e-Front runners

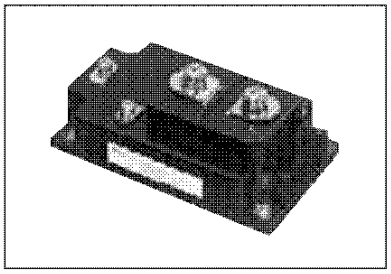
1MBI200S-120

IGBT Modules

IGBT MODULE (S series)
1200V / 200A / 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	V_{CES}			1200	V
Gate-Emitter voltage	V_{GES}			±20	V
Collector current	Ic	Continuous	Tc=25°C	300	A
			Tc=80°C	200	
	Ic pulse	1ms	Tc=25°C	600	
			Tc=80°C	400	
	-Ic			200	
	-Ic pulse	1ms		400	
Collector power dissipation	Pc	1 device		1500	W
Junction temperature	Tj			150	°C
Storage temperature	Tstg			-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	
	Terminals (*2)			1.7	

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), Terminal : 3.5+-4.5 N·m (M6), 1.3+-1.7 N·m (M4)

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

Items	Symbols	Conditions		Characteristics min.	Characteristics typ.	Characteristics max.	Units
Zero gate voltage collector current	I_{CES}	V_{GE} = 0V, V_{CE} = 1200V		-	-	4.0	mA
Gate-Emitter leakage current	I_{GES}	V_{CE} = 0V, V_{GE} = ±20V		-	-	0.8	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, V_{CE} = 10V, f = 1MHz		-	24000	-	pF
Output capacitance	Coes			-	5000	-	
Reverse transfer capacitance	Cres			-	4400	-	
Turn-on time	ton	V_{CC} = 600V, I_C = 200A, V_{GE} = ±15V, R_G = 4.7Ω		-	0.35	1.2	μs
	tr			-	0.25	0.6	
	tr (i)			-	0.1	-	
Turn-off time	toff			-	0.45	1.0	
	tf			-	0.08	0.3	
Forward on voltage	V_F	I_F = 200A	Tj=25°C	-	2.7	3.5	V
			Tj=125°C	-	2.4	-	
Reverse recovery time	trr	I_F = 200A		-	-	0.35	μs

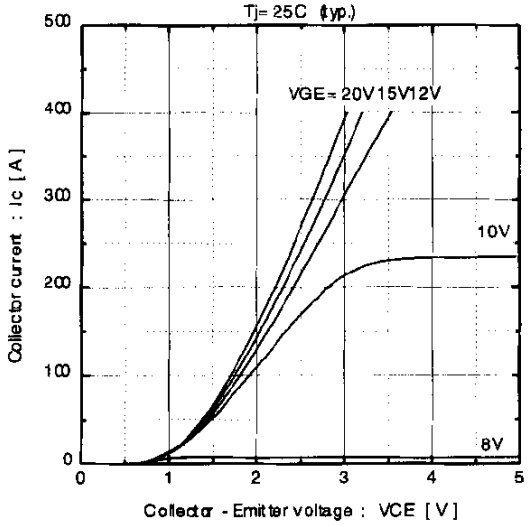
● Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics min.	Characteristics typ.	Characteristics max.	Units
Thermal resistance (1device)	Rth(j-c)	IGBT	-	-	0.085	°C/W
		FWD	-	-	0.22	
Contact thermal resistance	Rth(c-f)	with Thermal Compound (*3)	-	0.0125	-	

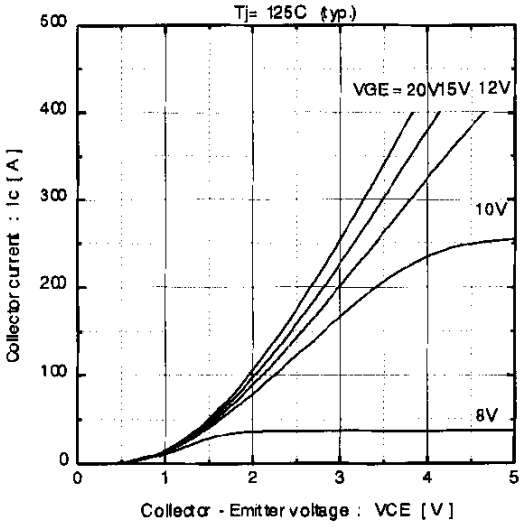
Note *3: This is the value which is defined mounting on the additional cooling fin with thermal compound.

