

2MBI200UC-120

IGBT Modules

IGBT MODULE (U series) 1200V / 200A / 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	V _{CES}		1200	V
Gate-Emitter voltage	V _{GES}		±20	V
Collector current	I _C	Continuous	Tc=25°C 300	A
			Tc=80°C 200	
	I _C pulse	1ms	Tc=25°C 600	
			Tc=80°C 400	
	-I _C		200	
	-I _C pulse		400	
Collector power dissipation	P _C	1 device	1040	W
Junction temperature	T _J		150	°C
Storage temperature	T _{stg}		-40 to +125	°C
Isolation voltage	Between terminal and copper base (*1)		V _{ISO}	VAC
Screw torque	Mounting (*2)		3.5	N·m
	Terminals (*2)		4.5	

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	Symbols	Conditions	Characteristics			Units
			min.	typ.	max.	
Zero gate voltage collector current	I _{CES}	V _{GE} = 0V, V _{CE} = 1200V	-	-	2.0	mA
Gate-Emitter leakage current	I _{GES}	V _{CE} = 0V, V _{GE} = ±20V	-	-	400	nA
Gate-Emitter threshold voltage	V _{GE(th)}	V _{CE} = 20V, I _C = 200mA	4.5	6.5	8.5	V
Collector-Emitter saturation voltage	V _{CE(sat)} (terminal)	V _{GE} = 15V I _C = 200A	Tj=25°C	1.85	2.20	V
			Tj=125°C	2.10	-	
	V _{CE(sat)} (chip)		Tj=25°C	1.75	2.10	
			Tj=125°C	2.00	-	
Input capacitance	C _{ies}	V _{GE} = 0V, V _{CE} = 10V, f = 1MHz	-	22	-	nF
Turn-on time	t _{on}	V _{CC} = 600V I _C = 200A V _{GE} = ±15V R _G = 3Ω	-	0.36	1.20	μs
	t _r		-	0.21	0.60	
	t _{r(i)}		-	0.03	-	
Turn-off time	t _{off}		-	0.37	1.00	
	t _f		-	0.07	0.30	
Forward on voltage	V _F (terminal)	V _{GE} = 0V I _F = 200A	Tj=25°C	1.70	2.00	V
			Tj=125°C	1.80	-	
	V _F (chip)		Tj=25°C	1.60	1.90	
			Tj=125°C	1.70	-	
Reverse recovery time	t _{rr}	I _F = 200A	-	-	0.35	μs
Lead resistance, terminal-chip (*3)	R lead		-	0.53	-	mΩ

Note *3: Biggest internal terminal resistance among arm.

