

2MBI300UC-120

IGBT Modules

IGBT MODULE (U series) 1200V / 300A / 2 in one package

Features

High speed switching Voltage drive Low Inductance module structure

Applications

Inverter for Motor Drive AC and DC Servo Drive Amplifier Uninterruptible Power Supply Industrial machines, such as Welding machines



■ Maximum Ratings and Characteristics

■ 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	V _{GES}			±20	V	
Collector current	Ic	Continuous	Tc=25°C	400		
			Tc=80°C	300		
	Ic pulse	1ms	Tc=25°C	800	Α	
			Tc=80°C	600	А	
	-lc			300		
	-lc pulse			600		
Collector power dissipation	Pc	1 device		1470	W	
Junction temperature	Tj			150	°C	
Storage temperature	Tstg			-40 to +125	°C	
Isolation voltage Between terminal and copper base (*1)	Viso	AC: 1min.		2500	VAC	
Screw torque	Mounting (*2)			3.5	NI m	
	Terminals (*2)			4.5	N·m	

Note *1: All terminals should be connected together when isolation test will be done.

Note *2: Recommendable value : Mounting : 2.5-3.5 N·m (M5 or M6), Terminals : 3.5-4.5 N·m (M6)

● Electrical characteristics (at Tj= 25°C unless otherwise specified)

Items	Cymhala	Conditions		Characteristics			Units
items	Symbols	Conditions	onditions		typ.	max.	Units
Zero gate voltage collector current	Ices	V _{GE} = 0V, V _{CE} = 1200V		-	-	2.0	mA
Gate-Emitter leakage current	I _{GES}	$V_{CE} = 0V, V_{GE} = \pm 20V$		-	-	400	nA
Gate-Emitter threshold voltage	V _{GE (th)}	V _{CE} = 20V, I _C = 300mA		4.5	6.5	8.5	V
Collector-Emitter saturation voltage	V _{CE (sat)}	V _{GE} = 15V I _C = 300A	Tj=25°C	-	1.90	2.25	V
	(teminal)		Tj=125°C	-	2.15	-	
	V _{CE (sat)}		Tj=25°C	-	1.75	2.10	
	(chip)		Tj=125°C	-	2.00	-	
Input capacitance	Cies	V _{GE} = 0V, V _{CE} = 10V, f = 1MHz		-	34	-	nF
Turn-on time	ton	V _{cc} = 600V I _c = 300A V _{cE} = ±15V R _G = 1.1Ω		-	0.36	1.20	μs
	tr			-	0.21	0.60	
	tr (i)			-	0.03	-	
Turn-off time	toff			-	0.37	1.00	
	tf			-	0.07	0.30	
Forward on voltage	V _F		Tj=25°C	-	1.75	2.05	V
	(teminal)	$V_{GE} = 0V$	Tj=125°C	-	1.85	-	
	VF	I _F = 300A	Tj=25°C	-	1.60	1.90	
	(chip)		Tj=125°C	-	1.70	-	
Reverse recovery time	trr	I _F = 300A		-	-	0.35	μs
Lead resistance, terminal-chip (*3)	R lead			-	0.53	-	mΩ

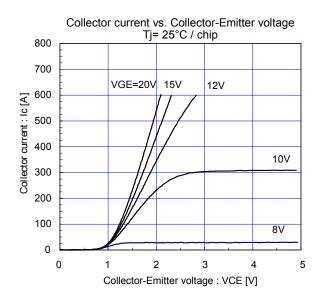
Note *3: Biggest internal terminal resistance among arm.

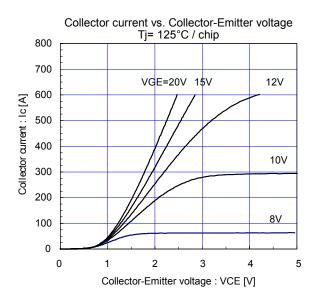
Thermal resistance characteristics

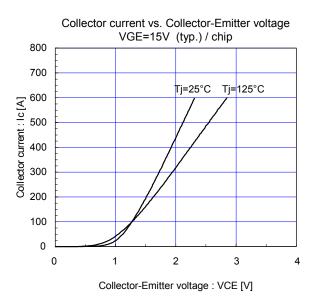
Items	Symbols	Conditions	Characteristics			Units	
items Sym		Conditions	min.	typ.	max.	Ullits	
Thermal resistance (1device)	Rth(j-c)	IGBT	0.08		0.085		
		FWD	-	-	0.14	°C/W	
Contact thermal resistance	Rth(c-f)	with Thermal Compound (*4)	-	0.025	-		

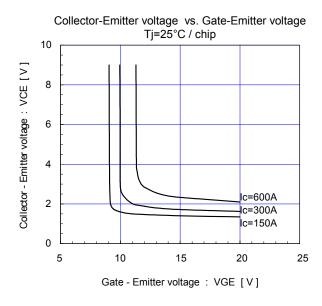
Note *4: This is the value which is defined mounting on the additional cooling fin with thermal compound.

