

2MBI150S-120

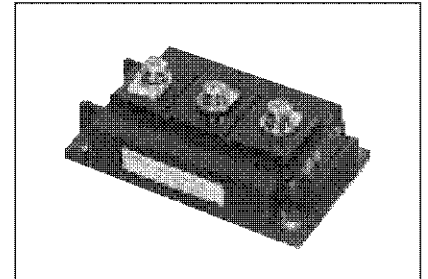
IGBT MODULE (S series) 1200V / 150A / 2 in one package

■ 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	200	A
			Tc=80°C	150	
	I _c pulse	1ms	Tc=25°C	400	
			Tc=80°C	300	
	-I _c			150	
-I _c pulse	1ms		300		
Collector power dissipation	P _c	1 device	1000	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	-	-	2.0	mA	
Gate-Emitter leakage current	I _{GEs}	V _{CE} = 0V, V _{GE} = ±20V	-	-	0.4	µA	
Gate-Emitter threshold voltage	V _{GE(th)}	V _{CE} = 20V, I _c = 150mA	5.5	7.2	8.5	V	
Collector-Emitter saturation voltage	V _{CE(sat)}	V _{GE} = 15V I _c = 150A	T _j =25°C	-	2.3	2.6	V
			T _j =125°C	-	2.8	-	
Input capacitance	C _{ies}	V _{GE} = 0V	-	18000	-	pF	
Output capacitance	C _{oes}	V _{CE} = 10V	-	3750	-		
Reverse transfer capacitance	C _{res}	f = 1MHz	-	3300	-		
Turn-on time	ton	V _{CC} = 600V I _c = 150A	-	0.35	1.2	µs	
	tr		-	0.25	0.6		
	tr (i)		-	0.1	-		
Turn-off time	toff	V _{GE} = ±15V R _θ = 5.6Ω	-	0.45	1.0	µs	
	tf		-	0.08	0.3		
Forward on voltage	V _f	I _f = 150A	T _j =25°C	-	2.3	3.0	V
			T _j =125°C	-	2.0	-	
Reverse recovery time	trr	I _f = 150A	-	-	0.35	µs	

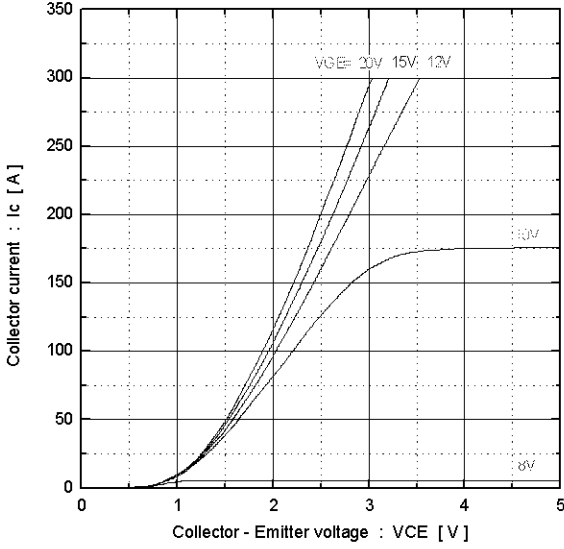
● Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	max.	
Thermal resistance (1device)	R _{th(j-c)}	IGBT	-	-	0.125	°C/W
		FWD	-	-	0.26	
Contact thermal resistance	R _{th(c-f)}	with Thermal Compound (*3)	-	0.025	-	

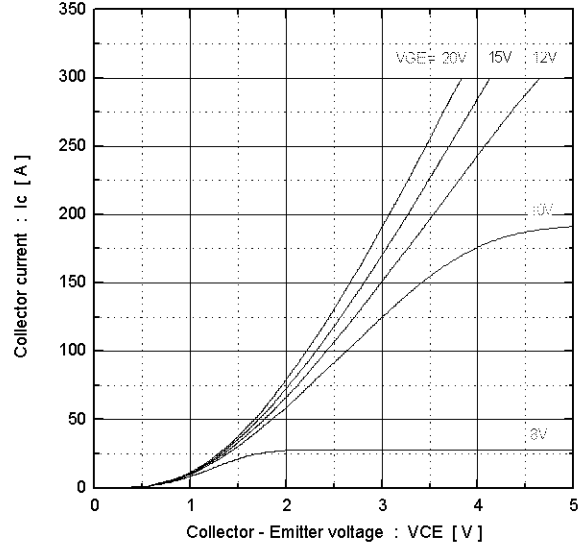
Note *3: This is the value which is defined mounting on the additional cooling fin with thermal compound.

