

# SPECIFICATION

Device Name : IGBT MODULE

Type Name : 2MBI300U4E-120

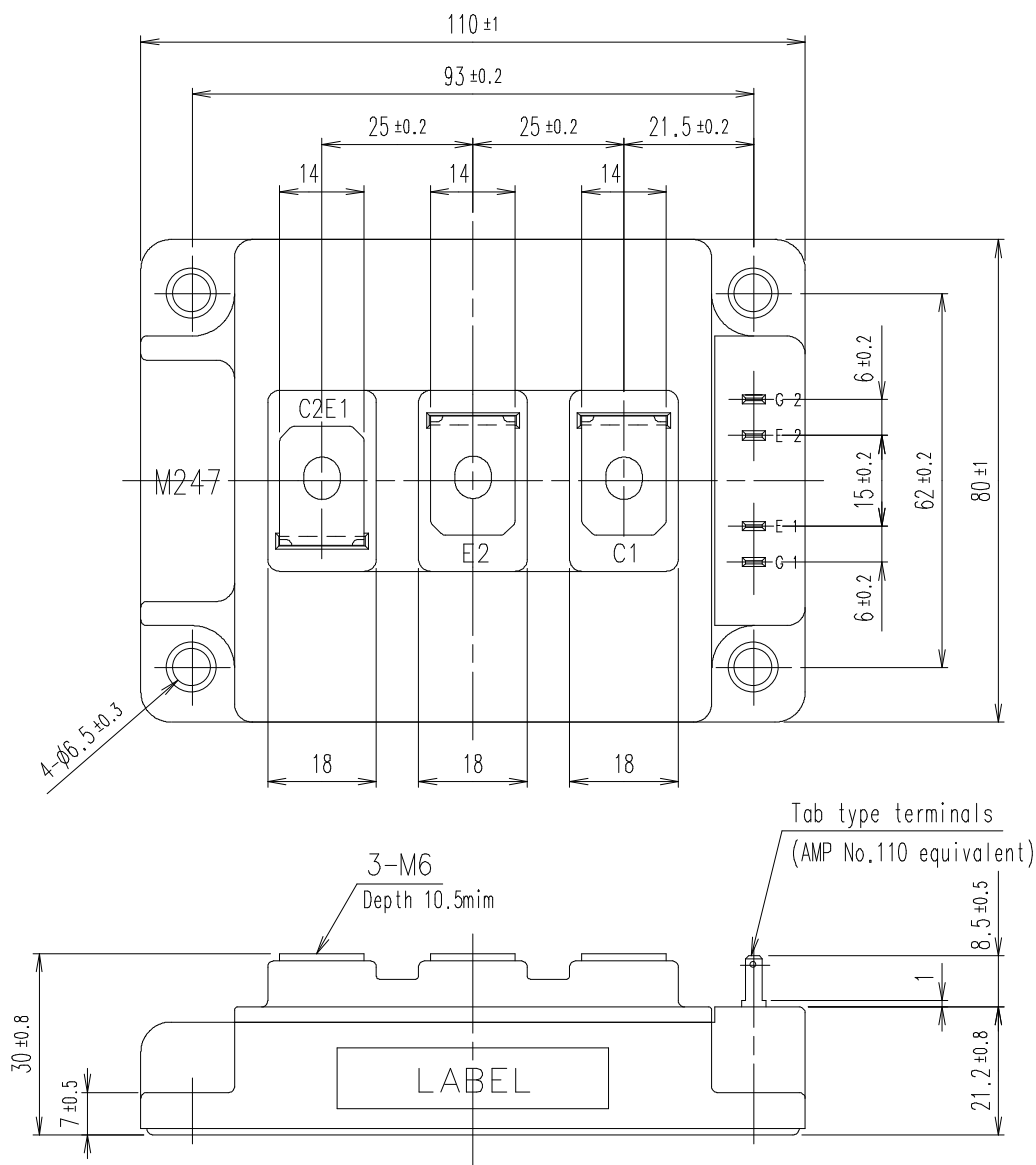
Spec. No. : MS5F 6058

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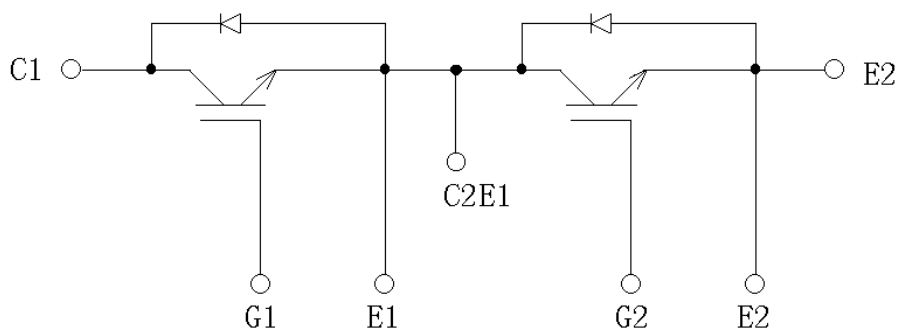
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2MBI300U4E-120

1. Outline Drawing ( Unit : mm )



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				
-Ic pulse		1ms		600	
Collector Power Dissipation		Pc	1 device	1810	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
Screw Torque	Mounting (*2)			3.5	N m
	Terminals (*3)			4.5	

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

(\*2) Recommendable Value : Mounting 2.5 to 3.5 Nm (M5 or M6)

(\*3) Recommendable Value : Terminals 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.		
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	-	<sup>a</sup> 2.10	<sup>a</sup> 2.25	V
			Tj=125°C	-	<sup>a</sup> 2.30	-	
	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	-	0.32	1.20	us	
	tr	Ic=300A	-	0.10	0.60		
