

6MBI100S-120

IGBT Modules

IGBT MODULE (S series)

1200V / 100A 6 in one-package

■ Features

- Compact package
- P.C.board mount
- Low $V_{CE(sat)}$

■ 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 ($T_c=25^{\circ}\text{C}$ unless otherwise specified)

Item			Symbol	Rating	Unit
Collector-Emitter voltage			V_{CES}	1200	V
Gate-Emitter voltage			V_{GES}	± 20	V
Collector current	Continuous	$T_c=25^{\circ}\text{C}$	I_c	150	A
		$T_c=80^{\circ}\text{C}$		100	
	1ms	$T_c=25^{\circ}\text{C}$	I_c pulse	300	A
		$T_c=80^{\circ}\text{C}$		200	
			$-I_c$	100	A
	1ms		$-I_c$ pulse	200	A
Max. power dissipation (1 device)			P_c	700	W
Operating temperature			T_j	+150	$^{\circ}\text{C}$
Storage temperature			T_{stg}	-40 to +125	$^{\circ}\text{C}$
Isolation voltage			V_{is}	AC 2500 (1min.)	V
Screw torque			Mounting $\ast_1$	3.5	N·m

$\ast_1$: Recommendable value : 2.5 to 3.5 N·m (M5)

● Electrical characteristics ($T_j=25^{\circ}\text{C}$ unless otherwise specified)

Item	Symbol	Characteristics			Conditions	Unit
		Min.	Typ.	Max.		
Zero gate voltage collector current	I_{CES}	—	—	1.0	$V_{GE}=0\text{V}$, $V_{CE}=1200\text{V}$	mA
Gate-Emitter leakage current	I_{GES}	—	—	0.2	$V_{CE}=0\text{V}$, $V_{GE}=\pm 20\text{V}$	μA
Gate-Emitter threshold voltage	$V_{GE(th)}$	5.5	7.2	8.5	$V_{CE}=20\text{V}$, $I_c=100\text{mA}$	V
Collector-Emitter saturation voltage	$V_{CE(sat)}$	—	2.3	2.6	$T_j=25^{\circ}\text{C}$, $V_{GE}=15\text{V}$, $I_c=100\text{A}$	V
		—	2.8	—	$T_j=125^{\circ}\text{C}$	
Input capacitance	C_{ies}	—	12000	—	$V_{GE}=0\text{V}$	pF
Output capacitance	C_{oes}	—	2500	—	$V_{CE}=10\text{V}$	
Reverse transfer capacitance	C_{res}	—	2200	—	$f=1\text{MHz}$	
Turn-on time	t_{on}	—	0.35	1.2	$V_{CC}=600\text{V}$	μs
	t_r	—	0.25	0.6	$I_c=100\text{A}$	
	$t_{r(i)}$	—	0.1	—	$V_{GE}=\pm 15\text{V}$	
Turn-off time	t_{off}	—	0.45	1.0	$R_G=12\Omega$	
	t_f	—	0.08	0.3		
Diode forward on voltage	V_F	—	2.5	3.3	$T_j=25^{\circ}\text{C}$, $I_F=100\text{A}$, $V_{GE}=0\text{V}$	V
		—	2.0	—	$T_j=125^{\circ}\text{C}$	
Reverse recovery time	t_{rr}	—	—	0.35	$I_F=100\text{A}$	μs

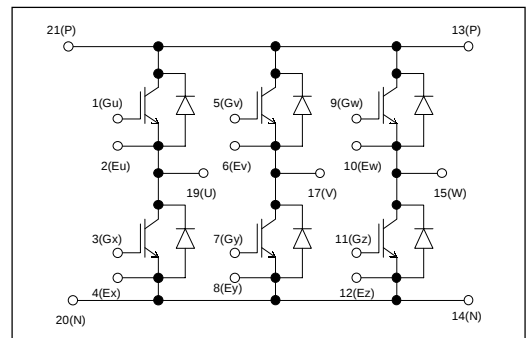
● Thermal resistance characteristics

Item	Symbol	Characteristics			Conditions	Unit
		Min.	Typ.	Max.		
Thermal resistance	$R_{th(j-c)}$	—	—	0.18	IGBT	$^{\circ}\text{C/W}$
	$R_{th(j-c)}$	—	—	0.36	FWD	$^{\circ}\text{C/W}$
	$R_{th(c-f)}\ast_2$	—	0.05	—	the base to cooling fin	$^{\circ}\text{C/W}$