■ Characteristics (Representative)

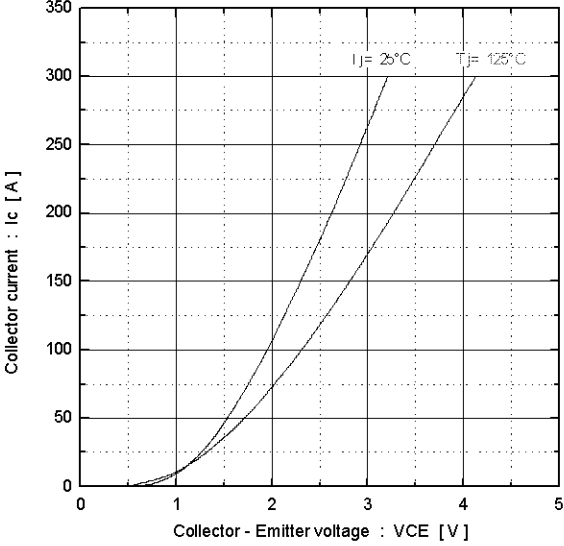
Collector current vs. Collector-Emiiter voltage
Tj= 25°C (typ.)



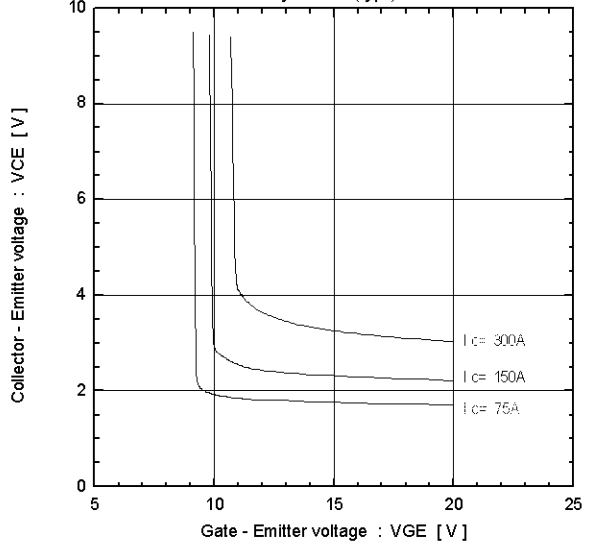
Collector current vs. Collector-Emiiter voltage
Tj= 125°C (typ.)



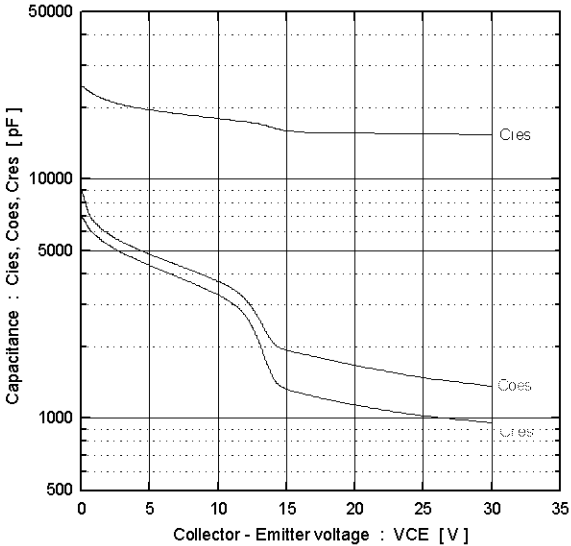
Collector current vs. Collector-Emiiter voltage
VGE=15V (typ.)



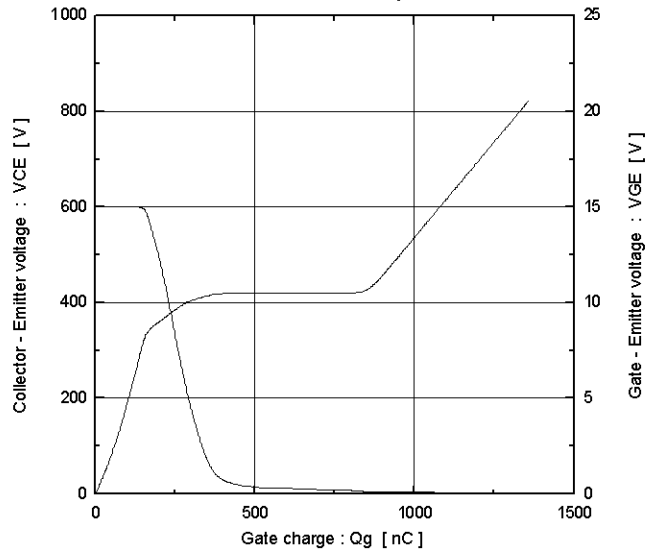
Collector-Emiiter voltage vs. Gate-Emiiter voltage
Tj= 25°C (typ.)

