

2MBI600U4G-170

IGBT Modules

IGBT MODULE (U series) 1700V / 600A / 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			1700	V	
Gate-Emitter voltage	V _{GES}			±20	V	
Collector current	Ic	Continuous	Tc=25°C	800		
			Tc=80°C	600		
	Icp	1ms	Tc=25°C	1600	^	
			Tc=80°C	1200	Α	
	-lc			600		
	-lc pulse	1ms		1200		
Collector power dissipation	Pc	1 device		3670	W	
Junction temperature	Tj			150	°C	
Storage temperature	Tstg			-40 to +125		
Isolation voltage between terminal and copper base (*1)	Viso	AC: 1min.		: 1min. 3400		
Screw torque (*2)	Mounting			5.75	N m	
	Main Terminals	als		10		
	Sense Terminals	;		2.5		

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

Note *2: Recommendable value: Mounting: 4.25-5.75 Nm (M6), Main Terminals: 8-10 Nm (M8), Sense Terminals: 1.7-2.5 Nm (M4)

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

lto	Cymhala	Symbols Conditions		Characteristics			I I mita
Items	Symbols			min.	typ.	max.	Units
Zero gate voltage collector current	Ices	V _{GE} = 0V, V _{CE} = 1700V		-	-	1.0	mA
Gate-Emitter leakage current	Iges	$V_{CE} = 0V, V_{GE} = \pm 20V$		-	-	1200	nA
Gate-Emitter threshold voltage	V _{GE (th)}	V _{CE} = 20V, I _C = 600mA		5.5	6.5	7.5	V
Collector-Emitter saturation voltage	V _{CE} (sat)	$ V_{GE} = 15V I_{C} = 600A$	Tj=25°C	-	2.43	2.61	V
	(main terminal)		Tj=125°C	-	2.83	-	
	V _{CE} (sat)		Tj=25°C	-	2.25	2.40	
	(chip)		Tj=125°C	-	2.65	-	
Input capacitance	Cies	V _{CE} = 10V, V _{GE} = 0V, f = 1MHz		-	56	-	nF
Turn-on time	ton	$V_{\text{CC}} = 900 \text{V}, I_{\text{C}} = 600 \text{A},$ $V_{\text{GE}} = \pm 15 \text{V}, Tj = 125^{\circ}\text{C},$ $R_{\text{gon}} = 12 \Omega, R_{\text{goff}} = 4.7 \Omega$		-	3.10	-	μs
	tr			-	1.25	-	
Turn-off time	toff			-	1.45	-	
	tf			-	0.25	-	
Forward on voltage	V _F	V _{GE} = 0V I _F = 600A	Tj=25°C	-	1.98	2.36	V
	(main terminal)		Tj=125°C	-	2.18	-	
	V _F		Tj=25°C	-	1.80	2.15	
	(chip)		Tj=125°C	-	2.00	-	
Reverse recovery time	trr	I _F = 600A	, -	-	0.45	-	μs
Lead resistance, terminal-chip (*3)	R lead			-	0.29	-	mΩ

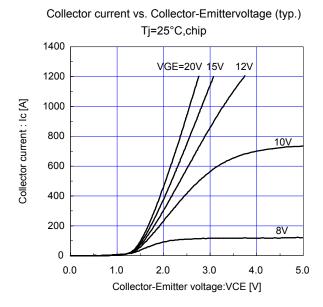
Note *3: Biggest internal terminal resistance among arm.

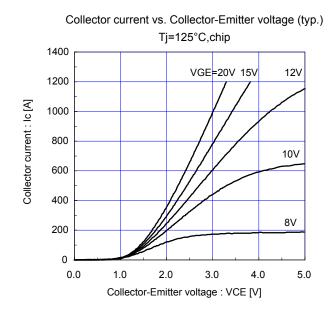
Thermal resistance characteristics

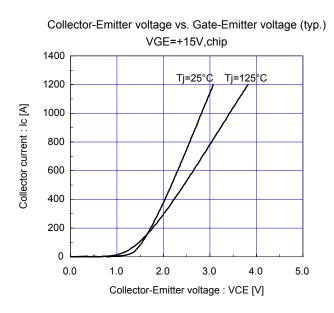
Items	Symbols	Conditions	Characteristics			Units	
		Conditions	min.	typ.	max.	UIIIIS	
Thermal resistance (1device)	Rth(j-c)	IGBT	-	-	0.034		
		FWD	-	-	0.060	°C/W	
Contact thermal resistance (1device)	Rth(c-f)	with Thermal Compound (*4)	-	0.006	-		

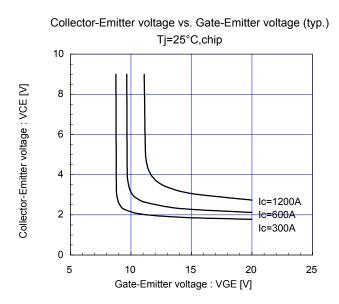
Note *4: This is the value which is defined mounting on the additional cooling fin with thermal compound.

