

1MBI2400U4D-120

IGBT MODULE (U series) 1200V / 2400A / 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

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	Vges			±20	V	
Collector current	lc	Continuouo	Tc=25°C	3600		
		Continuous	Tc=80°C	2400		
	Ic pulse	1ms	Tc=25°C	7200	^	
			Tc=80°C	4800	A	
	-lc			2400		
	-Ic pulse	1ms		4800		
Collector power dissipation	Pc	1 device		14700	W	
Junction temperature	Тј			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)

Harris	Or make a la	Symbols Conditions		Characteristics			11
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	$V_{CE} = 0V, V_{GE} = \pm 20V$		-	-	4800	nA
Gate-Emitter threshold voltage	V _{GE (th)}	V _{CE} = 20V, I _c = 2400mA		5.5	6.5	7.5	V
Collector-Emitter saturation voltage	V _{CE (sat)}	al) V _{GE} = 15V I _c = 2400A	Tj=25°C	-	2.11	2.29	V
	(main terminal)		Tj=125°C	-	2.31	-	
	V _{CE (sat)}		Tj=25°C	-	1.90	2.05	
	(chip)		Tj=125°C	-	2.10	-	
Input capacitance	Cies	V _{GE} = 0V, V _{CE} = 10V, f = 1MHz		-	270	-	nF
Turn-on time	ton		-	0.90	-	μs	
	tr	$V_{cc} = 600V, I_c = 2400A$	-	0.50	-		
Turn-off time	toff	$V_{GE} = \pm 15V, Tj = 125^{\circ}C$ $R_{gon} = 1\Omega, R_{goff} = 0.5\Omega$	-	0.80	-		
	tf	- 11gon - 1122, 11gon - 0.012	-	0.20	-		
Forward on voltage	VF) V _{GE} = 0V I _F = 2400A	Tj=25°C	-	1.86	2.04	V
	(main terminal)		Tj=125°C	-	1.96	-	
	VF		Tj=25°C	-	1.65	1.80	
	(chip)		Tj=125°C	-	1.75	-	
Reverse recovery time	trr	IF = 2400A		-	0.35	-	μs
Lead resistance, terminal-chip	R lead			-	0.089	-	mΩ

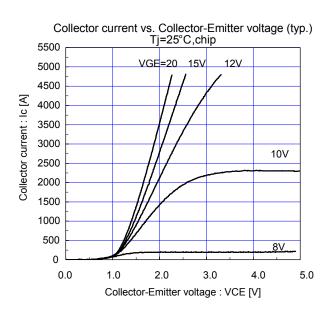
Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics			Units
items		Conditions	min.	typ.	max.	Units
Thermal resistance (1device)	Rth(j-c)	IGBT	-	-	0.0085	°C/W
		FWD	-	-	0.015	
Contact thermal resistance (1device)	Rth(c-f)	with Thermal Compound (*3)	-	0.004	-	

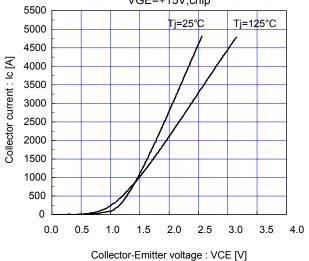
Note *3: This is the value which is defined mounting on the additional cooling fin with thermal compound.

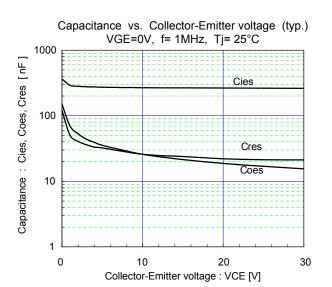


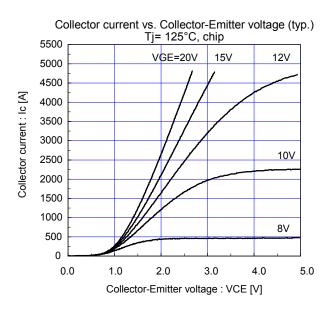
Characteristics (Representative)



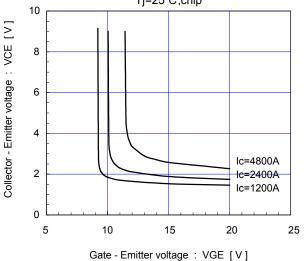
Collector-Emitter voltage vs. Gate-Emitter voltage (typ.) VGE=+15V,chip

