

6MBI50S-140

IGBT Modules

IGBT MODULE (S series) 1400V / 50A 6 in one-package

■ Features

- Compact Package
- P.C.Board Mount Module
- Low $V_{CE(sat)}$

■ Applications

- Inverter for Motor drive
- AC and DC Servo drive amplifier
- Uninterruptible power supply
- Industrial machines, such as Welding machines

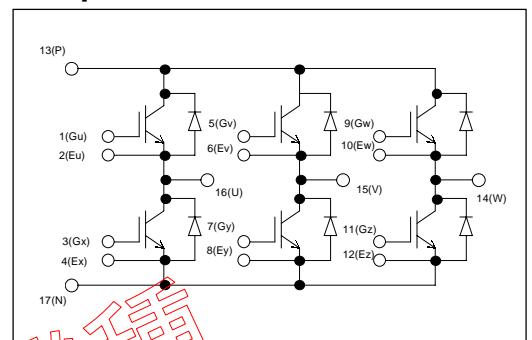
■ Maximum ratings and characteristics

● Absolute maximum ratings (at $T_c=25^\circ\text{C}$ unless otherwise specified)

Item	Symbol	Rating	Unit		
Collector-Emitter voltage	V_{CES}	1400	V		
Gate-Emitter voltage	V_{GES}	± 20	V		
Collector current	Continuous	$T_j=25^\circ\text{C}$	I_c	75	A
		$T_j=75^\circ\text{C}$		50	
	1ms	$T_j=25^\circ\text{C}$	I_c pulse	150	A
		$T_j=75^\circ\text{C}$		100	
			$-I_c$	50	A
			$-I_c$ pulse	100	A
Max. power dissipation (1 device)	P_c	360	W		
Operating temperature	T_j	+150	$^\circ\text{C}$		
Storage temperature	T_{stg}	-40 to +125	$^\circ\text{C}$		
Isolation voltage *1	V_{is}	AC 2500 (1min.)	V		
Screw torque	Mounting *2	3.5	N·m		



■ Equivalent Circuit Schematic



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

*2: Recommendable value : 2.5 to 3.5 N·m (M5)

