

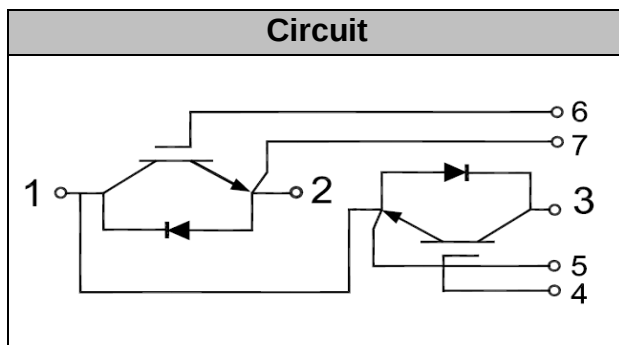
IGBT Modules



V_{CES} 1200V
I_C 150A

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	210	A
		T _C =80°C	150	A
I _{CM}	Repetitive Peak Collector Current	T _C =25°C, t _p =1ms	300	A
P _{tot}	Power Dissipation Per IGBT		1000	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	5.9	6.5	V
V _{CE(sat)}	Collector – Emitter Saturation Voltage	I _C =150A, V _{GE} =15V, T _J =25°C			1.9	2.1	V
		I _C =150A V _{GE} =15V, T _J =125°C			2.0	2.3	V
Dynamic Characteristics							
C _{ies}	Input Capacitance	V _{CE} =25V, V _{GE} =0V, f =1MHz			10		nF
C _{res}	Reverse Transfer Capacitance				0.42		nF
Switching Characteristics							
t _{d(on)}	Turn-on Delay Time	V _{CC} =600V, I _C =150A R _G =3.5Ω,V _{GE} =±15V T _J =25°C Inductive Load			116		ns
t _r	Rise Time				31		ns
t _{d(off)}	Turn-off Delay Time				226		ns
T _f	Fall Time				185		ns
t _{d(on)}	Turn-on Delay Time	V _{CC} =600V, I _C =150A R _G =3.5Ω,V _{GE} =±15V T _J =125°C Inductive Load			127		ns
t _r	Rise Time				35		ns
t _{d(off)}	Turn-off Delay Time				305		ns
T _f	Fall Time				300		ns
E _{on}	Turn-on Switching Loss	V _{CC} =600V, R _G =3.5Ω I _C =150A	T _J =25°C		7.0		mJ
			T _J =125°C		9.9		mJ
E _{off}	Turn-off Switching Loss	V _{CC} =600V, R _G =3.5Ω I _C =150A	T _J =25°C		8.6		mJ
			T _J =125°C		14.6		mJ
Q _{ge}	Gate Charge	V _{CC} =600V,I _C =150A, V _{GE} =±15V			275		nC
SCSOA	Short Circuit Safe Operating Area	V _{CC} = 600V, V _{GE} = 15V, T _J = 125°C		10			μs
					735		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 =150A, V _{GE} =0V;	T _J =25°C,		1.72	1.9	V
			T _J =125°C,		1.82	2.0	
t _{rr}	Reverse Recovery Time	I _F =150A , V _R =600V, di _F /dt=-2960A/μs V _{GE} = -15V	T _J =25°C,		180		ns
			T _J =125°C,		359		
I _{rr}	Peak Reverse Recovery Current		T _J =25°C,		110		A
			T _J =125°C,		120		
Q _{rr}	Reverse Recovery Charge		T _J =25°C,		8.3		mJ
			T _J =125°C,		15.9		

Thermal Resistance Characteristics

Symbol	Description	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-To-Case (IGBT Part, Per Leg)			0.1	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Junction-To-Case (Diode Part, Per Leg)			0.27	$^\circ\text{C}/\text{W}$
$R_{\theta CS}$	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

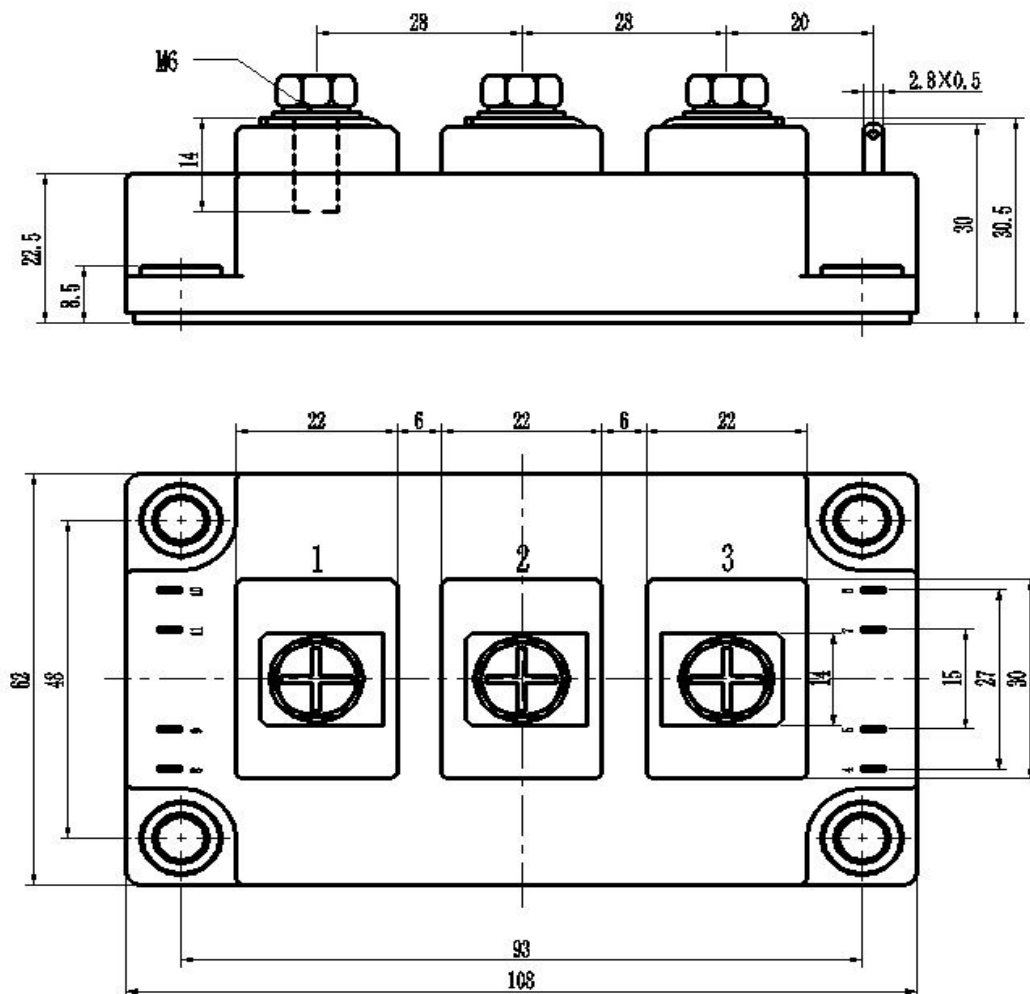


PRELIMINARY

MG150HF12MIC2 **RoHS**
COMPLIANT

Package Outline Information

CASE: C2



Dimensions in mm