

1MBI600S-120

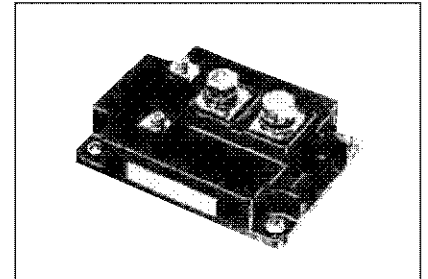
IGBT MODULE (S series) 1200V / 600A / 1 in one package

■ 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	I _c	Continuous	T _c =25°C	900	A
			T _c =80°C	600	
	I _c pulse	1ms	T _c =25°C	1800	
			T _c =80°C	1200	
	-I _c			600	
-I _c pulse	1ms		1200		
Collector power dissipation	P _c	1 device	4150	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)		4.5	N·m	
	Terminals (*2)		11.0		
	Terminals (*2)		1.7		

Note *1: All terminals should be connected together when isolation test will be done.

Note *2: Recommendable value : Mounting : 4.0+0.5 N·m (M6), Terminal : 10.0+1.0 N·m (M8), 1.5+0.2 N·m (M4)

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

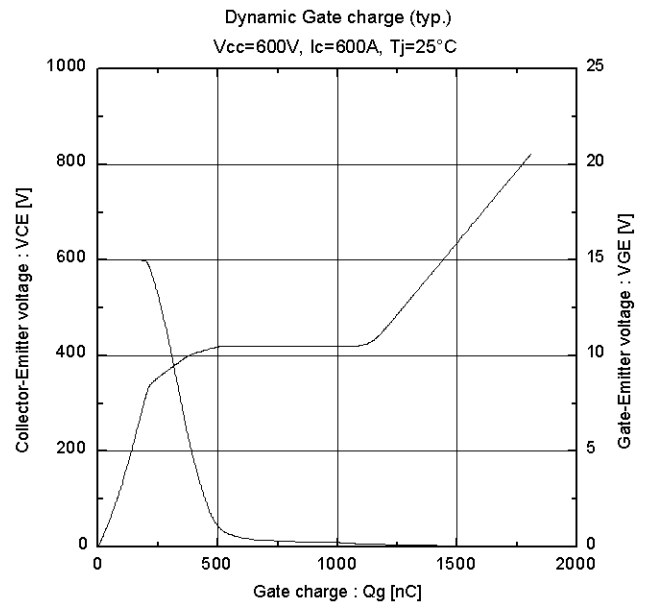
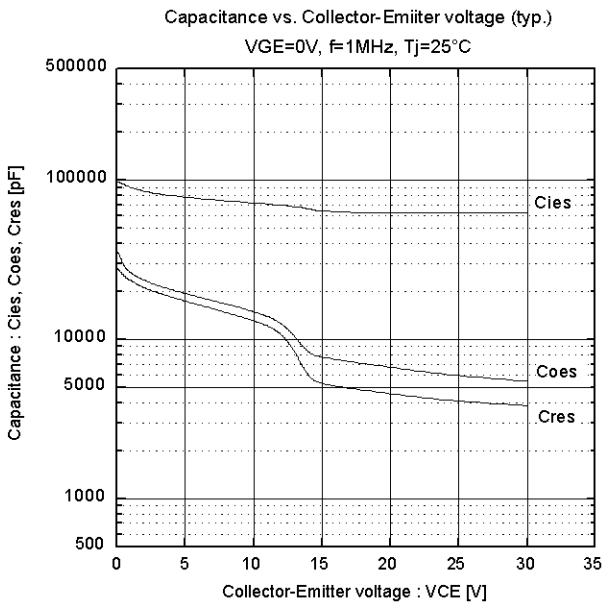
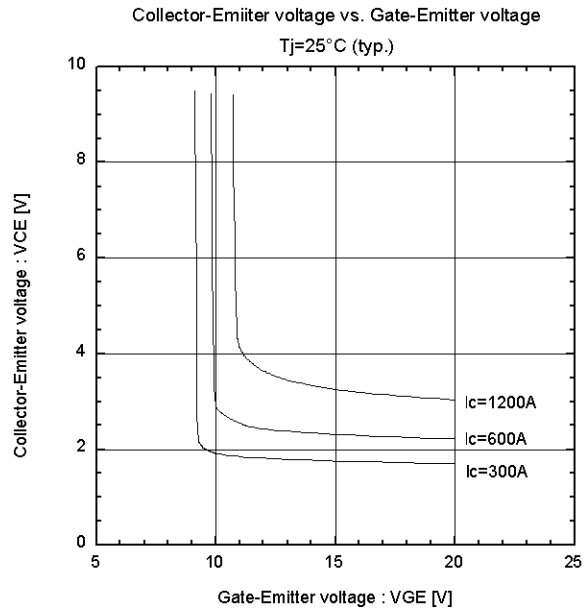
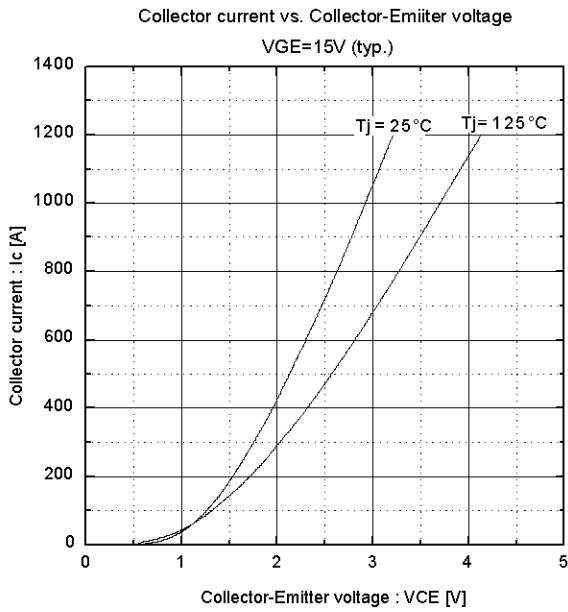
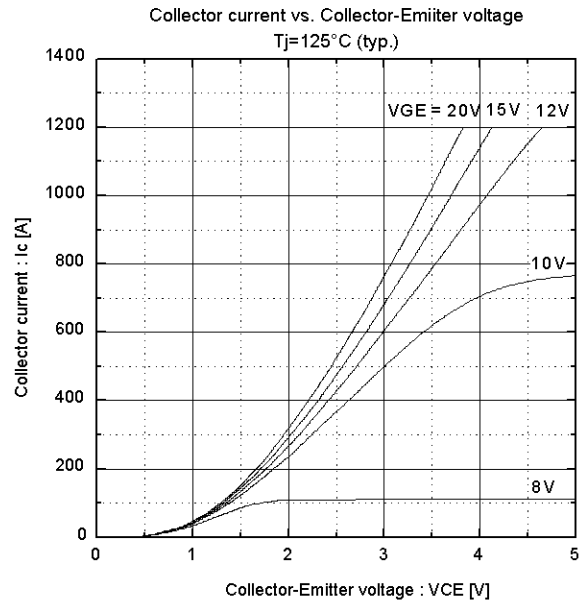