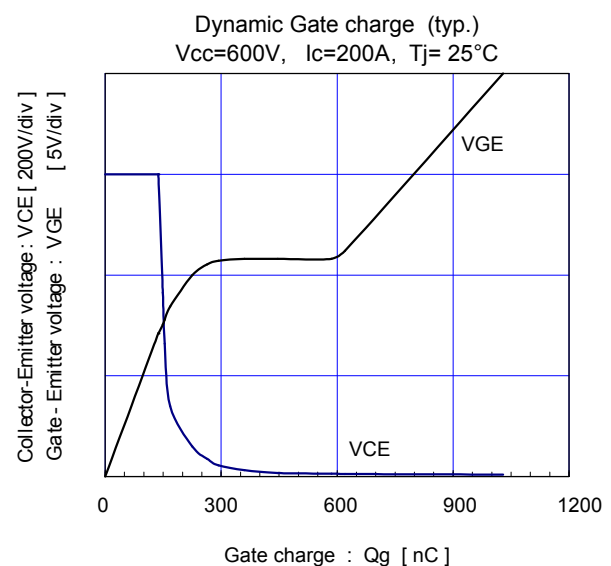
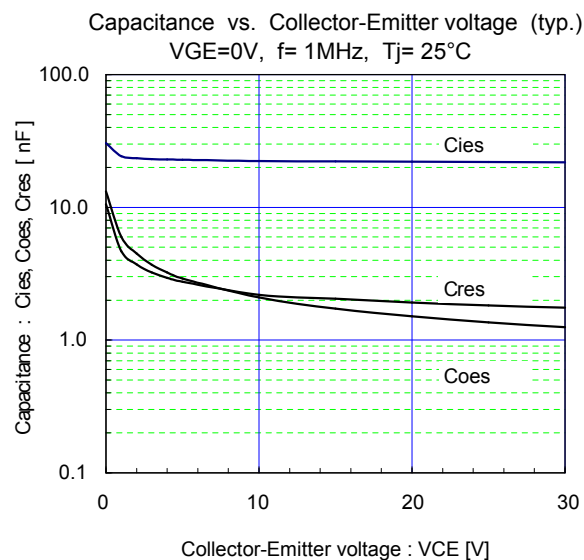
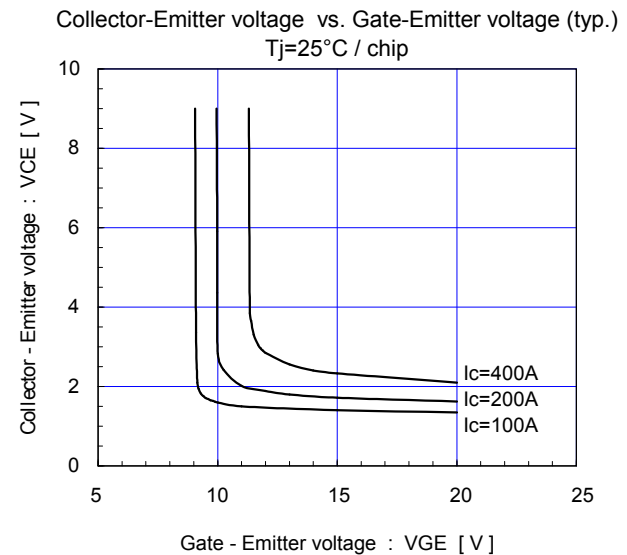
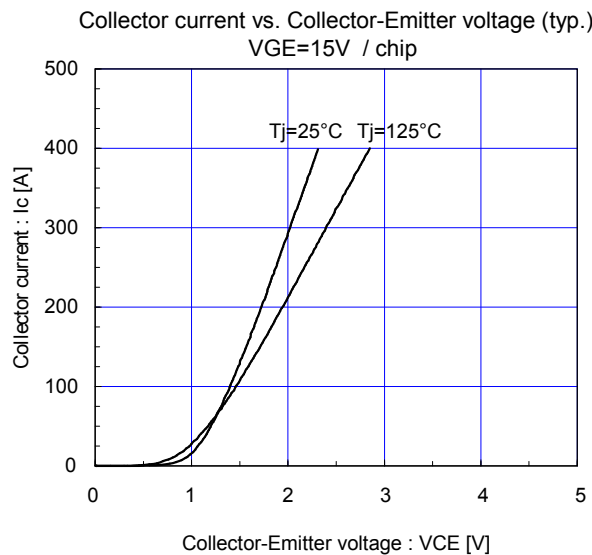
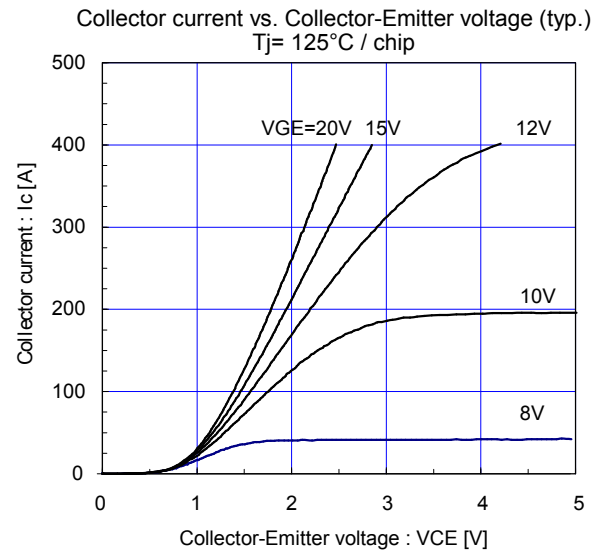
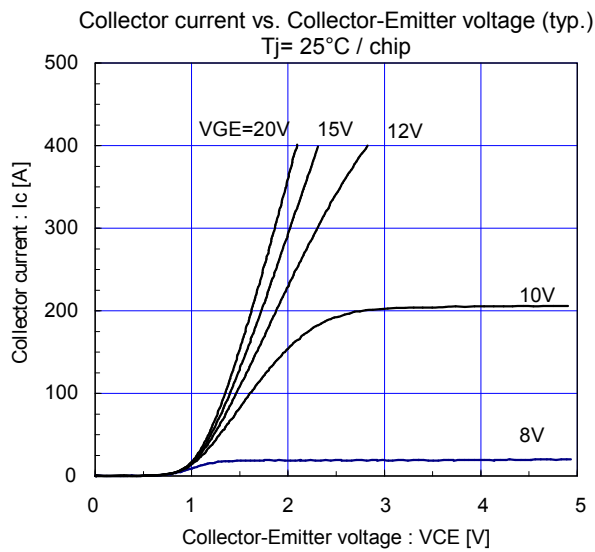
● Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	max.	
Thermal resistance (1device)	R _{th(j-c)}	IGBT	-	-	0.12	°C/W
		FWD	-	-	0.20	
Contact thermal resistance	R _{th(c-f)}	with Thermal Compound (*4)	-	0.025	-	