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

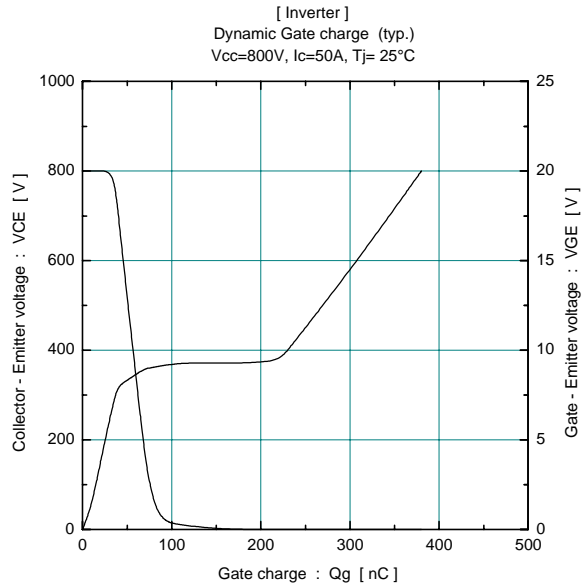
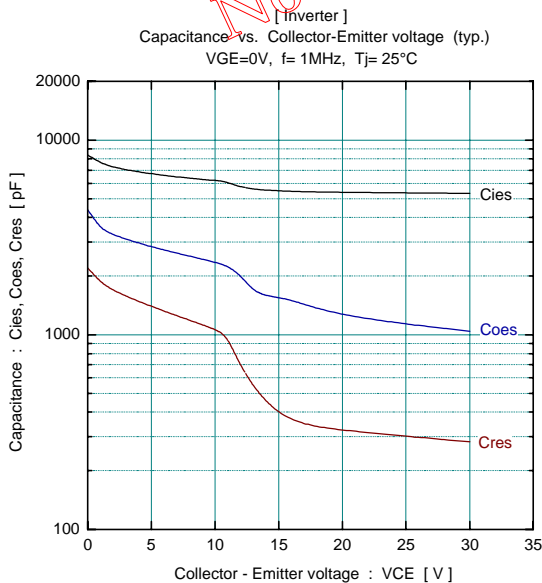
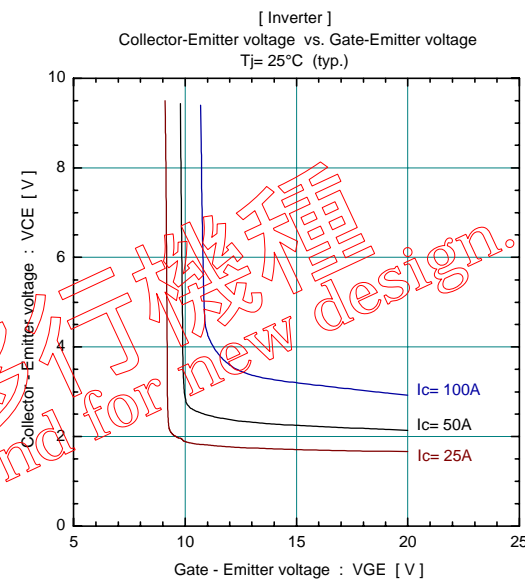
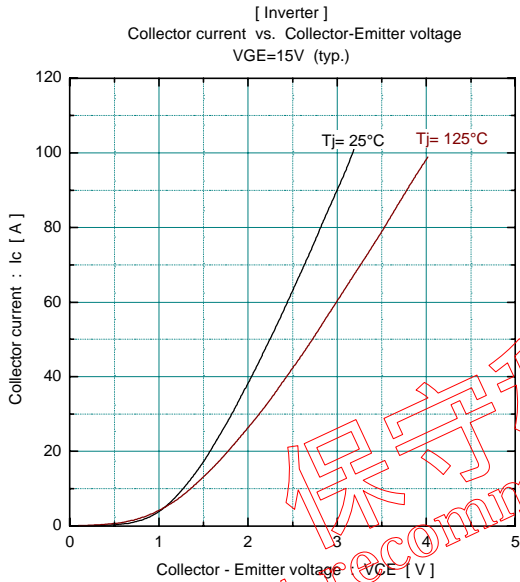
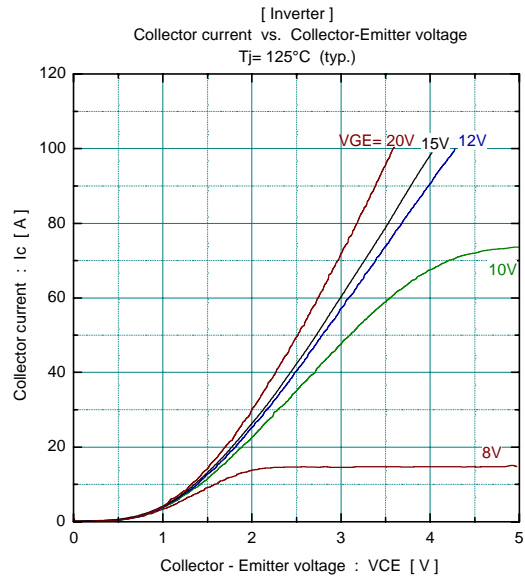
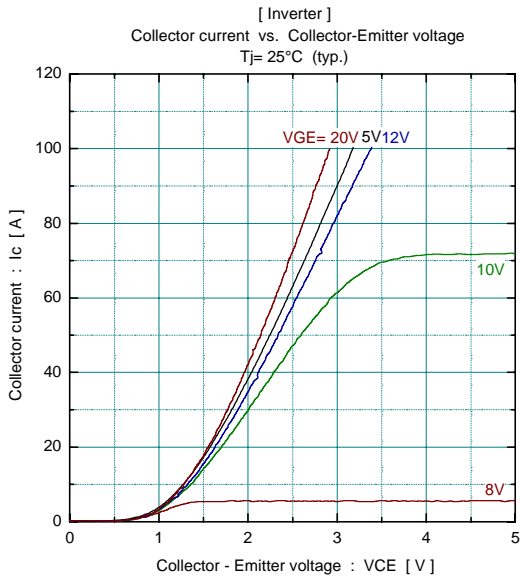
Item	Symbol	Characteristics			Conditions	Unit
		Min.	Typ.	Max.		
Zero gate voltage collector current	I_{CES}	—	—	1.0	$V_{GE}=0\text{V}$, $V_{CE}=1400\text{V}$	mA
Gate-Emitter leakage current	I_{GES}	—	—	0.2	$V_{CE}=0\text{V}$, $V_{GE}=\pm 20\text{V}$	μA
Gate-Emitter threshold voltage	$V_{GE(th)}$	5.5	7.2	8.5	$V_{CE}=20\text{V}$, $I_c=50\text{mA}$	V
Collector-Emitter saturation voltage	$V_{CE(sat)}$	—	2.4	2.75	$T_j=25^\circ\text{C}$, $V_{GE}=15\text{V}$, $I_c=50\text{A}$	V
		—	3.0	—	$T_j=125^\circ\text{C}$	
Input capacitance	C_{ies}	—	6000	—	$V_{GE}=0\text{V}$	pF
Output capacitance	C_{oes}	—	1250	—	$V_{CE}=10\text{V}$	
Reverse transfer capacitance	C_{res}	—	1100	—	$f=1\text{MHz}$	
Turn-on time	t_{on}	—	0.35	1.2	$V_{CC}=800\text{V}$ $I_c=50\text{A}$ $V_{GE}=\pm 15\text{V}$ $R_G=24\Omega$	μs
	t_r	—	0.25	0.6		
	$t_{r(i)}$	—	0.1	—		
Turn-off time	t_{off}	—	0.45	1.0		
	t_f	—	0.08	0.3		
Diode forward on voltage	V_F	—	2.6	3.4	$T_j=25^\circ\text{C}$, $I_F=50\text{A}$, $V_{GE}=0\text{V}$	V
		—	2.2	—	$T_j=125^\circ\text{C}$	
Reverse recovery time	t_{rr}	—	—	0.35	$I_F=50\text{A}$	μs