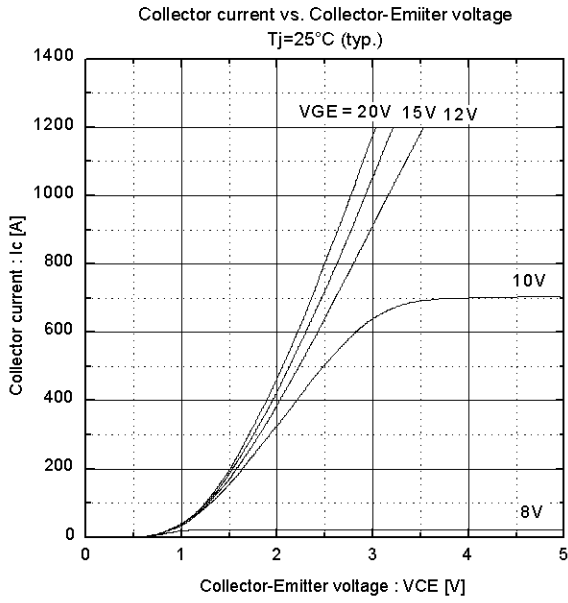
Items	Symbols	Conditions	Characteristics			Units	
			min.	typ.	max.		
Zero gate voltage collector current	I _{CEs}	V _{GE} = 0V, V _{CE} = 1200V	-	-	2.0	mA	
Gate-Emitter leakage current	I _{GEs}	V _{CE} = 0V, V _{GE} = ±20V	-	-	1.6	µA	
Gate-Emitter threshold voltage	V _{GE(th)}	V _{CE} = 20V, I _c = 600mA	5.5	7.2	8.5	V	
Collector-Emitter saturation voltage	V _{CE(sat)}	V _{GE} = 15V I _c = 600A	T _J =25°C	-	2.3	2.6	V
			T _J =125°C	-	2.8	-	
Input capacitance	C _{ies}	V _{GE} = 0V	-	72000	-	pF	
Output capacitance	C _{oes}	V _{CE} = 10V	-	15000	-		
Reverse transfer capacitance	C _{res}	f = 1MHz	-	13200	-		
Turn-on time	ton	V _{CC} = 600V I _c = 600A	-	0.8	1.2	µs	
	tr		-	0.25	0.6		
	tr (i)		V _{GE} = ±15V	-	0.1		-
Turn-off time	toff	R _θ = 1.5Ω	-	0.7	1.0	µs	
	tf		-	0.1	0.3		
Forward on voltage	V _f	I _f = 600A	T _J =25°C	-	2.8	3.4	V
			T _J =125°C	-	2.4	-	
Reverse recovery time	trr	I _f = 600A	-	-	0.35	µs	