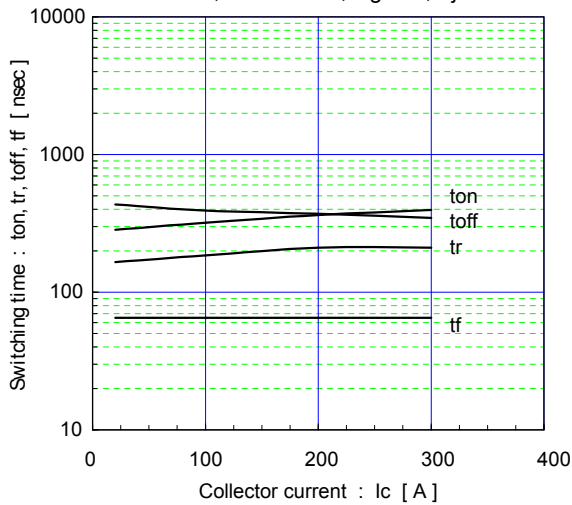
Note *4: This is the value which is defined mounting on the additional cooling fin with thermal compound.



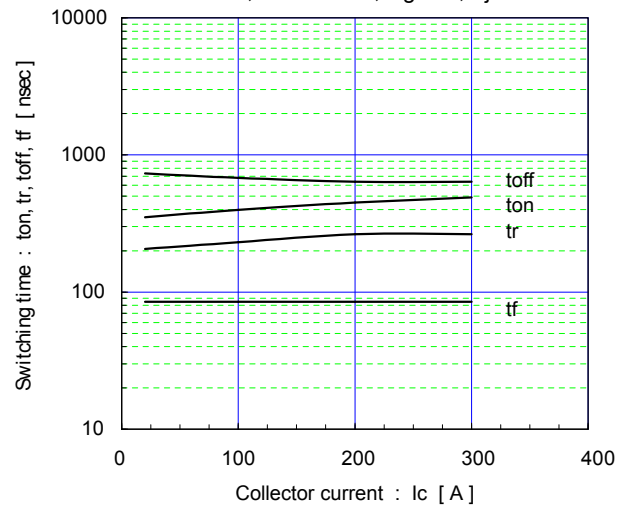
■ Characteristics (Representative)



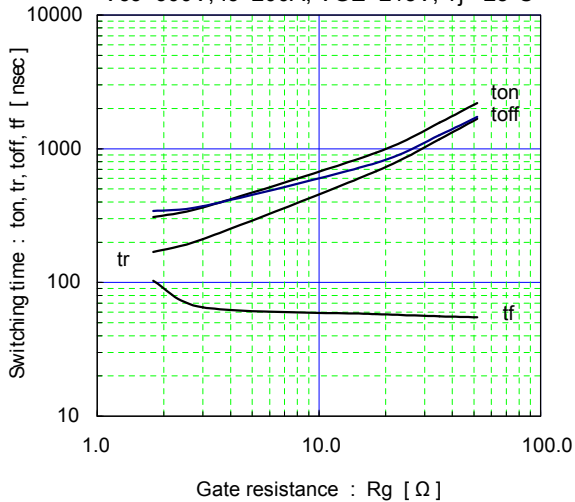
Switching time vs. Collector current (typ.)
 $V_{cc}=600V$, $V_{GE}=\pm 15V$, $R_g=3\Omega$, $T_j=25^\circ C$



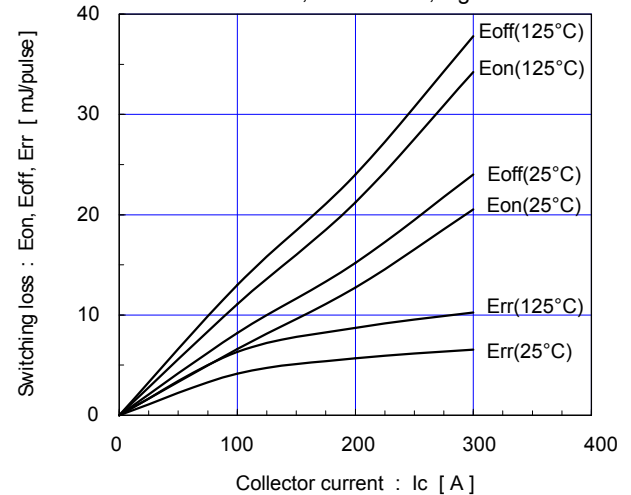
Switching time vs. Collector current (typ.)
 $V_{cc}=600V$, $V_{GE}=\pm 15V$, $R_g=3\Omega$, $T_j=125^\circ C$



