

2MBI200SB-120

IGBT Modules

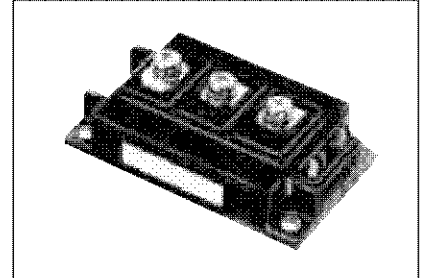
IGBT MODULE (S series) 1200V / 200A / 2 in one package

■ 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	T _c =25°C	300	A
			T _c =80°C	200	
	I _c pulse	1ms	T _c =25°C	600	
			T _c =80°C	400	
	-I _c			200	
	-I _c pulse	1ms		400	
Collector power dissipation	P _c	1 device		1500	W
Junction temperature	T _J			150	°C
Storage temperature	T _{stg}			-40 to +125	°C
Isolation voltage (*1)	V _{iso}	AC : 1min.		2500	V
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}	$V_{GE} = 0V, V_{CE} = 1200V$	-	-	1.0	mA
Gate-Emitter leakage current	I_{GES}	$V_{CE} = 0V, V_{GE} = \pm 20V$	-	-	0.4	μA
Gate-Emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = 20V, I_c = 200mA$	5.5	7.2	8.5	V
Collector-Emitter saturation voltage	$V_{CE(sat)}$	$V_{GE} = 15V$ $I_c = 200A$	Tj=25°C	2.3	2.6	V
			Tj=125°C	2.8	-	
Input capacitance	Cies	$V_{GE} = 0V$	-	24000	-	pF
Output capacitance	Coes	$V_{CE} = 10V$	-	5000	-	
Reverse transfer capacitance	Cres	f = 1MHz	-	4400	-	
Turn-on time	ton	$V_{CC} = 600V$ $I_c = 200A$	-	0.35	1.2	μs
	tr		-	0.25	0.6	
	tr (i)		-	0.1	-	
Turn-off time	toff	$V_{GE} = \pm 15V$ $R_\theta = 4.7\Omega$	-	0.45	1.0	
	tf		-	0.08	0.3	
			-			
Forward on voltage	V_f	$I_f = 200A$	Tj=25°C	2.3	3.0	V
			Tj=125°C	2.0	-	
Reverse recovery time	trr	$I_f = 200A$	-	-	0.35	μs

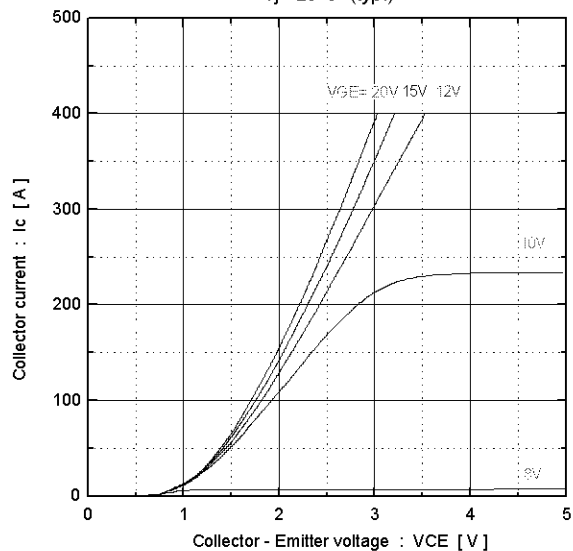
● Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	max.	
Thermal resistance (1device)	Rth(j-c)	IGBT	-	-	0.085	°C/W
		FWD	-	-	0.18	
Contact thermal resistance	Rth(c-f)	with Thermal Compound (*3)	-	0.025	-	

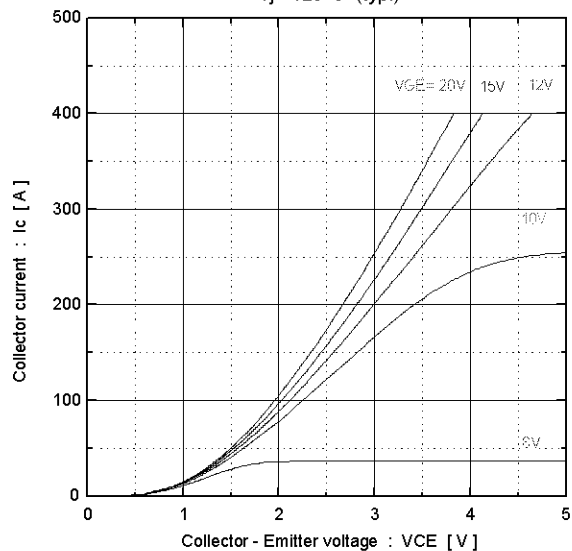
Note *3: This is the value which is defined mounting on the additional cooling fin with thermal compound.