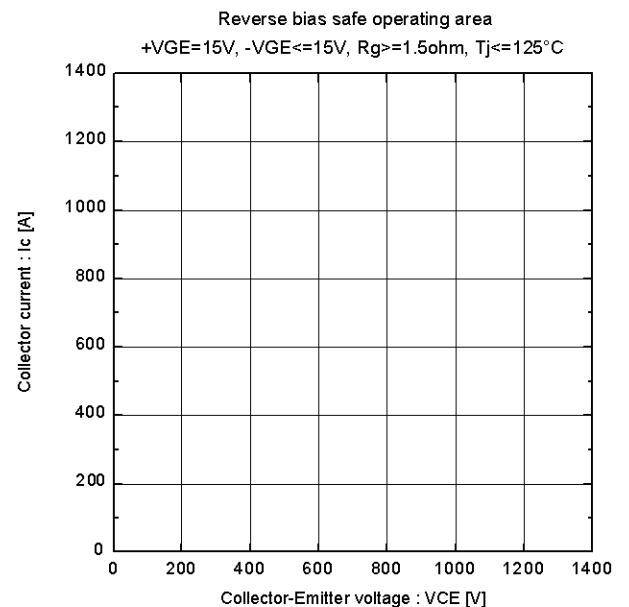
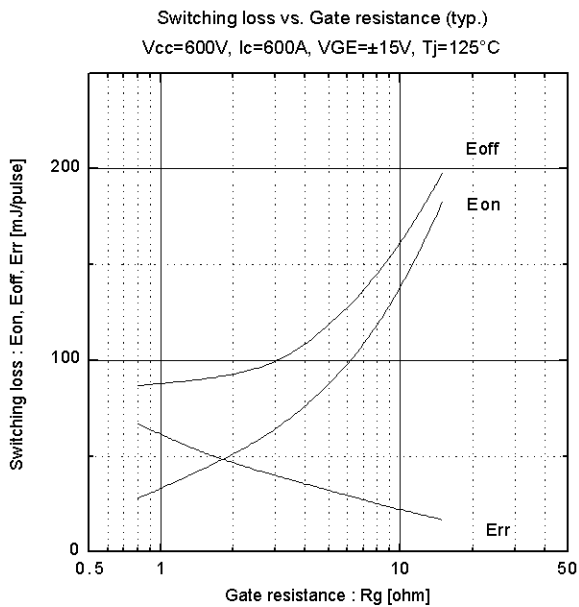
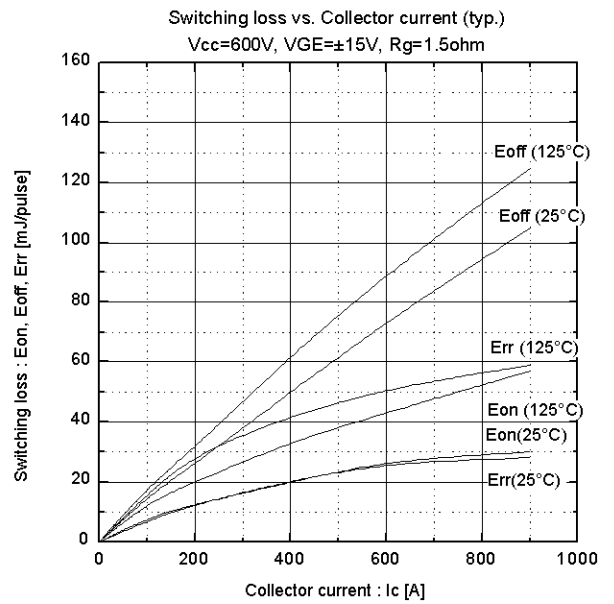
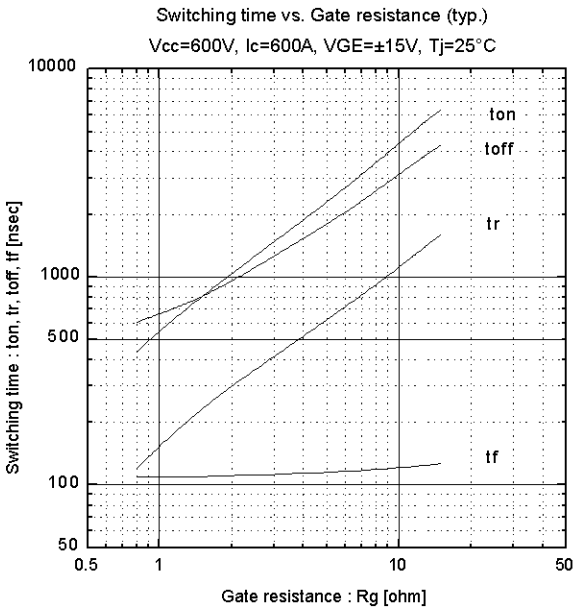
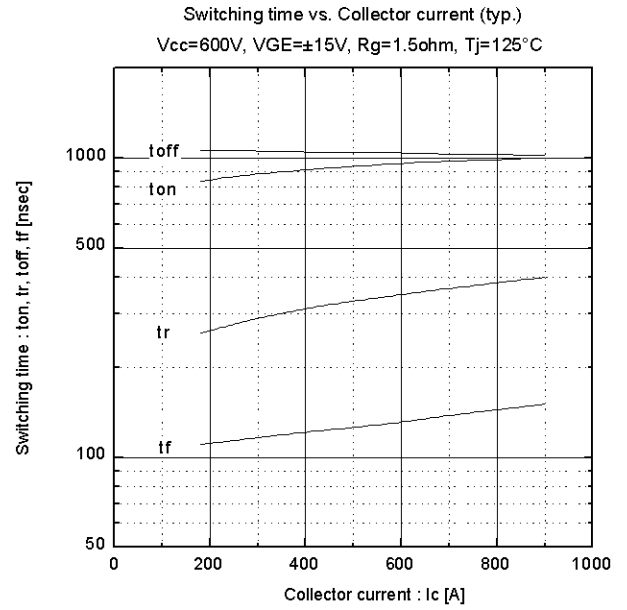
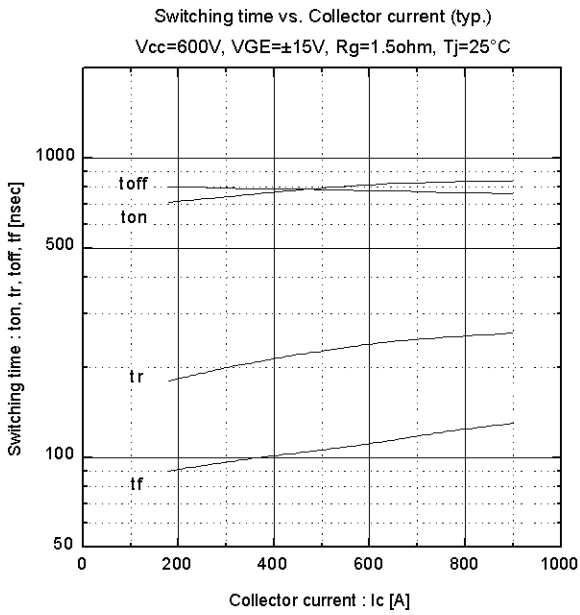
● Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	max.	
Thermal resistance (1device)	R _{th(j-c)}	IGBT	-	-	0.03	°C/W
		FWD	-	-	0.06	
Contact thermal resistance	R _{th(c-f)}	with Thermal Compound (*3)	-	0.0063	-	°C/W