Characteristics (Representative)

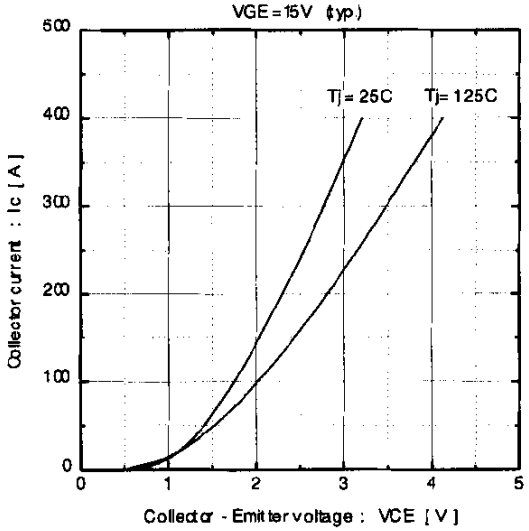
Collector current vs. Collector-Emitter voltage
Tj= 25C (typ.)



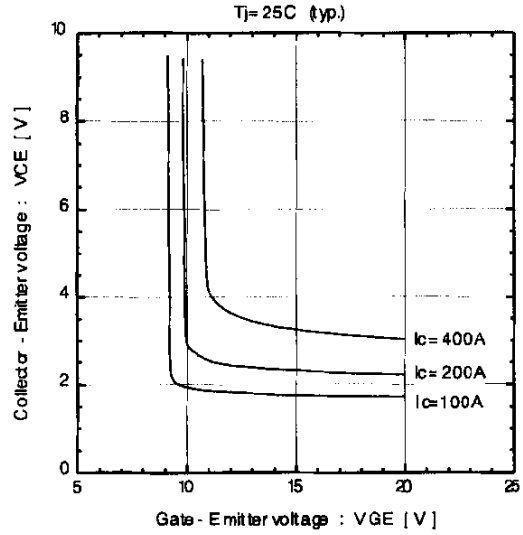
Collector current vs. Collector-Emitter voltage
Tj= 125C (typ.)



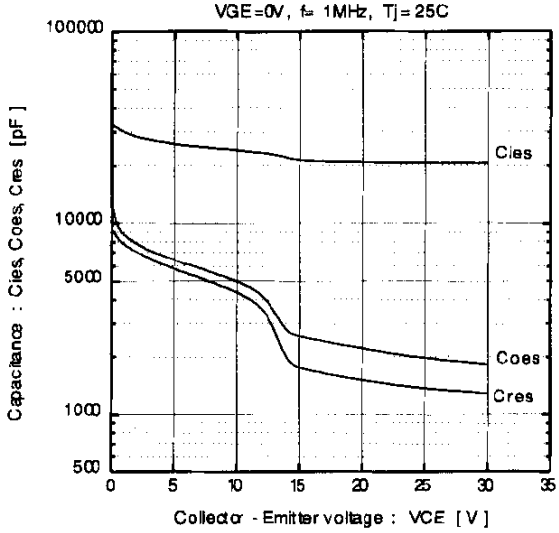
Collector current vs. Collector-Emitter voltage
VGE= 15V (typ.)



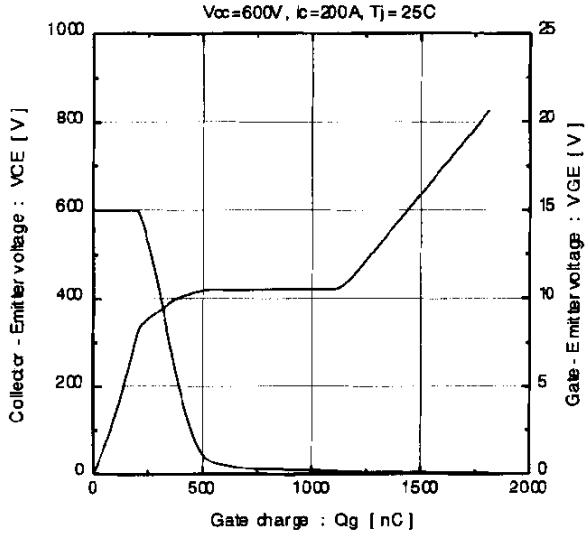
Collector-Emitter voltage vs. Gate-Emitter voltage
Tj= 25C (typ.)