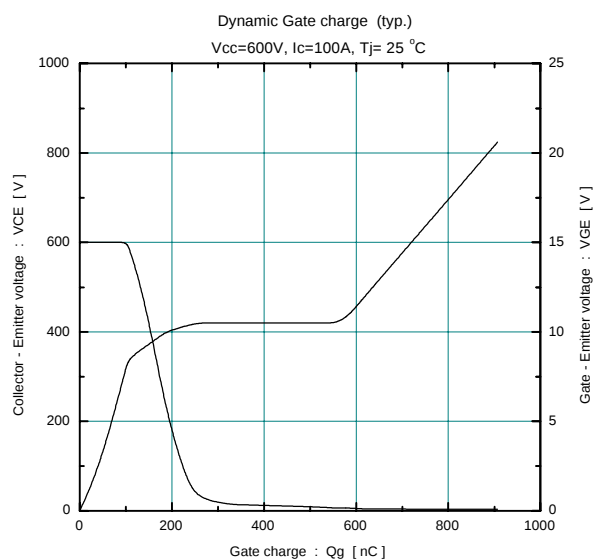
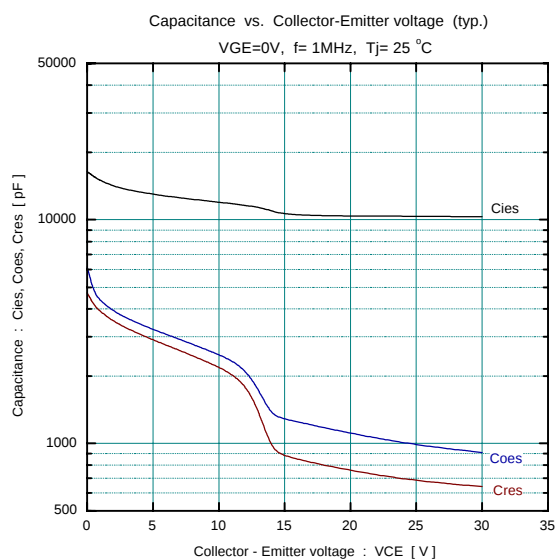
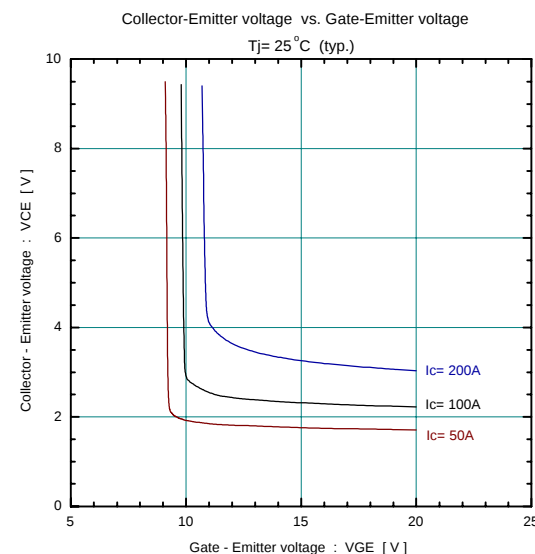
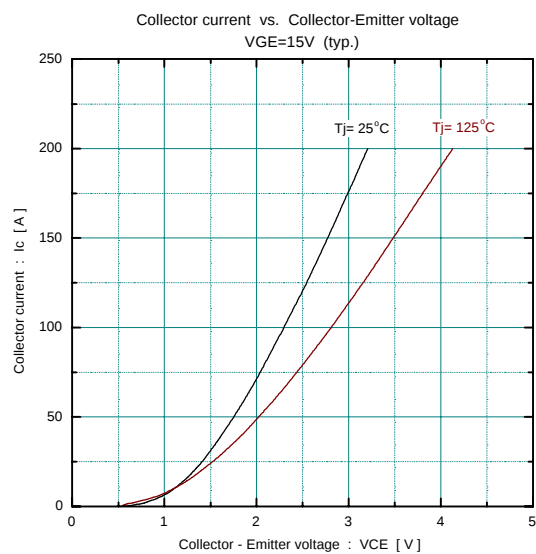
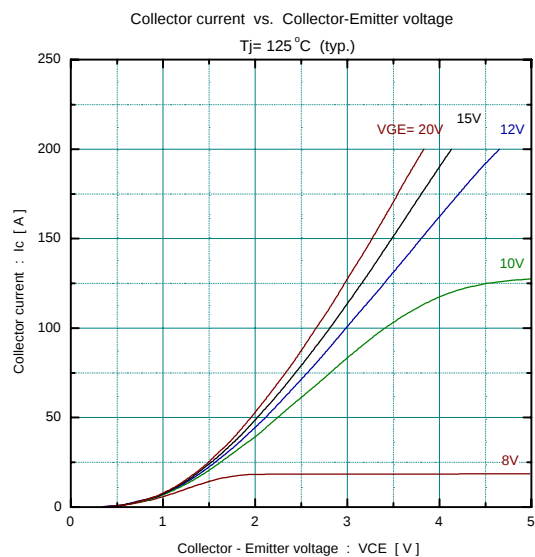
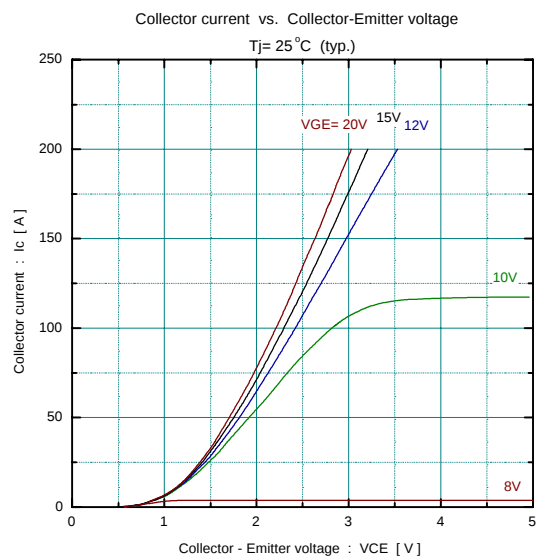
$\ast_2$: This is the value which is defined mounting on the additional cooling fin with thermal compound