	tr(i)	VGE=±15V	-	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	-	1.80	1.95	V
			Tj=125°C	-	1.90	-	
	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 (*4)	R lead		-	0.45	-	mΩ	

(\*4) Biggest internal terminal resistance among arm.

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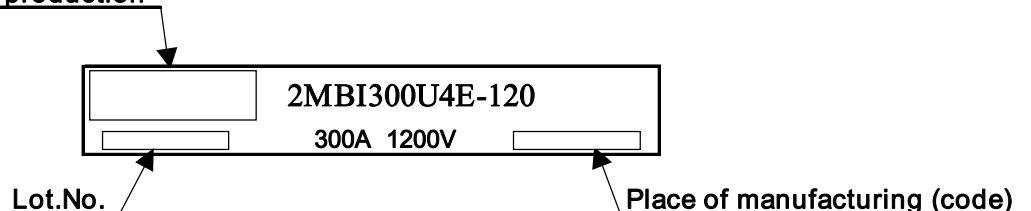
### 5. Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	max.	
Thermal resistance(1device)	Rth(j-c)	IGBT	-	-	0.069	°C/W
		FWD	-	-	0.12	
Contact Thermal resistance (1 device) (*5)	Rth(c-f)	with Thermal Compound	-	0.0167	-	

(\*5) This is the value which is defined mounting on the additional cooling fin with thermal compound.

### 6. Indication on module

#### Logo of production



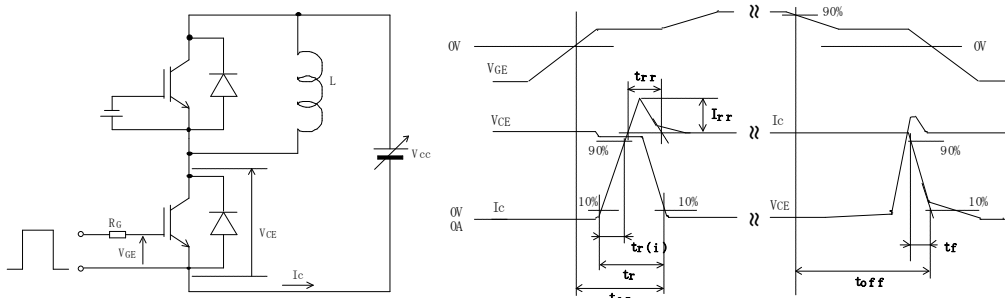
### 7. Applicable category

This specification is applied to IGBT-Module named 2MBI300U4E-120.

### 8. 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.

### 9. Definitions of switching time



### 10. Packing and Labeling

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