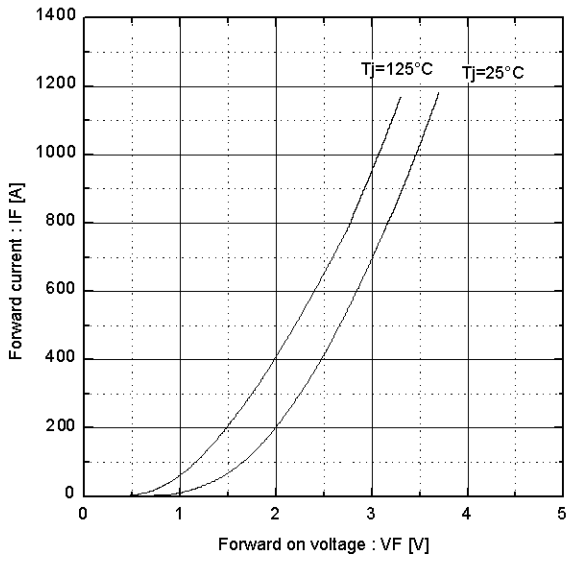
Note *3: This is the value which is defined mounting on the additional cooling fin with thermal compound.

■ Characteristics (Representative)

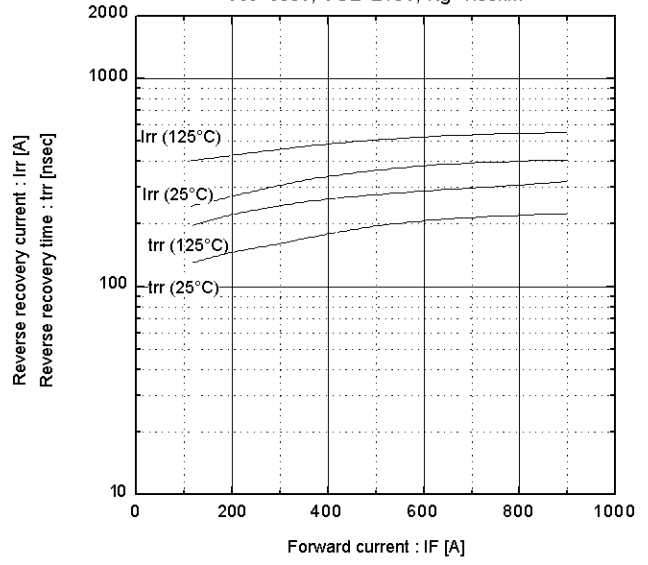




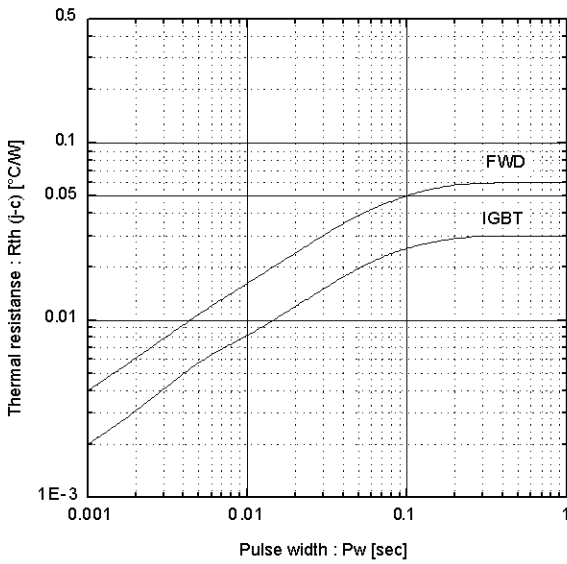
Forward current vs. Forward on voltage (typ.)



Reverse recovery characteristics (typ.)
Vcc=600V, VGE=±15V, Rg=1.5ohm



Transient thermal resistance



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