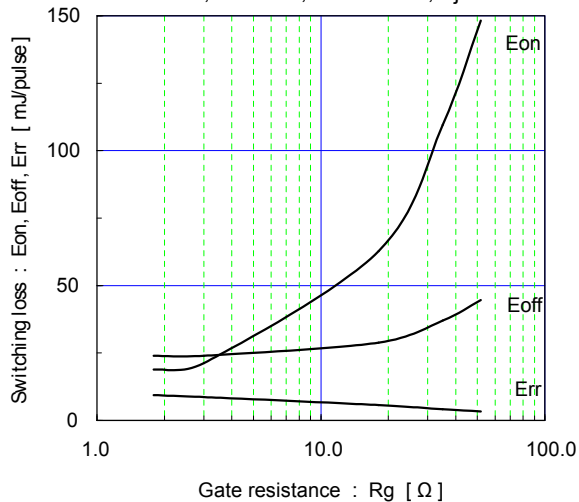
Switching time vs. Gate resistance (typ.)
 $V_{cc}=600V$, $I_c=200A$, $V_{GE}=\pm 15V$, $T_j=25^\circ C$



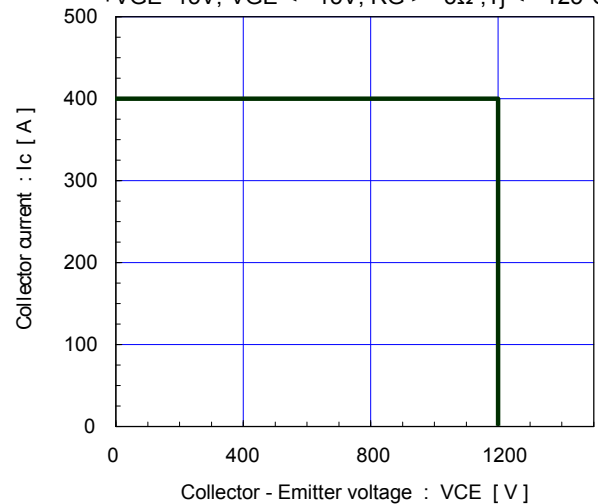
Switching loss vs. Collector current (typ.)
 $V_{cc}=600V$, $V_{GE}=\pm 15V$, $R_g=3\Omega$

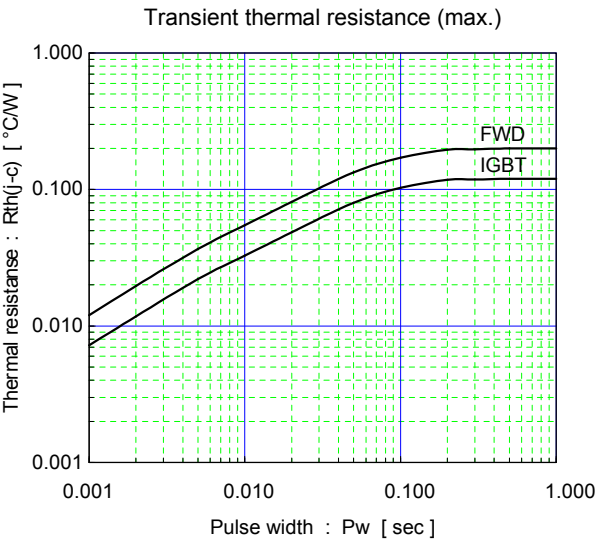
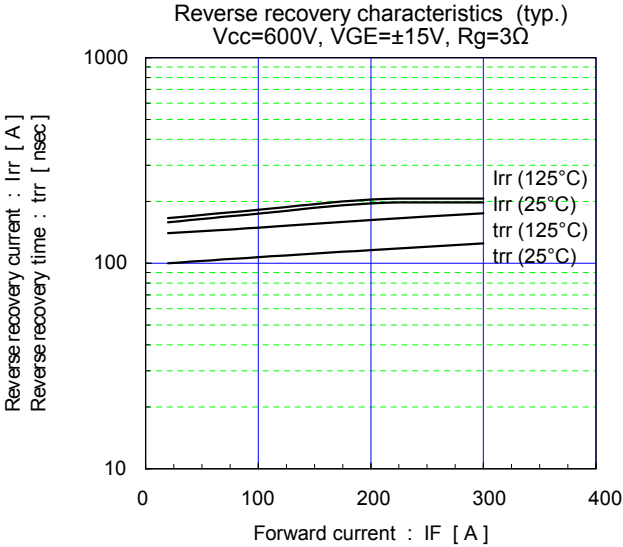
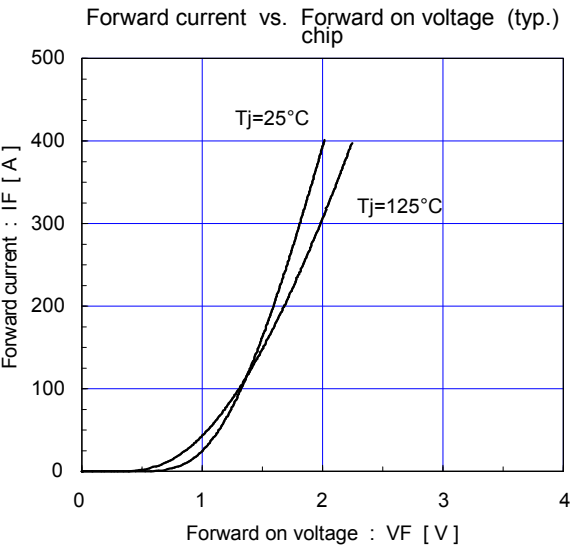