■ Characteristics (Representative)

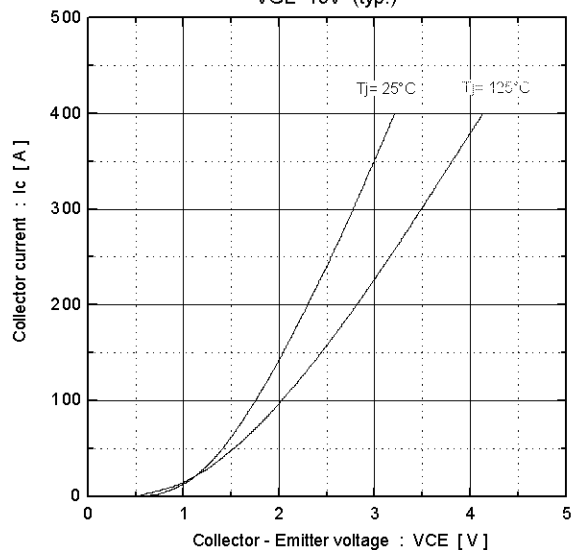
Collector current vs. Collector-Emitter voltage
T_J = 25°C (typ.)



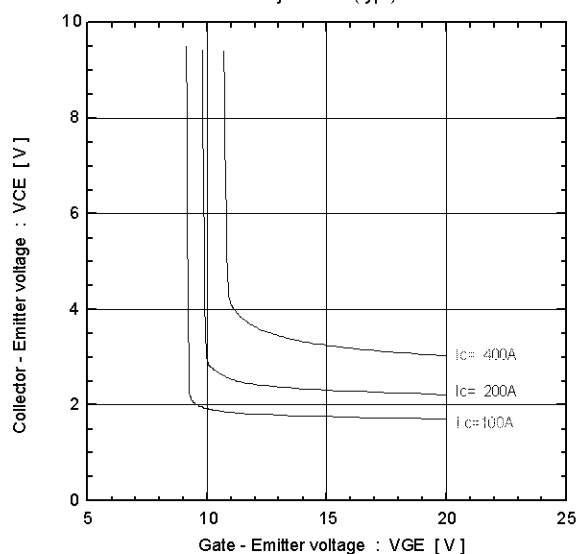
Collector current vs. Collector-Emitter voltage
T_J = 125°C (typ.)



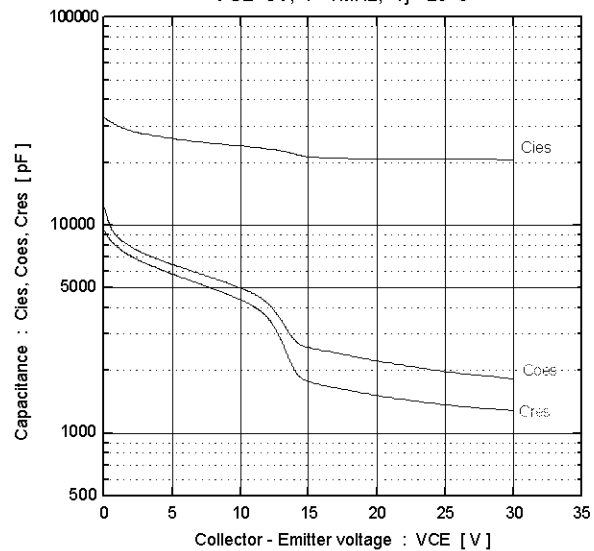
Collector current vs. Collector-Emitter voltage
VGE = 15V (typ.)



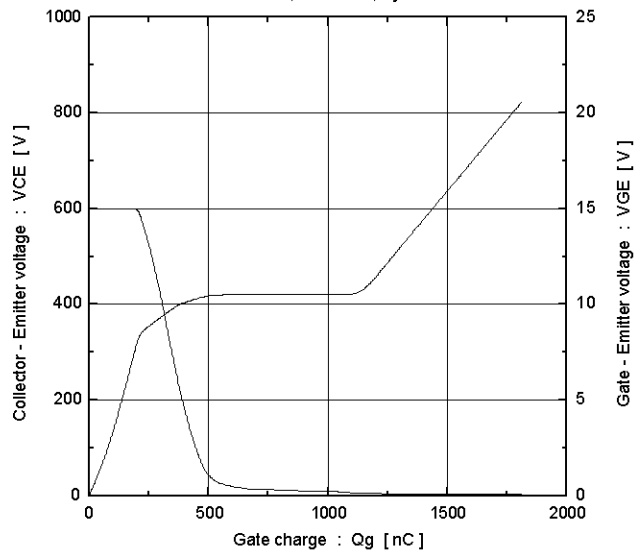
Collector-Emitter voltage vs. Gate-Emitter voltage
T_J = 25°C (typ.)