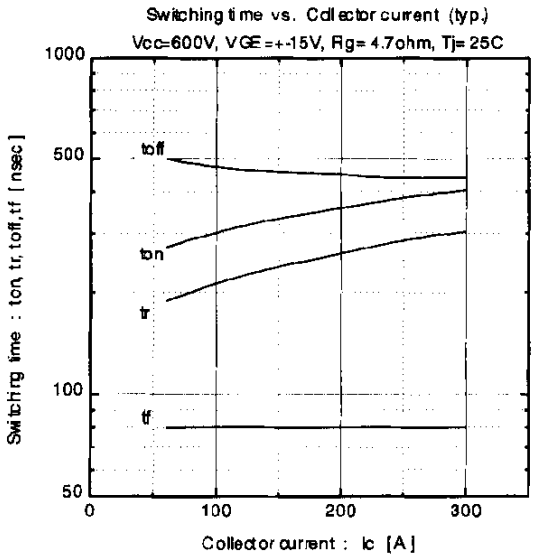


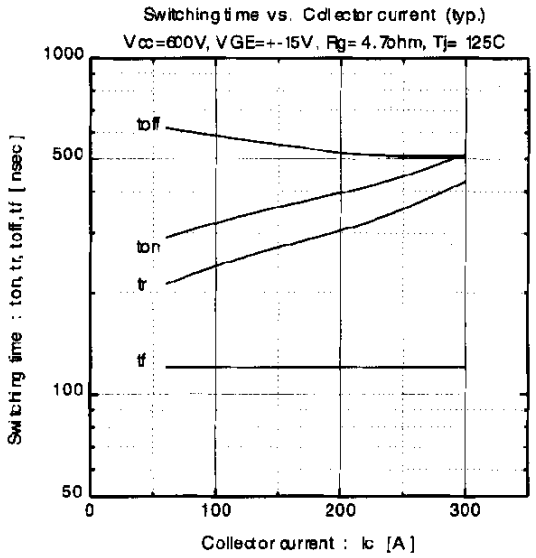
Capacitance vs. Collector-Emitter voltage (typ.)
VGE=0V, f= 1MHz, Tj= 25C

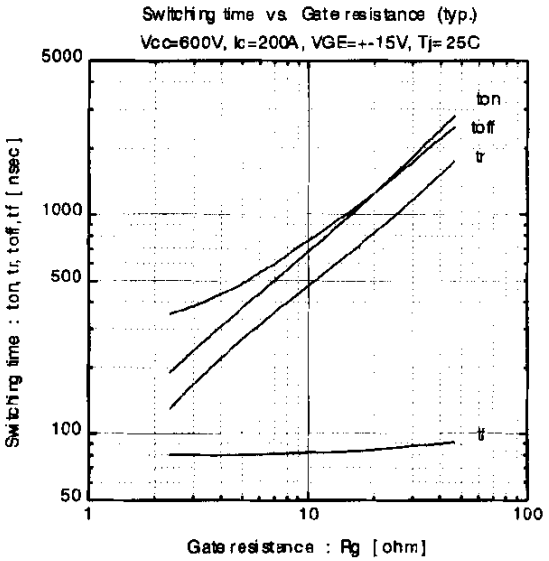


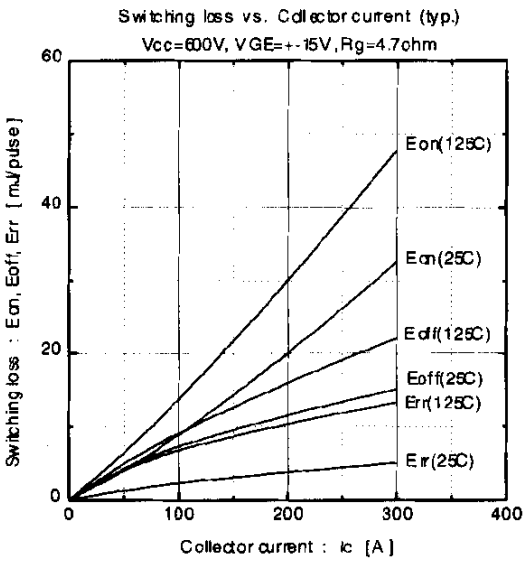
Dynamic Gate charge (typ.)
Vcc=600V, Ic=200A, Tj= 25C

