

# SPECIFICATION

Device Name : IGBT MODULE

Type Name : 6MBI300U4-120

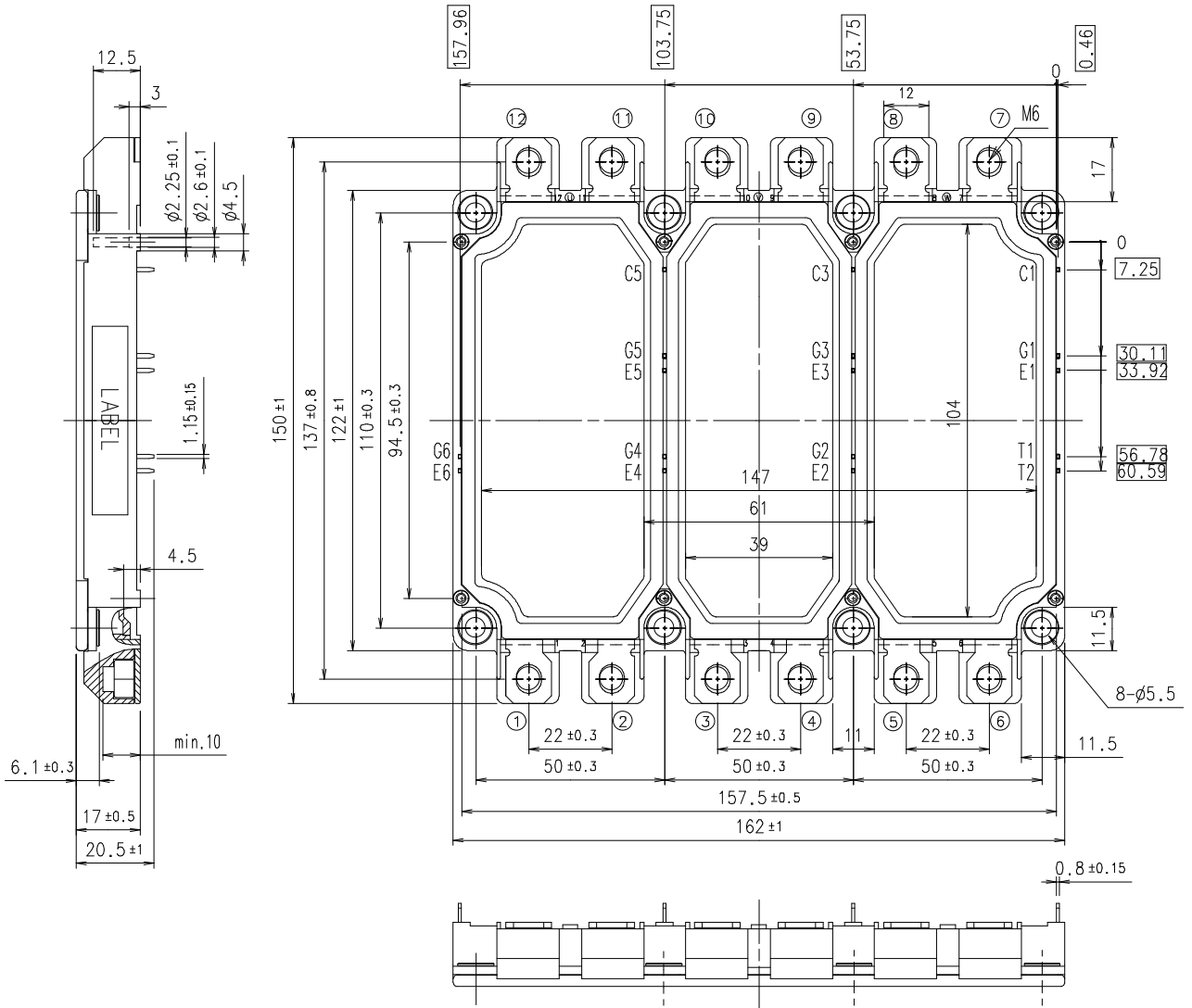
Spec. No. : MS5F 6022

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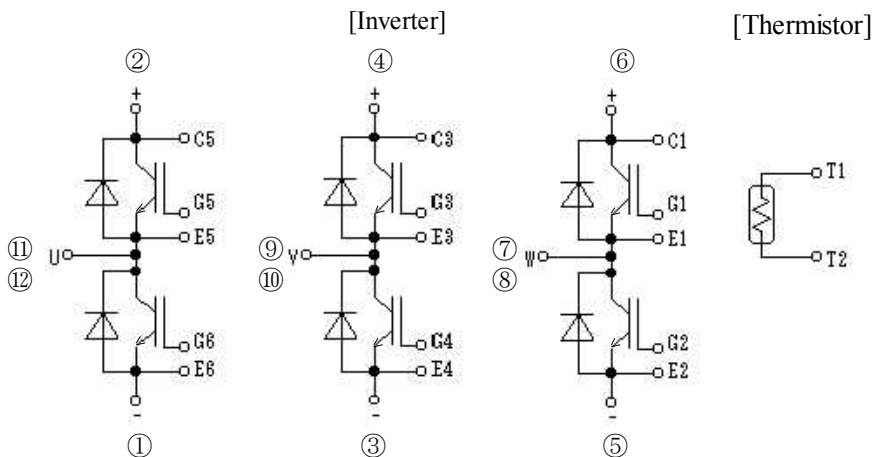
6MBI300U4-120

1. Outline Drawing ( Unit : mm )



NOTE)   shows theoretical dimension and tolerance is  $\boxed{\pm 0.5}$  .

2. Equivalent circuit



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### 3. Absolute Maximum Ratings ( at Tc= 25°C unless otherwise specified )

Items		Symbols	Conditions	Maximum Ratings	Units
Collector-Emitter voltage		VCES		1200	V
Gate-Emitter voltage		VGES		±20	V
Collector current	Ic	Continuous	Tc=25°C	450	A
			Tc=80°C	300	
	Icp	1ms	Tc=25°C	900	
			Tc=80°C	600	
	-Ic			300	
-Ic pulse	1ms		600		
Collector Power Dissipation		Pc	1 device	1385	W
Junction temperature		Tj		+150	°C
Storage temperature		Tstg		-40 to +125	
Isolation voltage	between terminal and copper base (*1)	Viso	AC : 1min.	2500	VAC
	between thermistor and others (*2)				
Screw Torque	Mounting (*3)			3.5	N m
	Terminals (*4)			4.5	

(\*1) All terminals should be connected together when isolation test will be done.

(\*2) Two thermistor terminals should be connected together, each other terminals should be connected together and shorted to base plate when isolation test will be done.

