

1MBI1600U4C-120

IGBT Modules

IGBT MODULE (U series) 1200V / 1600A / 1 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

FARD

■ 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		Tc=25°C	1600		
			Tc=80°C	1600		
	Ic pulse	1ms	Tc=25°C	3200	Α	
			Tc=80°C	3200	A	
	-lc			1600		
	-lc pulse	1ms		3200		
Collector power dissipation	Pc	1 device		9610	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)			5.75	N·m	
	Main Terminals (*2)			10		
	Sense Terminals (*2)			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 N·m (M6), Main Terminal : 8-10 N·m (M8), Sense Terminal : 1.7-2.5 N·m (M4)

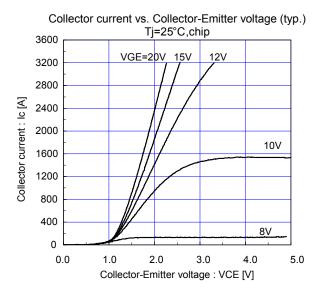
● Electrical characteristics (at Tj= 25°C unless otherwise specified)

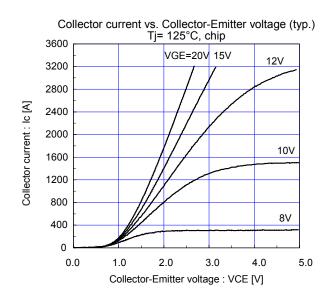
Home	Cympholo	Symbols Conditions		Characteristics			I I mita
Items	Symbols			min.	typ.	max.	Units
Zero gate voltage collector current	Ices	V _{GE} = 0V, V _{CE} = 1200V		-	-	1.0	mA
Gate-Emitter leakage current	Iges	$V_{CE} = 0V$, $V_{GE} = \pm 20V$		-	-	3200	nA
Gate-Emitter threshold voltage	V _{GE (th)}	V _{CE} = 20V, I _C = 1600mA		5.5	6.5	7.5	V
Collector-Emitter saturation voltage	V _{CE} (sat)) V _{GE} = 15V	Tj=25°C	-	2.11	2.29	V
	(main terminal)		Tj=125°C	-	2.31	-	
	V _{CE} (sat)	Ic = 1600A	Tj=25°C	-	1.90	2.05	V
	(chip)		Tj=125°C	-	2.10	-	1
Input capacitance	Cies	V _{GE} = 0V, V _{CE} = 10V, f = 1MHz		-	180	-	nF
Turn-on time	ton	V_{CC} = 600V, I_{C} = 1600A V_{GE} = ±15V, T_{j} = 125°C R_{gon} = 1.5 Ω , R_{goff} = 0.75 Ω		-	0.90	-	μs
	tr			-	0.50	-	
Turn-off time	toff			-	0.80	-	
	tf			-	0.20	-	
Forward on voltage	VF		Tj=25°C	-	1.86	2.04	V
	(main terminal)	V _{GE} = 0V I _F = 1600A	Tj=125°C	-	1.96	-	
	V _F		Tj=25°C	-	1.65	1.80	
	(chip)		Tj=125°C	-	1.75	-	
Reverse recovery time	trr	I _F = 1600A		-	0.35	-	μs
Lead resistance, terminal-chip	R lead			-	0.13	-	mΩ

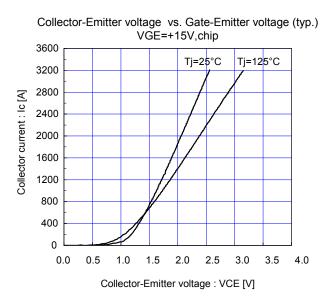
Thermal resistance characteristics

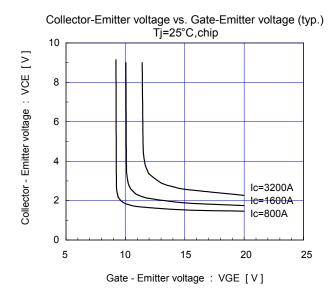
Items	Symbols	Conditions	Characteristics			Units	
		Conditions	min.	typ.	max.	UIIIIS	
Thermal resistance (1device)	Rth(j-c)	IGBT	-	-	0.013		
		FWD	-	-	0.023	°C/W	
Contact thermal resistance (1device)	Rth(c-f)	with Thermal Compound (*3)	- 0.006 -		-		