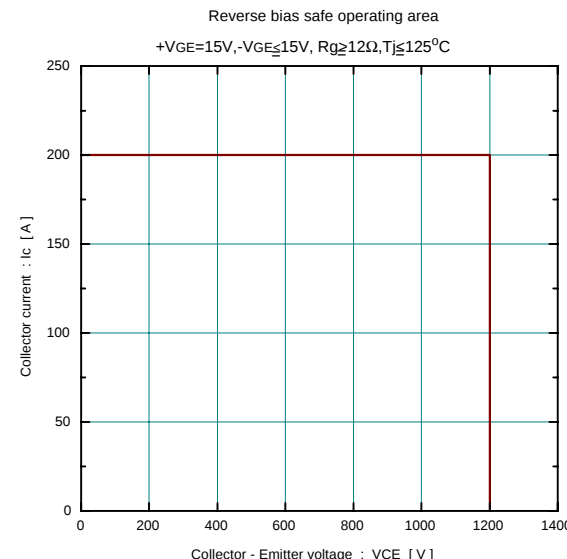
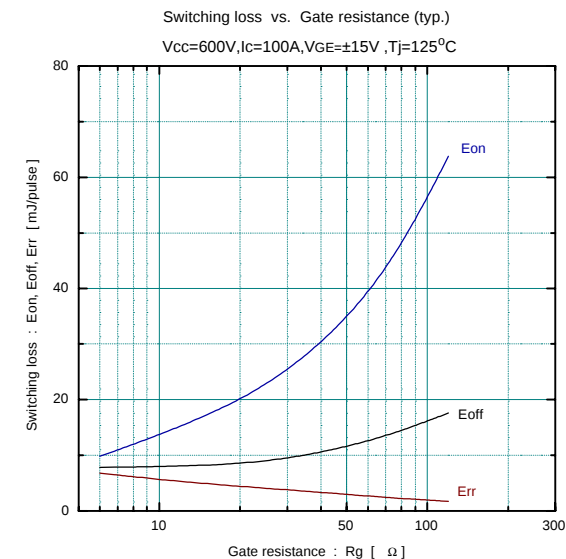
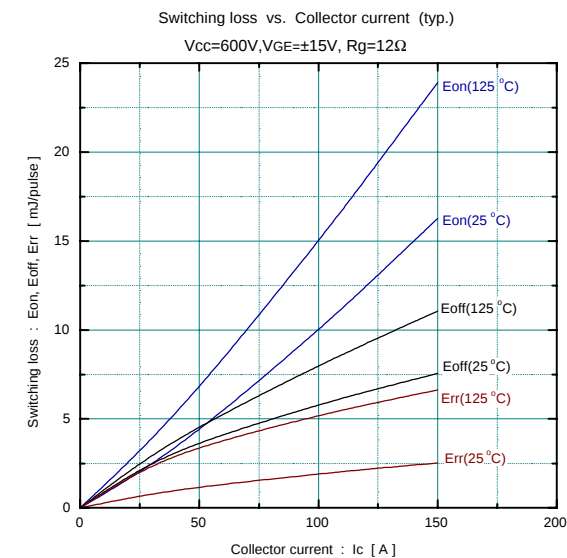