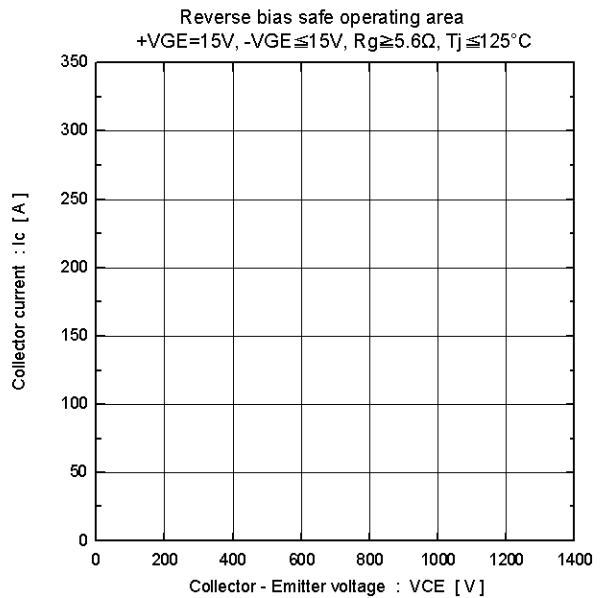
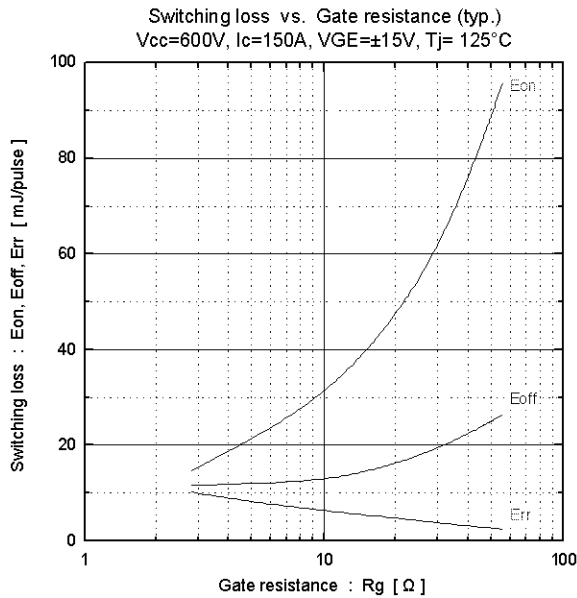
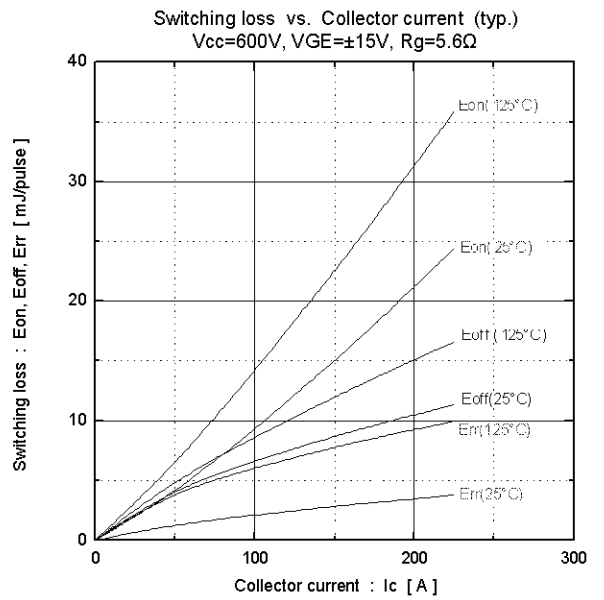