(\*3) Recommendable Value : 2.5 to 3.5 Nm (M5)

(\*4) Recommendable Value : 3.5 to 4.5 Nm (M6)

### 4. Electrical characteristics ( at Tj= 25°C unless otherwise specified )

Items	Symbols	Conditions	Characteristics			Units		
			min.	typ.	max.			
Inverter	Zero gate voltage collector current	ICES	VCE=1200V VGE=0V	-	-	3.0	mA	
	Gate-Emitter leakage current	IGES	VCE=0V VGE=±20V	-	-	600	nA	
	Gate-Emitter threshold voltage	VGE(th)	VCE=20V Ic=300mA	4.5	6.5	8.5	V	
	Collector-Emitter saturation voltage	VCE(sat) (terminal)	Ic=300A VGE=15V	Tj=25°C	-	Ⓐ 2.30	Ⓐ 2.45	V
				Tj=125°C	-	Ⓐ 2.50	-	
		VCE(sat) (chip)		Tj=25°C	-	1.90	2.05	
				Tj=125°C	-	2.10	-	
	Input capacitance	Cies	VCE=10V, VGE=0V, f=1MHz	-	34	-	nF	
	Turn-on time	ton	Vcc=600V Ic=300A	-	0.32	1.20	us	
		tr	VGE=±15V	-	0.10	0.60		
		tr(i)		-	0.03	-		
	Turn-off time	toff	RG=2.0Ω	-	0.41	1.00	us	
		tf		-	0.07	0.30		
	Forward on voltage	VF (terminal)	IF=300A VGE=0V	Tj=25°C	-	Ⓐ 2.00	Ⓐ 2.15	V
				Tj=125°C	-	Ⓐ 2.10	-	
VF (chip)		Tj=25°C		-	1.65	1.80		
		Tj=125°C		-	1.75	-		
Reverse recovery time	trr	IF=300A	-	-	0.35	us		
Lead resistance, terminal-chip (*5)	R lead		-	1.00	-	mΩ		
Thermistor	Resistance	R	T=25°C	-	5000	-	Ω	
			T=100°C	465	495	520		
	B value	B	T=25/50°C	3305	3375	3450	K	

(\*5) Biggest internal terminal resistance among arm.