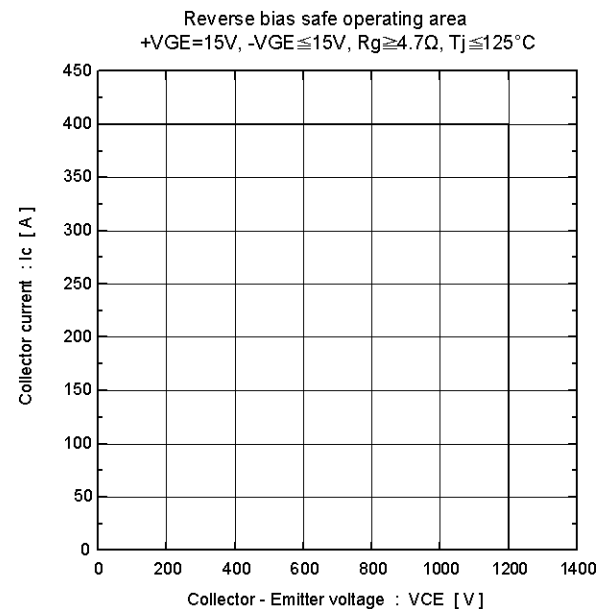
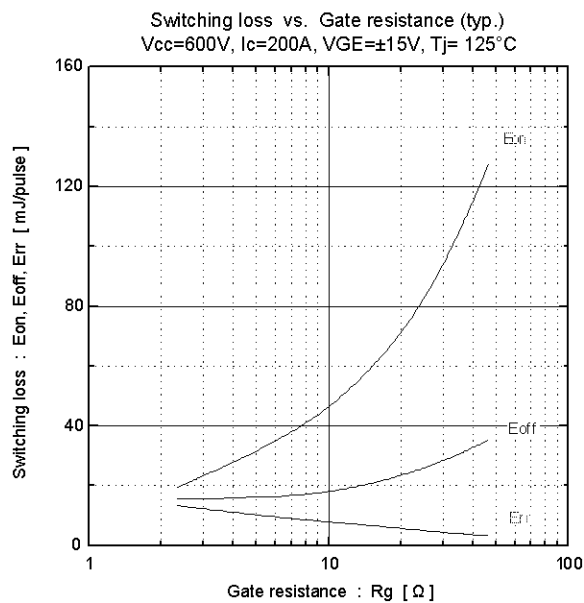
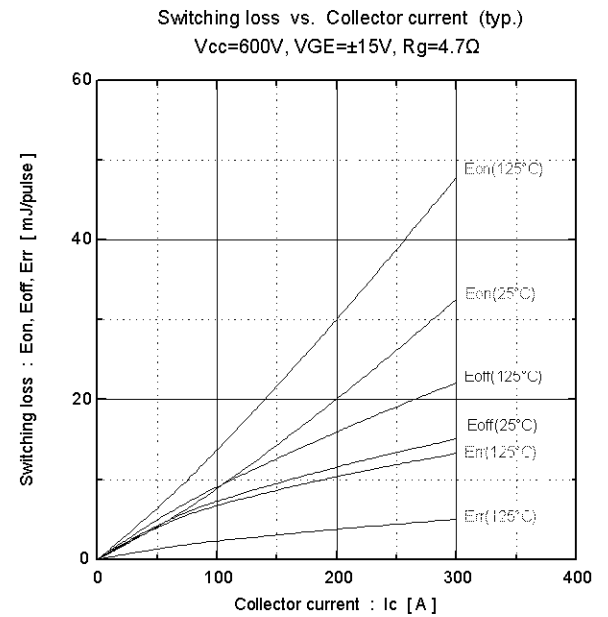