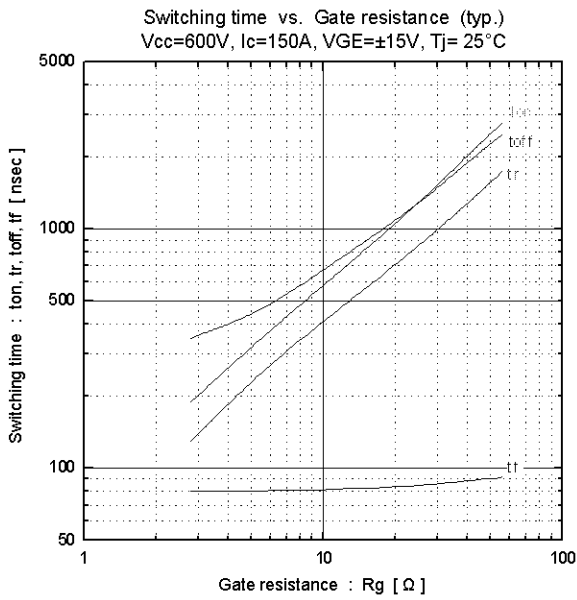
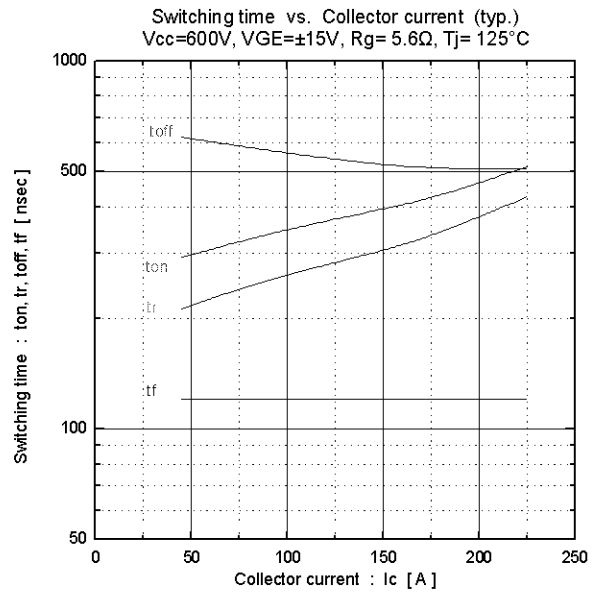
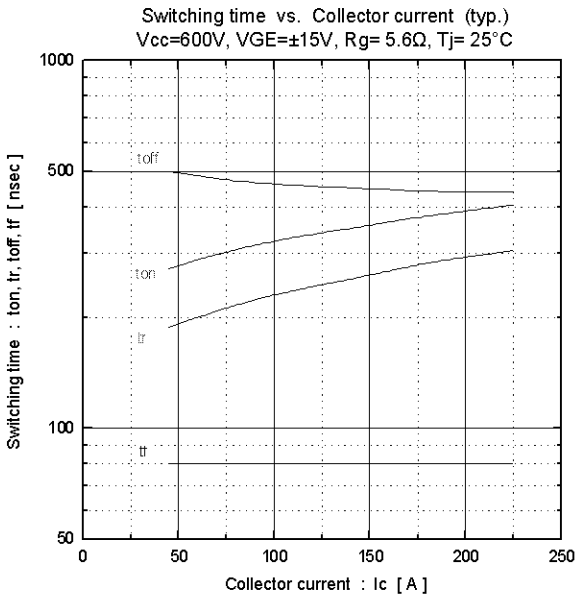