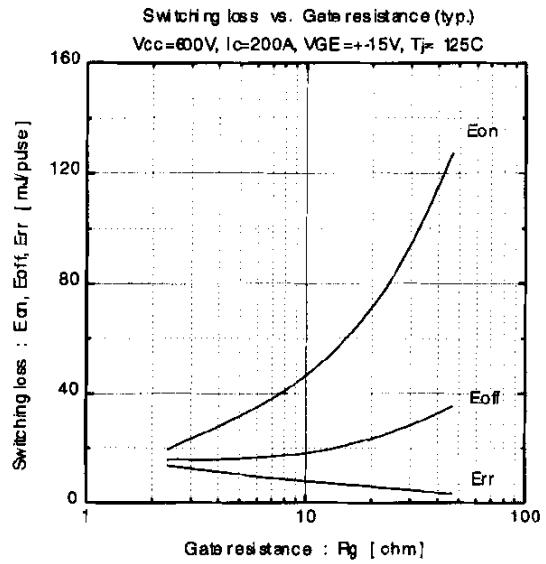


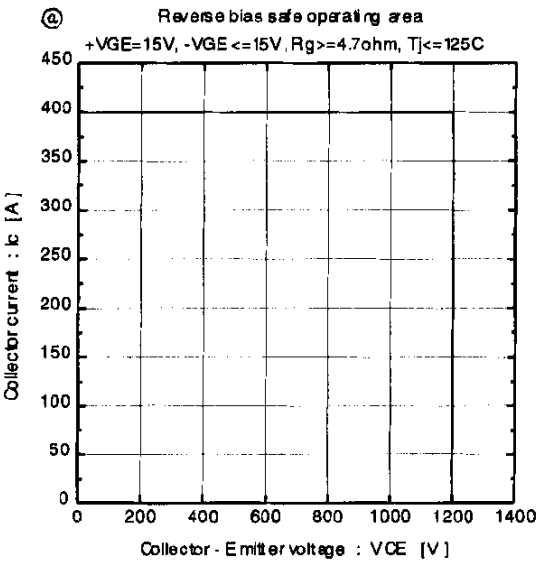


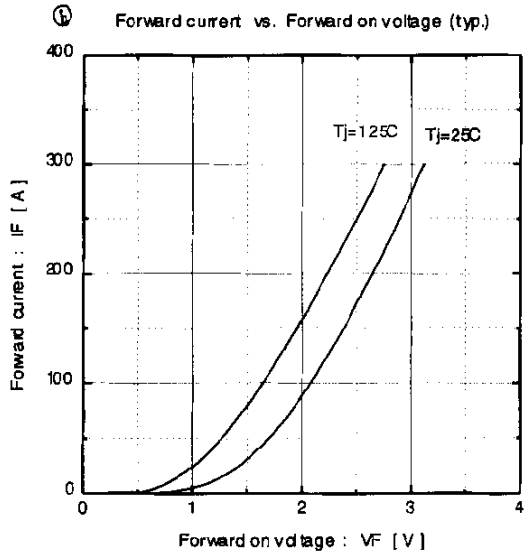


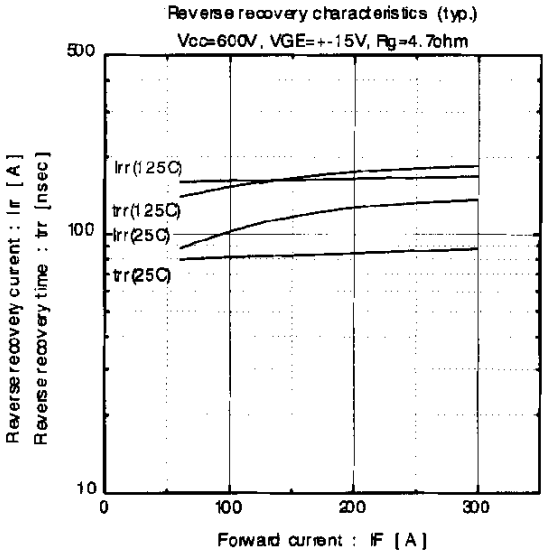


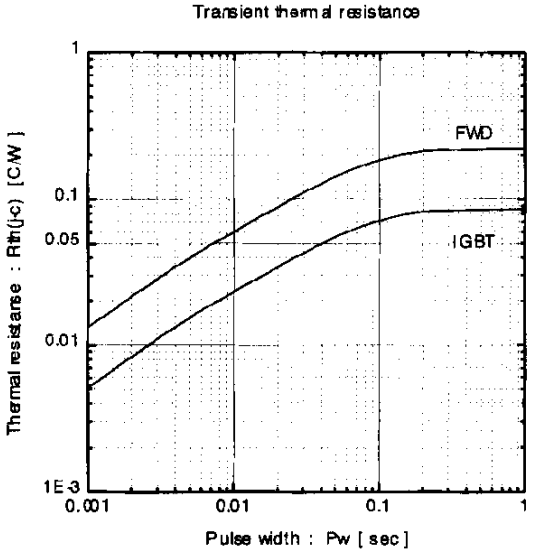




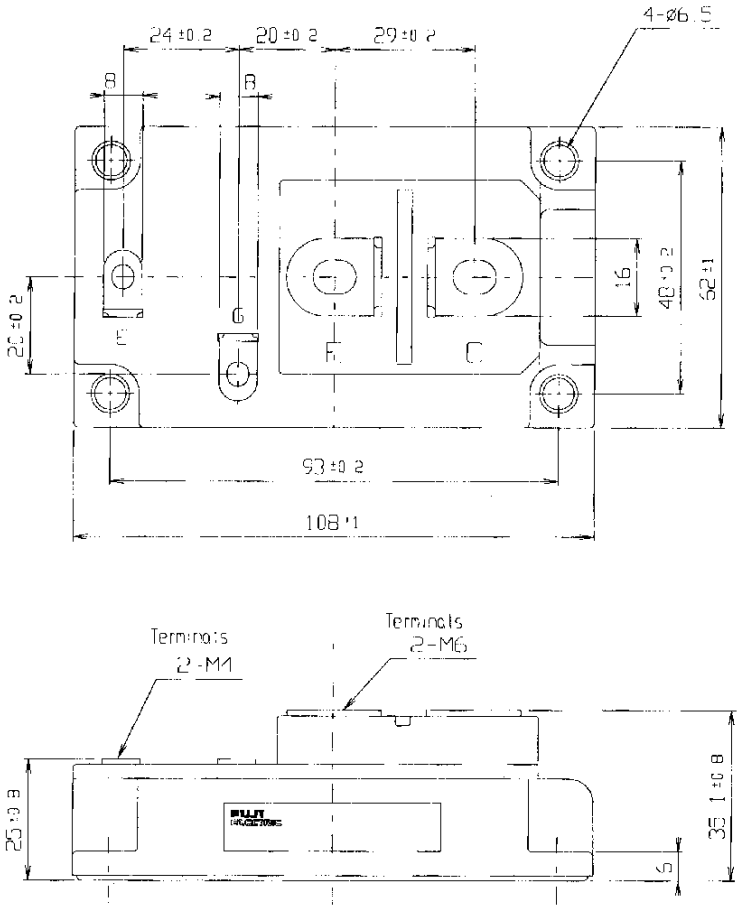




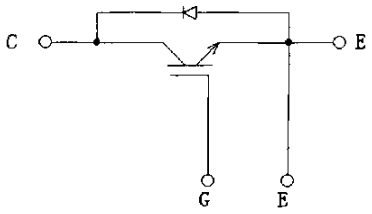




Outline Drawings, mm



Equivalent Circuit Schematic



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   • Medical equipment

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