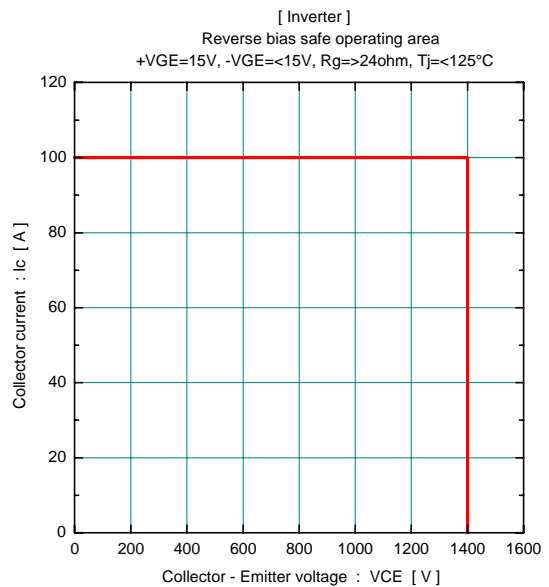
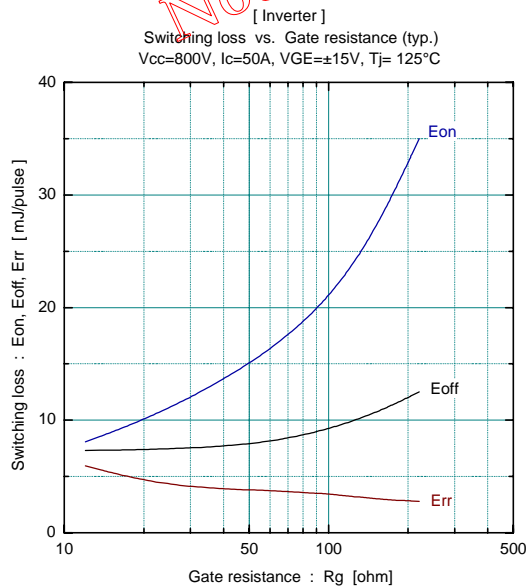
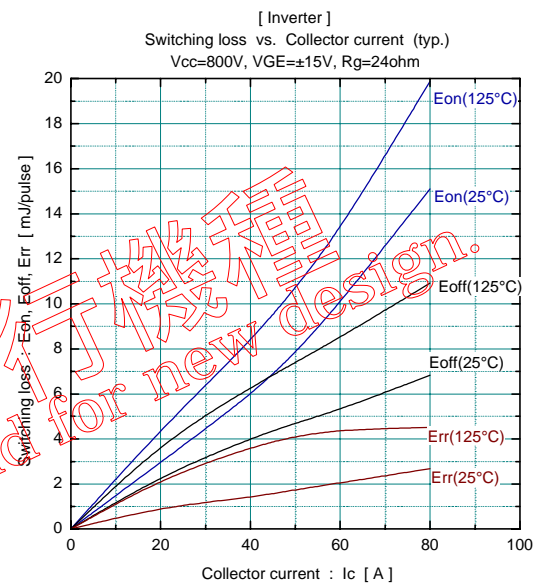
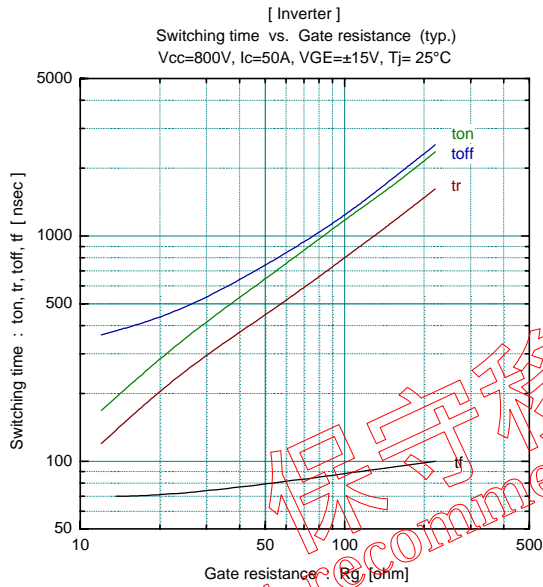
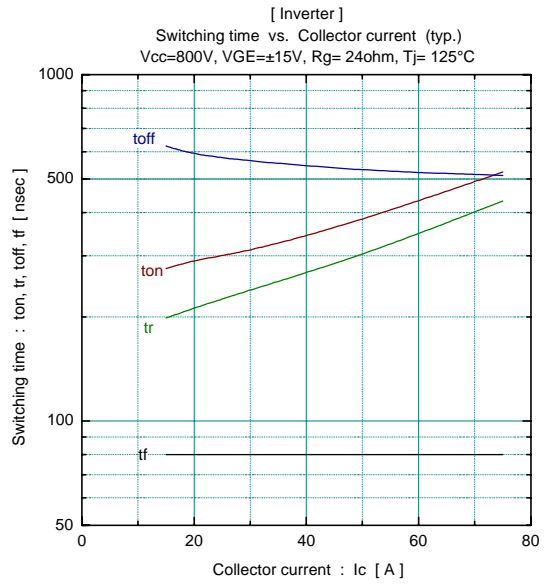
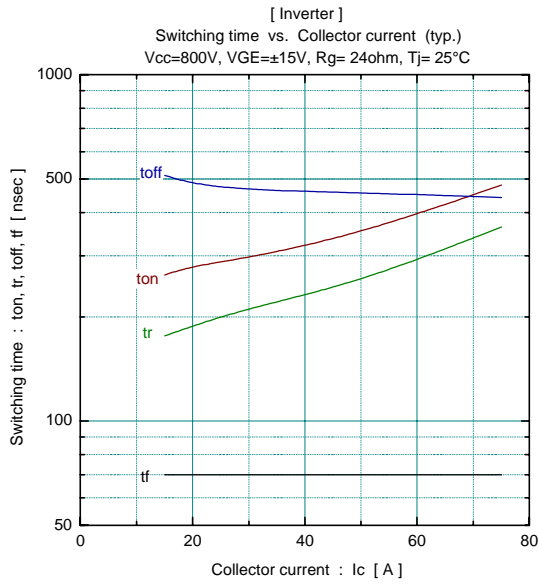
● Thermal resistance characteristics