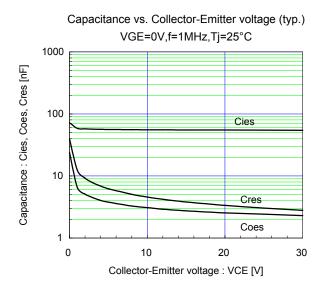
■ Characteristics (Representative)

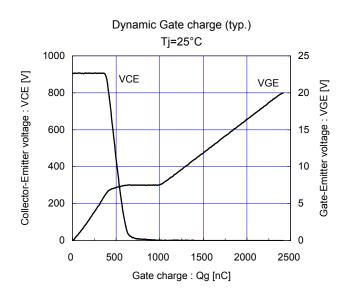




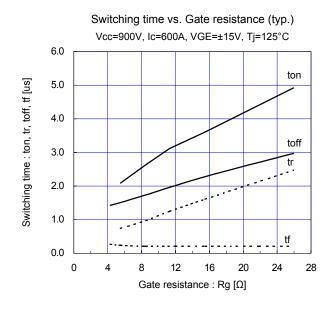


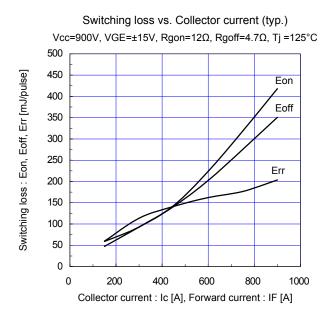


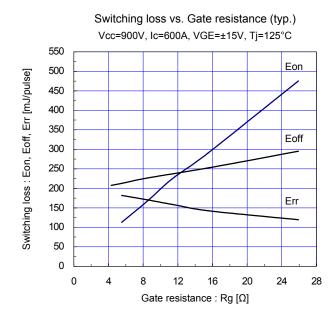


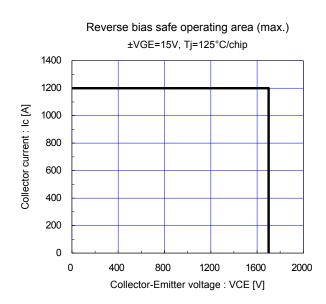


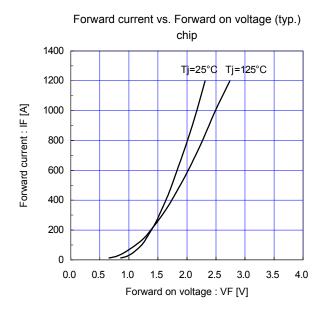
Switching time vs. Collector current (typ.) Vcc=900V, VGE= \pm 15V, Rgon=12 Ω , Rgoff=4.7 Ω , Tj=125°C 4.0 ton 3.5 Switching time: ton, tr, toff, tf [us] 3.0 2.5 2.0 tr 1.5 toff 1.0 0.5 tf 0.0 0 200 1000 400 600 800 Collector current : Ic [A]

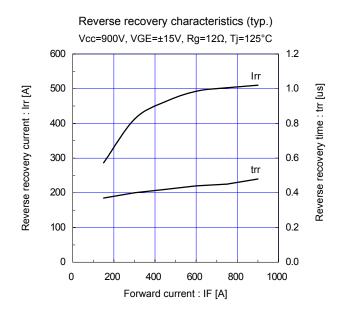


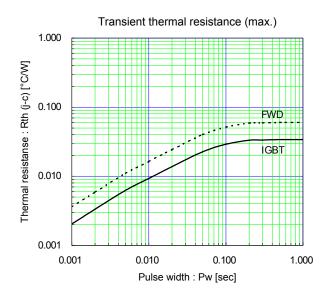




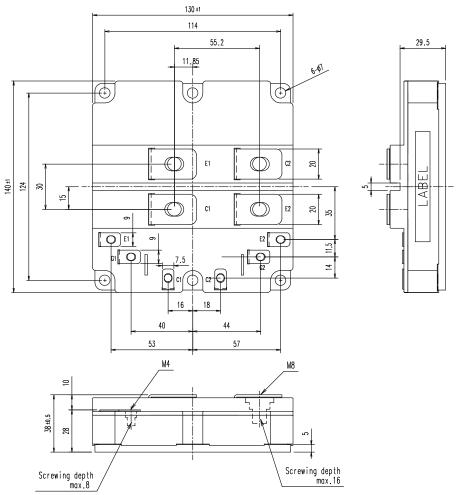




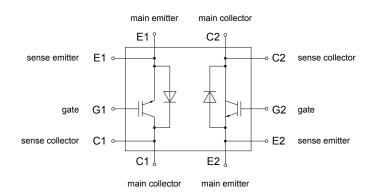




■ Outline Drawings, mm



■ Equivalent Circuit Schematic



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- Measurement equipment

- Machine tools
- Audiovisual equipment
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- Personal equipment · Industrial robots etc.
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• Traffic-signal control equipment

- · Gas leakage detectors with an auto-shut-off feature
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- · Safety devices

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