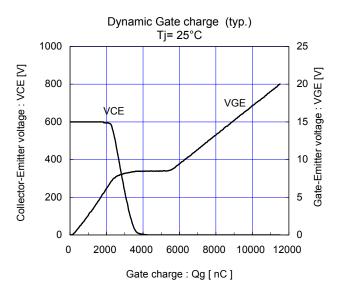


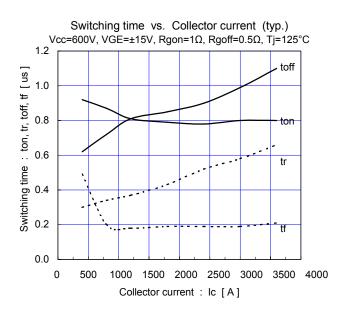


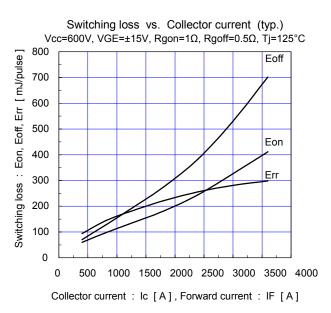


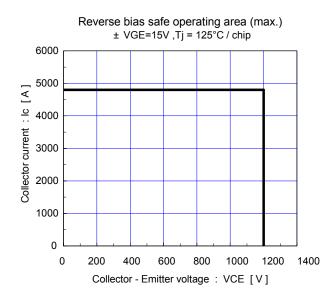
Collector-Emitter voltage vs. Gate-Emitter voltage (typ.) Tj=25°C,chip

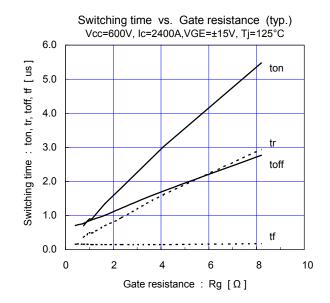




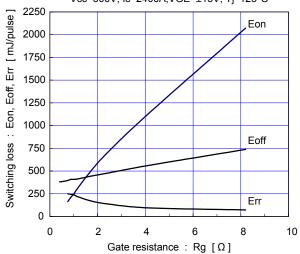




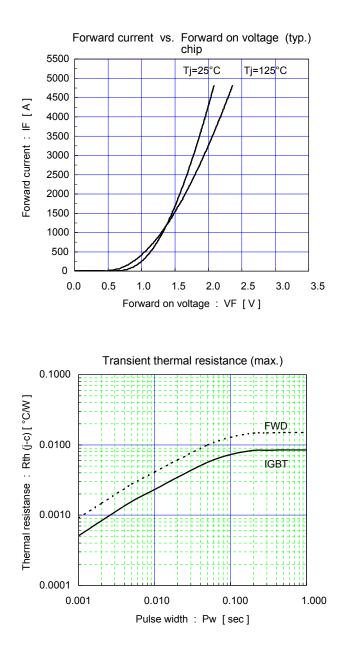


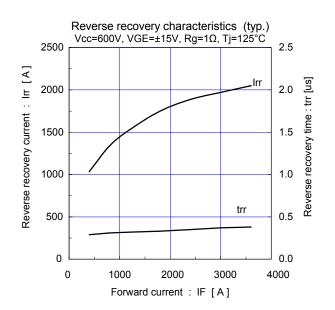


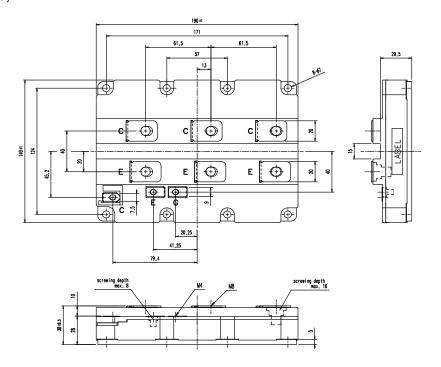
Switching loss vs. Gate resistance (typ.) Vcc=600V, lc=2400A,VGE=±15V, Tj=125°C



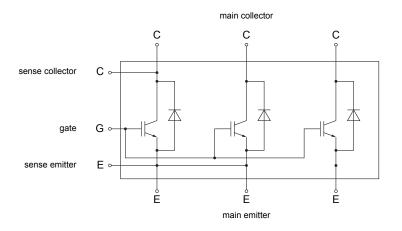








Equivalent Circuit Schematic



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