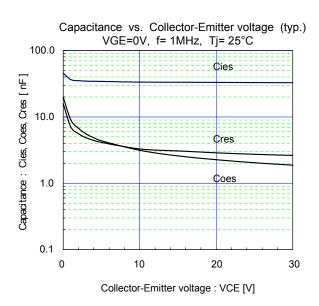
■ Characteristics (Representative)

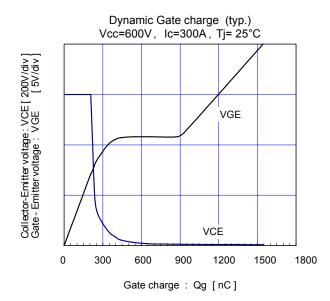


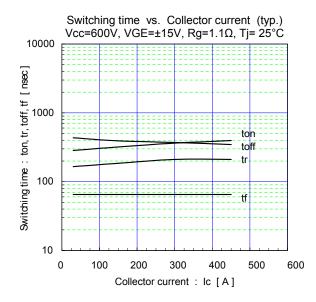


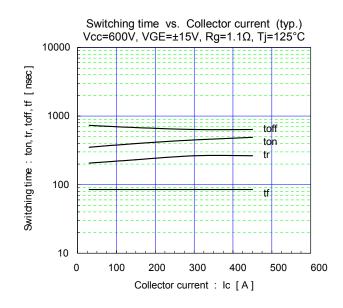


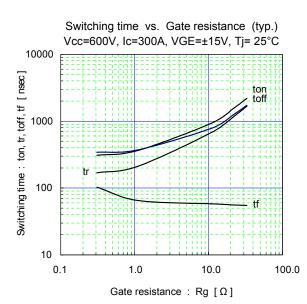


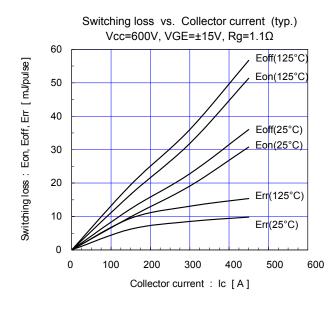


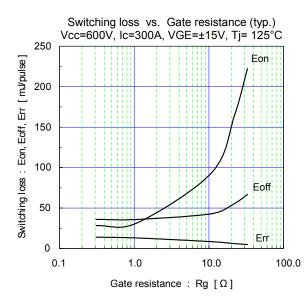


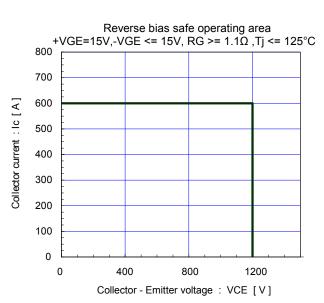


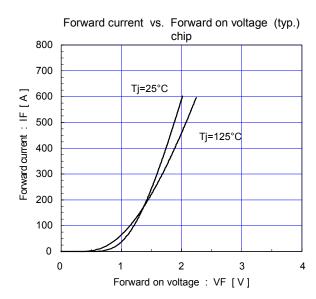


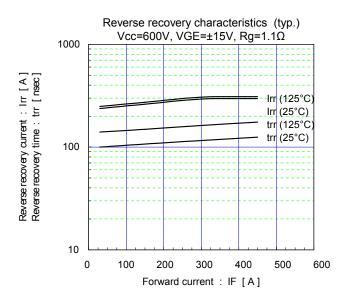


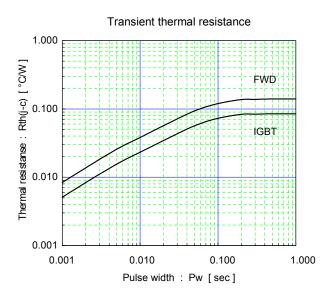




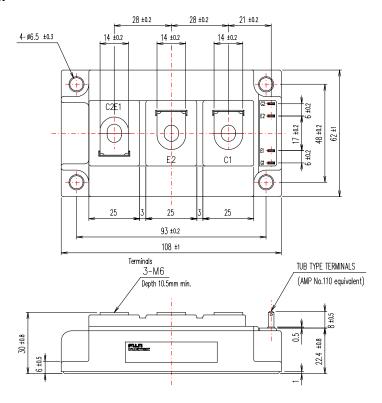




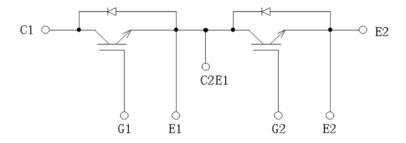




■ Outline Drawings, mm



■ Equivalent Circuit Schematic



WARNING

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- Measurement equipment

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- Audiovisual equipment
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- Personal equipment
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• Traffic-signal control equipment

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- Safety devices

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