Capacitance vs. Collector-Emiiter voltage (typ.)
VGE=0V, f= 1MHz, Tj= 25°C

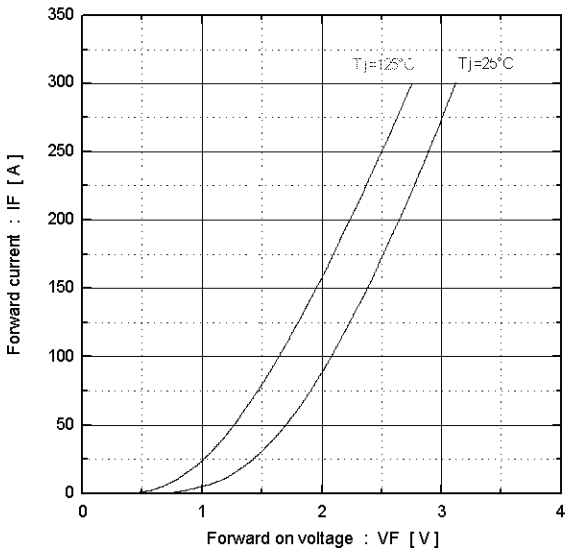


Dynamic Gate charge (typ.)
Vcc=600V, Ic=150A, Tj= 25°C



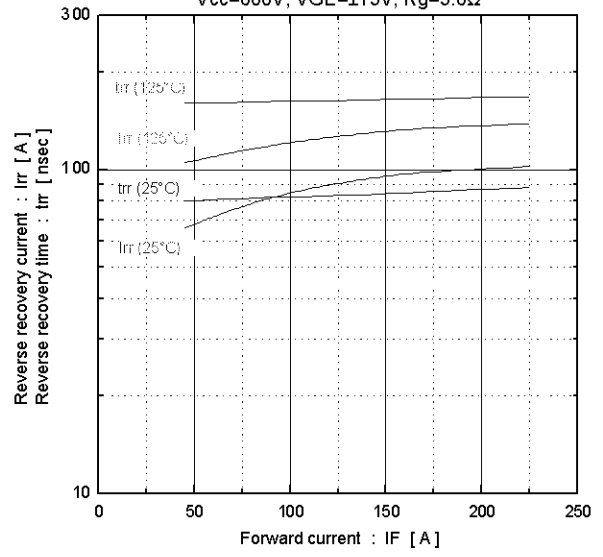


Forward current vs. Forward on voltage (typ.)

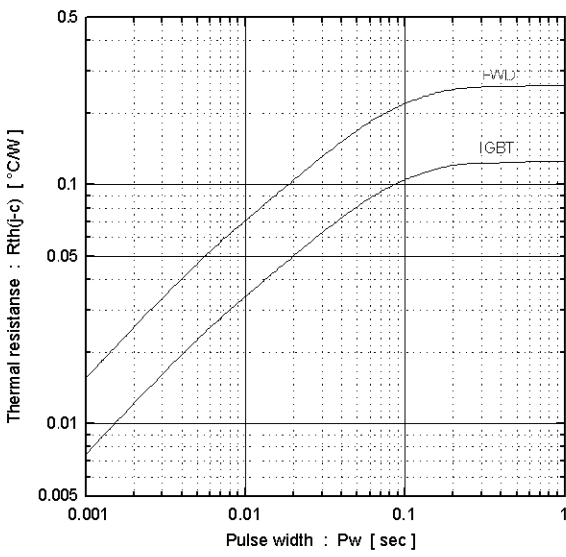


Reverse recovery characteristics (typ.)

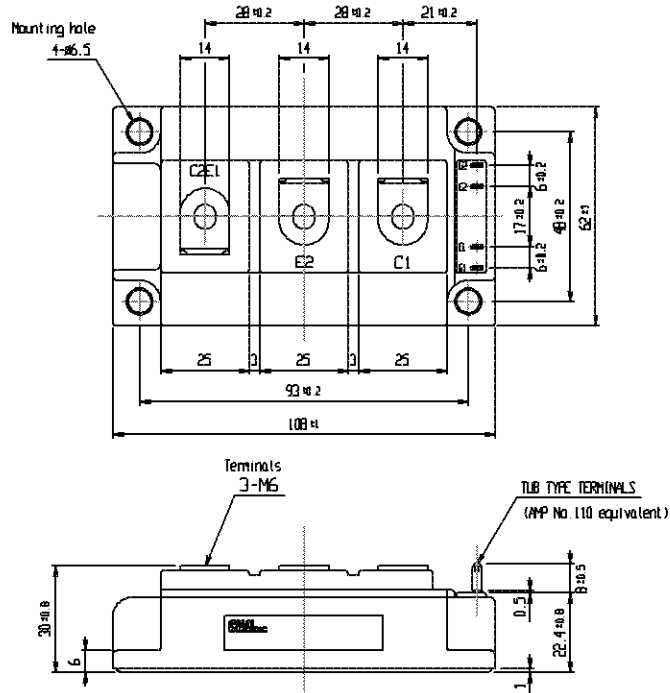
Vcc=600V, VGE=±15V, Rg=5.6Ω



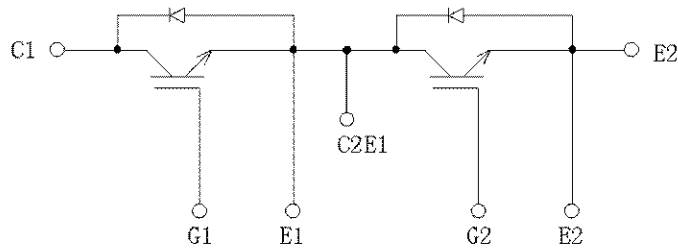
Transient thermal resistance



■ Outline Drawings, mm



■ Equivalent Circuit Schematic



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