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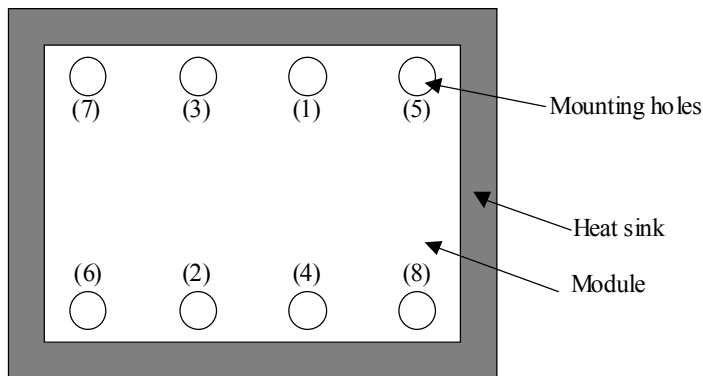
### 5. Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	max.	
Thermal resistance(1device)	Rth(j-c)	IGBT	-	-	0.09	°C/W
		FWD	-	-	0.15	
Contact Thermal resistance (1 device) (*6)	Rth(c-f)	with Thermal Compound	-	0.0167	-	

(\*6) This is the value which is defined mounting on the additional cooling fin with thermal compound.

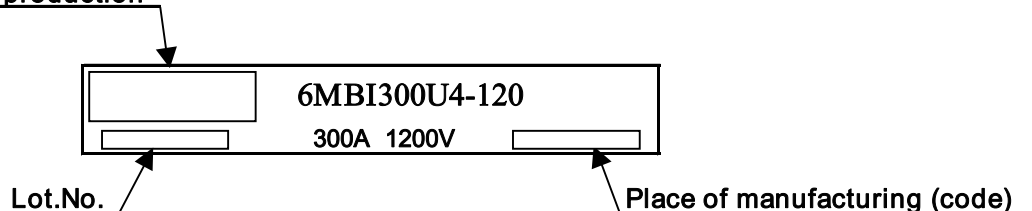
### 6.Recommend way of module mounting to Heat sink Clamping

- (1) Initial : 1/3 specified torque, sequence (1)→(2)→(3)→(4)→(5)→(6)→(7)→(8)  
 (2) Final : Full specified torque (3.5 Nm),sequence(4)→(3)→(2)→(1)→(8)→(7)→(6)→(5)



### 7. Indication on module

#### Logo of production



### 8. Applicable category

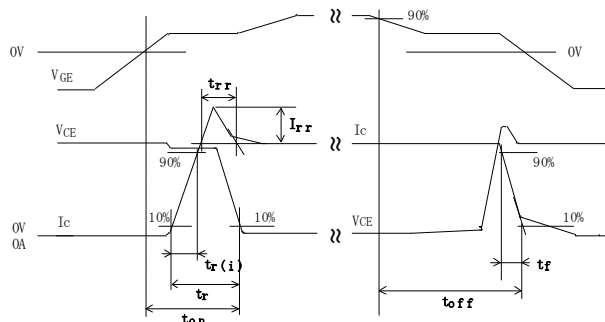
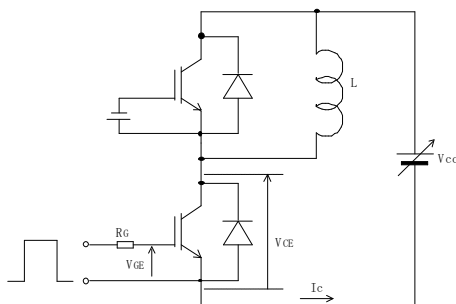
This specification is applied to IGBT-Module named 6MBI300U4-120.

### 9. Storage and transportation notes

- The module should be stored at a standard temperature of 5 to 35°C and humidity of 45 to 75% .
- Store modules in a place with few temperature changes in order to avoid condensation on the module surface.
- Avoid exposure to corrosive gases and dust.
- Avoid excessive external force on the module.
- Store modules with unprocessed terminals.
- Do not drop or otherwise shock the modules when transporting.

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### 10. Definitions of switching time



### 11. Packing and Labeling

Display on the packing box

- Logo of production
- Type name
- Lot No
- Products quantity in a packing box