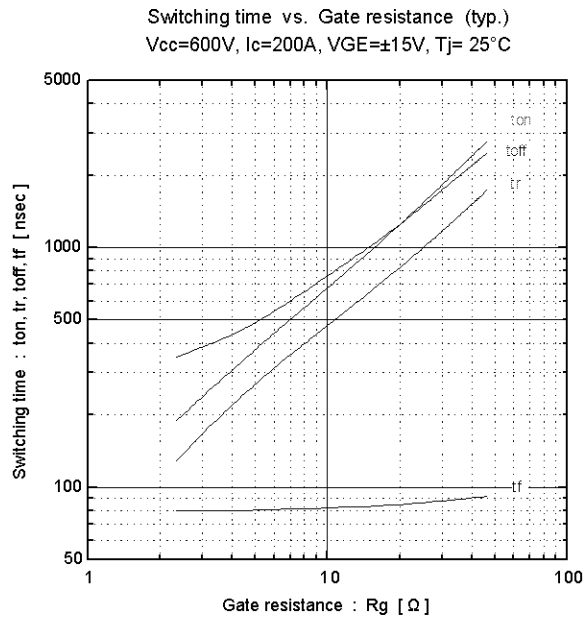
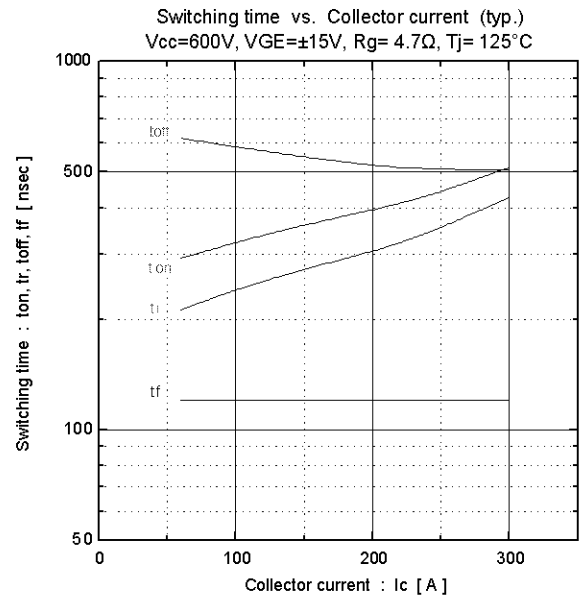
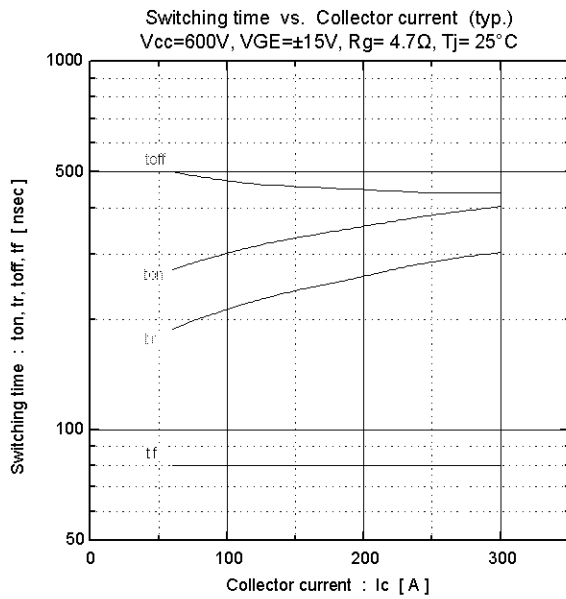


