	V_{CC}=600V, V_{GE}≤15V, T_J=125℃	10			μs
				1100		A

Electrical Characteristics of FWD（T_C = 25℃ unless otherwise specified）

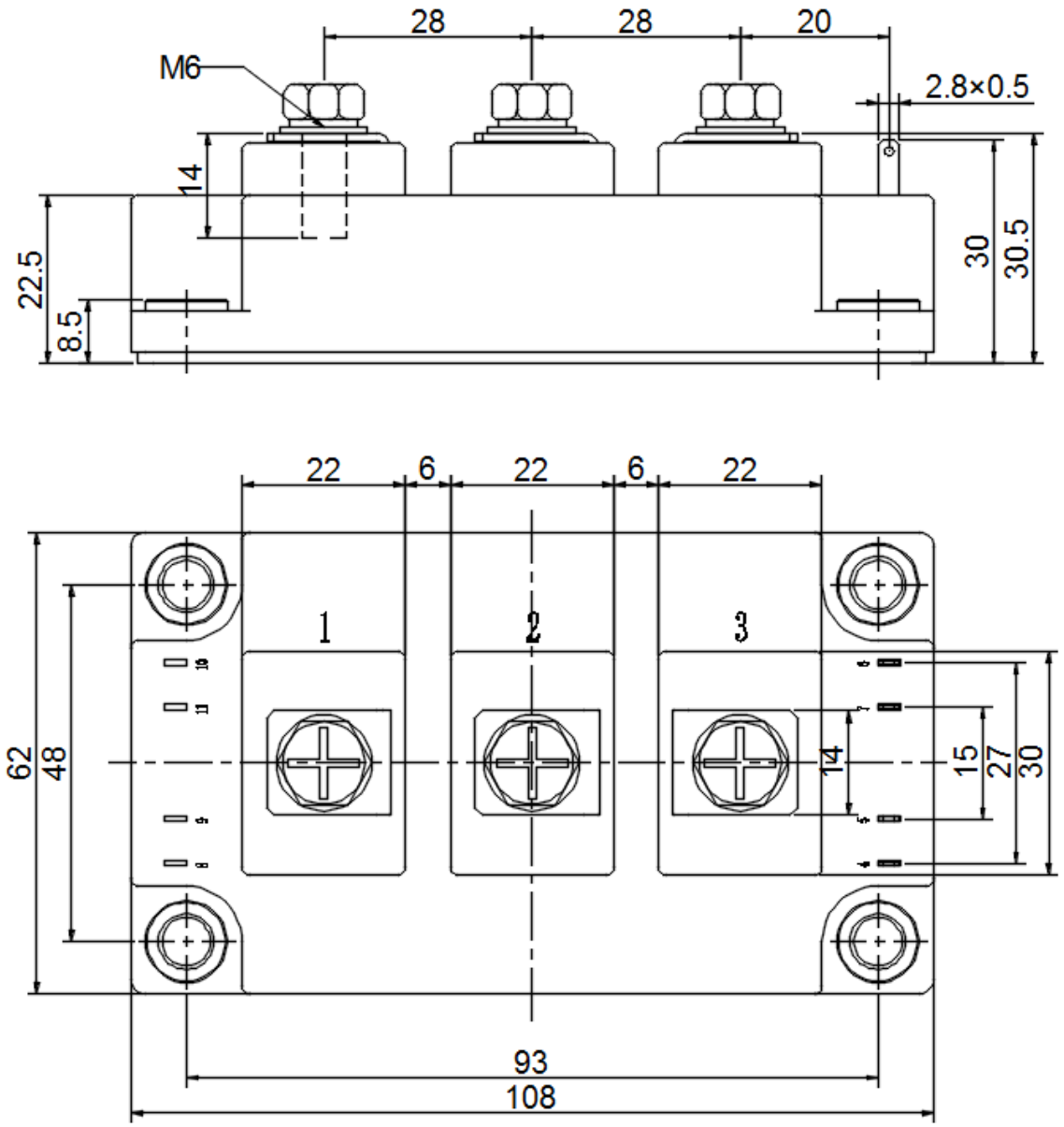
Symbol	Item	Conditions		Min.	Typ.	Max.	Units
V_{FM}	Forward Voltage	I_F=200A, V_{GE}=0V;	T_J=25°C,		1.79	2.0	V
			T_J=125°C,		1.9	2.2	
t_{rr}	Reverse Recovery Time	I_F=200A , V_R=600V, di_F/dt=-2500A/μs V_{GE} = -15V	T_J=25°C,		175		ns
			T_J=125°C,		350		
I_{rr}	Peak Reverse Recovery Current		T_J=25°C,		140		A
			T_J=125°C,		151		
Q_{rr}	Reverse Recovery Charge		T_J=25°C,		10.6		mJ
			T_J=125°C,		19.6		

Thermal Resistance Characteristics

Symbol	Description	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-To-Case (IGBT Part, Per Leg)			0.08	℃/W
$R_{\theta JC}$	Junction-To-Case (Diode Part, Per Leg)			0.25	℃/W
$R_{\theta CS}$	Case-To-Sink (Conductive Grease Applied)			0.1	℃/W
Mt	Power Terminals Screw:M6	3		5	N·m
Ms	Mounting Screw:M6	3		5	N·m
Weight	Weight Of Module			300	g

Package Outline Information

CASE: C2



Dimensions in mm