

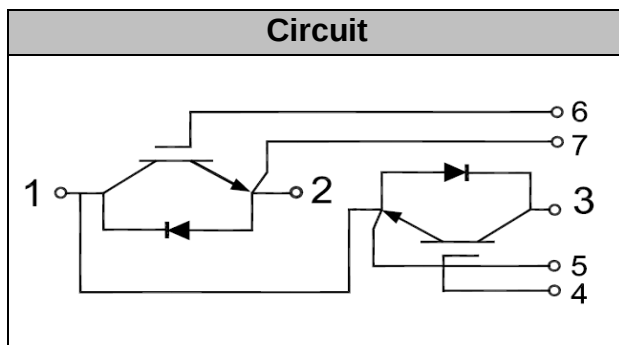
IGBT Modules



V_{CES} 1200V
I_C 200A

Applications

- Welding Machine
- Power Supplies
- Others



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

Absolute Maximum Ratings (T_C = 25°C 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°C	300	A
		T _C =80°C	200	A
I _{CM}	Repetitive Peak Collector Current	Tc=25°C, tp=1ms	400	A
P _{tot}	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** ($T_J = 25^\circ\text{C}$ 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
			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
			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°C	10			μs
				1100		A

**Electrical Characteristics of FWD** ($T_C = 25^\circ\text{C}$ 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	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Junction-To-Case (Diode Part, Per Leg)			0.25	$^\circ\text{C}/\text{W}$
$R_{\theta CS}$	Case-To-Sink (Conductive Grease Applied)			0.1	$^\circ\text{C}/\text{W}$
M_t	Power Terminals Screw:M6	3		5	N·m
M_s	Mounting Screw:M6	3		5	N·m
Weight	Weight Of Module			300	g

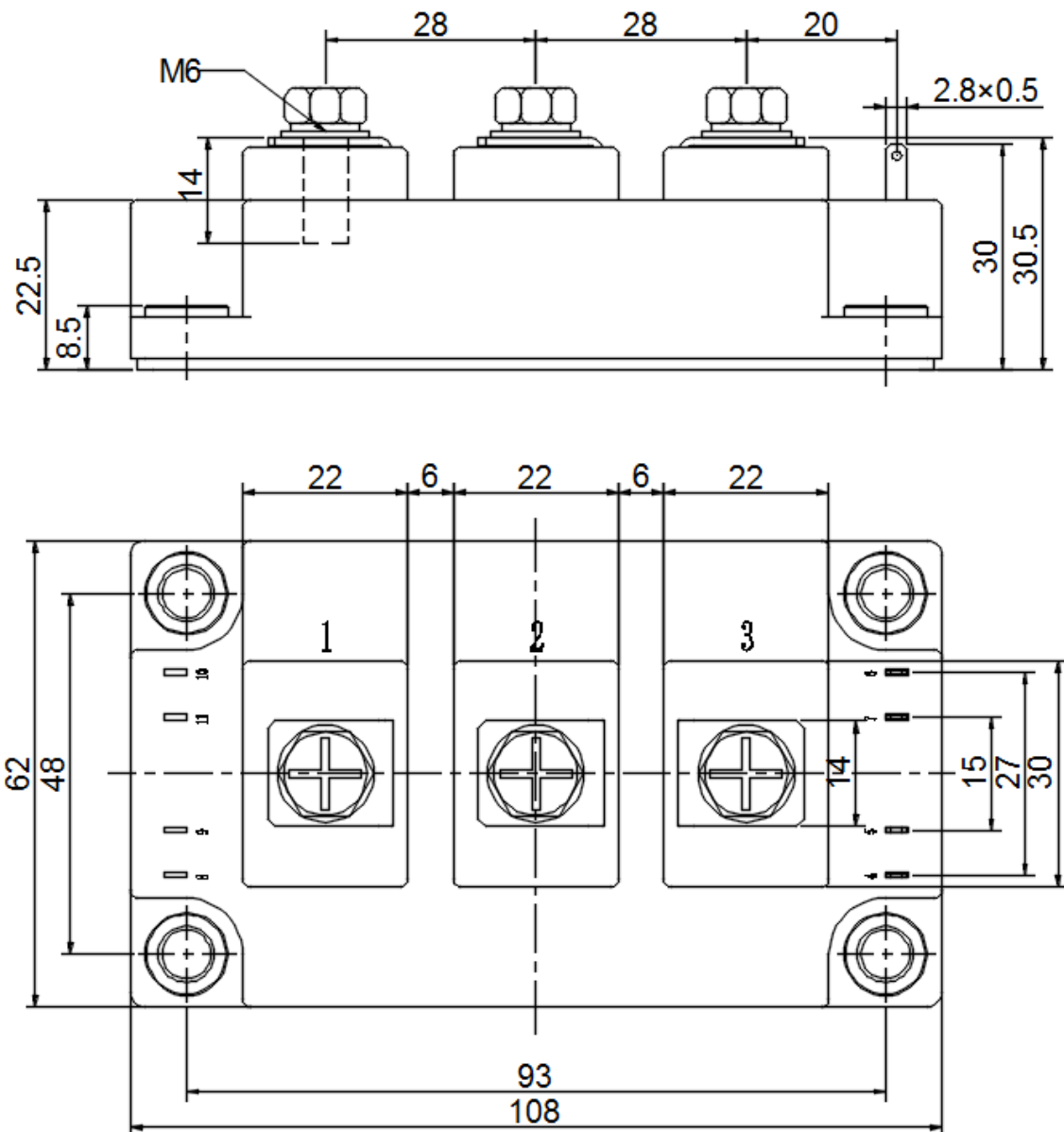


PRELIMINARY

MG200HF12MIC2 **RoHS**
COMPLIANT

Package Outline Information

CASE: C2



Dimensions in mm