Switching loss vs. Gate resistance (typ.)
 $V_{cc}=600V$, $I_c=200A$, $V_{GE}=\pm 15V$, $T_j=125^\circ C$

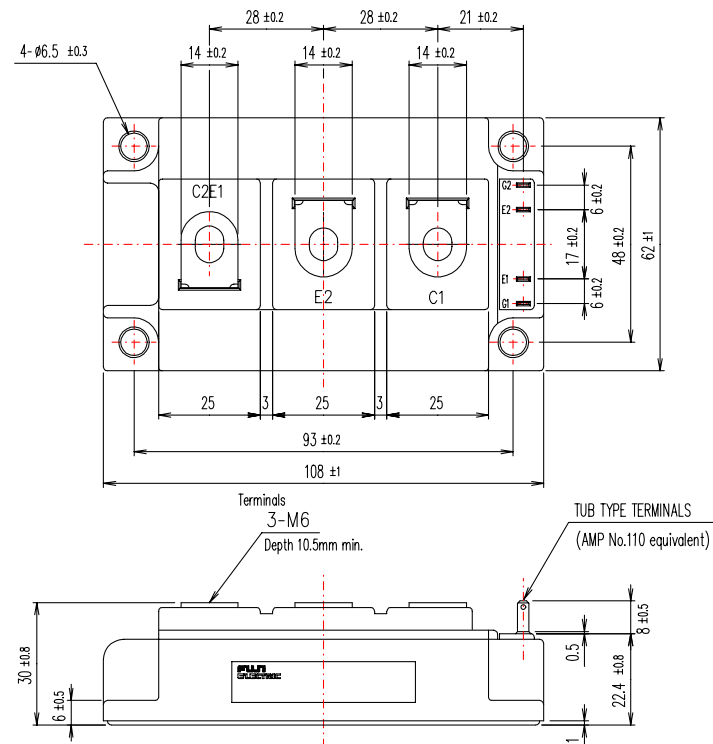


Reverse bias safe operating area (max.)
 $+V_{GE}=15V$, $-V_{GE} \leq 15V$, $R_g \geq 3\Omega$, $T_j \leq 125^\circ C$

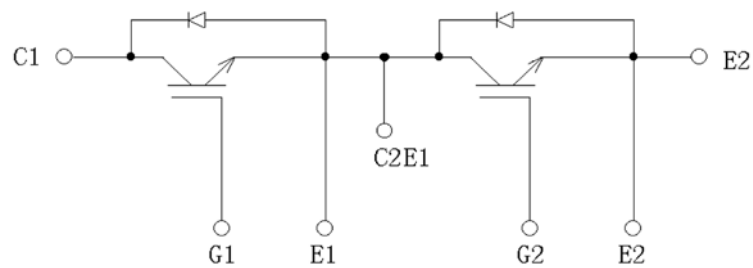




Outline Drawings, mm



Equivalent Circuit Schematic



WARNING

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