Capacitance vs. Collector-Emitter voltage (typ.)
VGE = 0V, f = 1MHz, T_J = 25°C

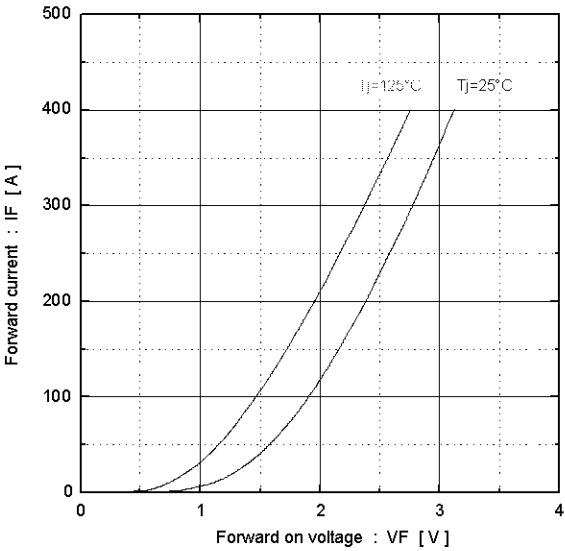


Dynamic Gate charge (typ.)
VCC = 600V, Ic = 200A, T_J = 25°C

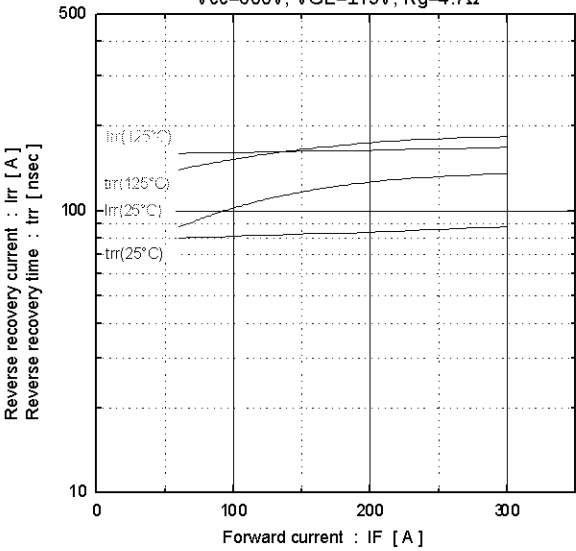




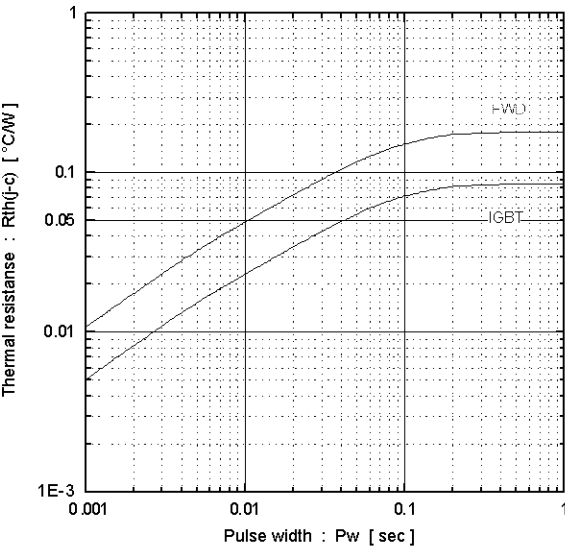
Forward current vs. Forward on voltage (typ.)



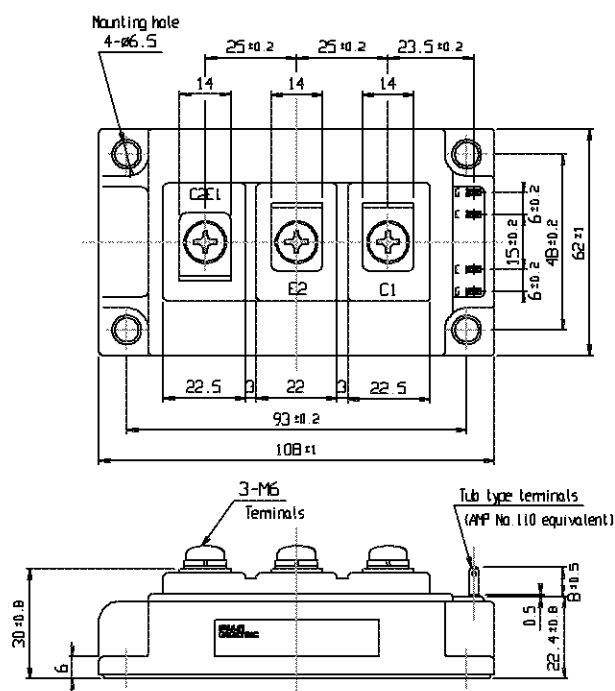
Reverse recovery characteristics (typ.)
Vcc=600V, VGE=±15V, Rg=4.7Ω



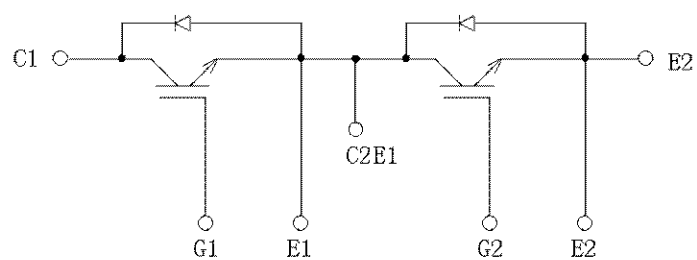
Transient thermal resistance



■ Outline Drawings, mm



■ Equivalent Circuit Schematic



WARNING

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