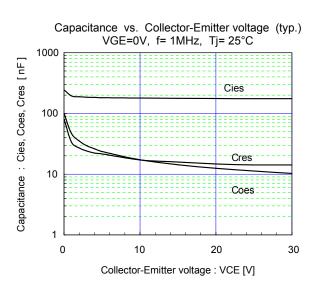
■ Characteristics (Representative)

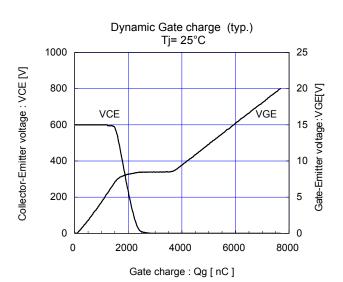


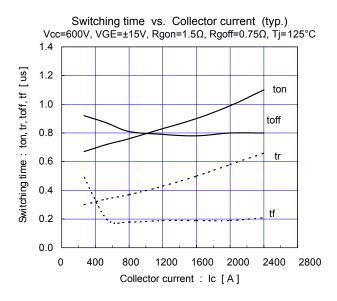


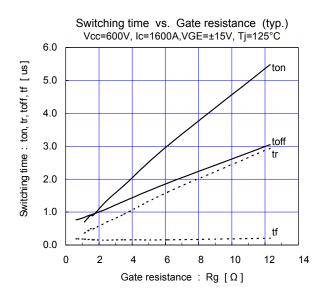


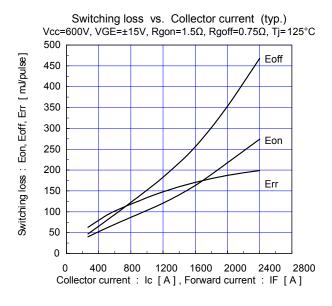


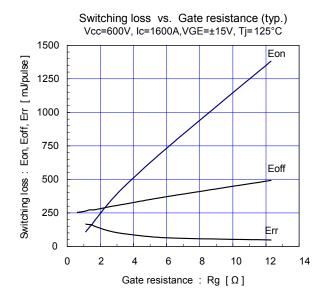


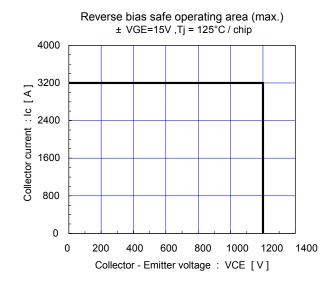


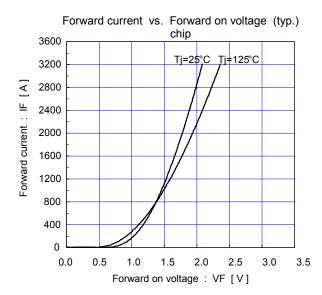


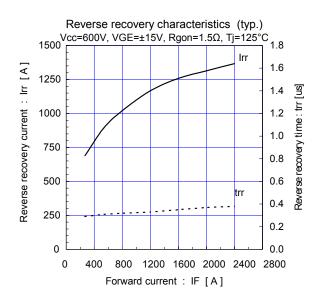


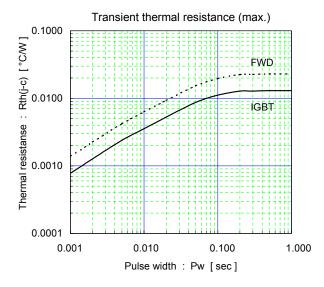




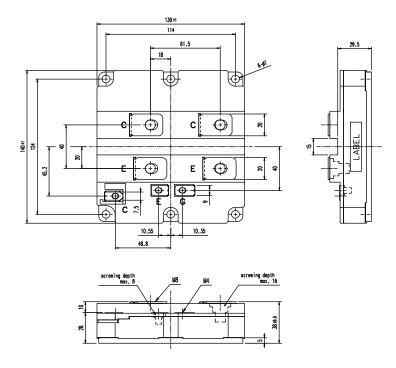




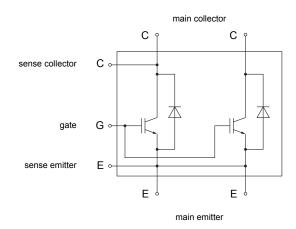




■ Outline Drawings, mm



■ Equivalent Circuit Schematic



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- Communications equipment (terminal devices)
- Measurement equipment

- Machine tools
- Audiovisual equipment
- Electrical home appliances
- Personal equipment
- Industrial robots etc.
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