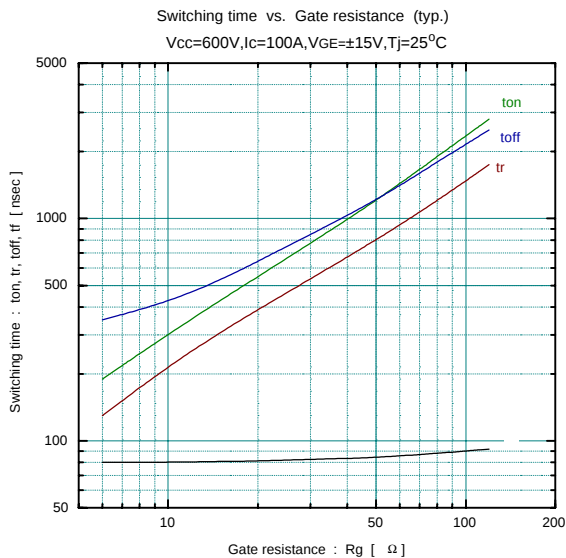
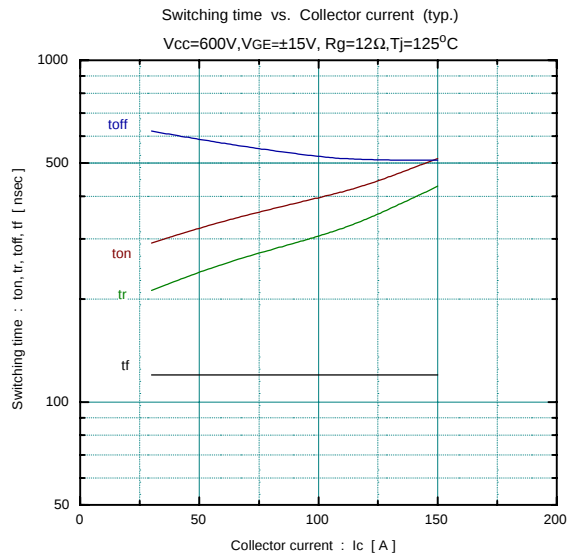
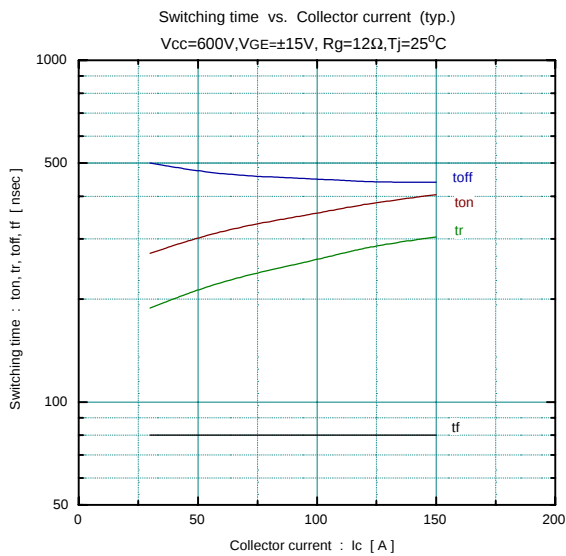


■ Equivalent Circuit Schematic

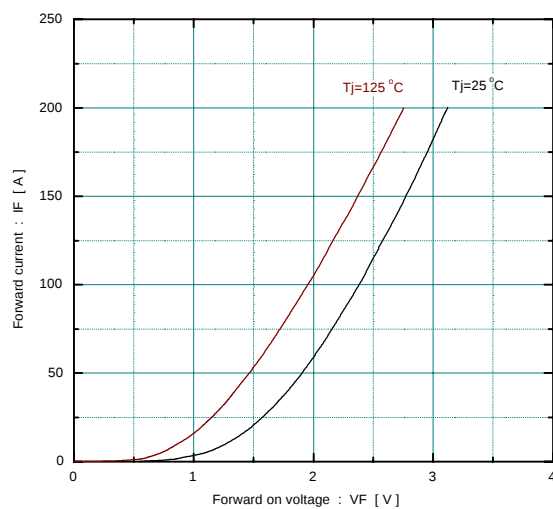


Characteristics



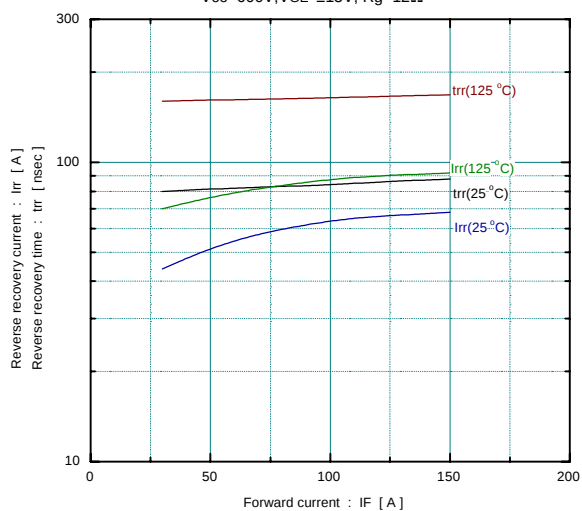


Forward current vs. Forward on voltage (typ.)

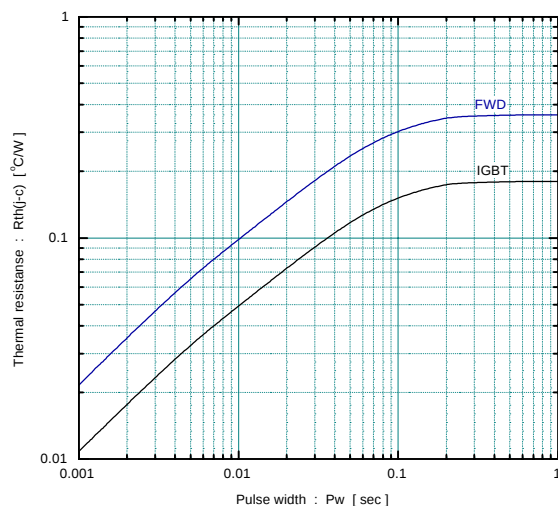


Reverse recovery characteristics (typ.)

Vcc=600V, VGE=±15V, Rg=12Ω



Transient thermal resistance



Outline Drawings, mm