Item	Symbol	Characteristics			Conditions	Unit
		Min.	Typ.	Max.		
Thermal resistance	$R_{th(j-c)}$	—	—	0.35	IGBT	$^\circ\text{C/W}$
	$R_{th(j-c)}$	—	—	0.75	FWD	$^\circ\text{C/W}$
	$R_{th(c-f)*2}$	—	0.05	—	the base to cooling fin	$^\circ\text{C/W}$

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

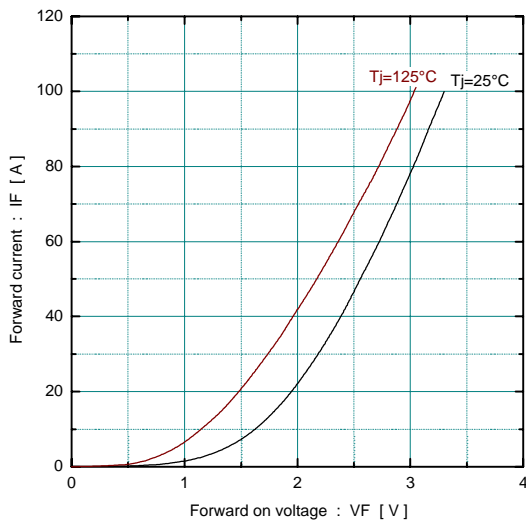
Characteristics



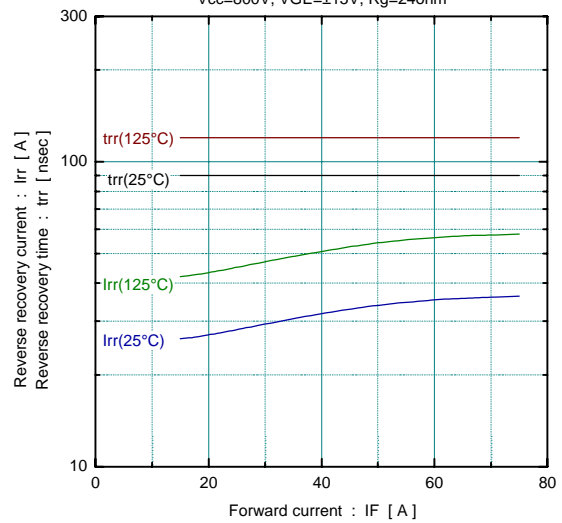


Not recommended for new design.

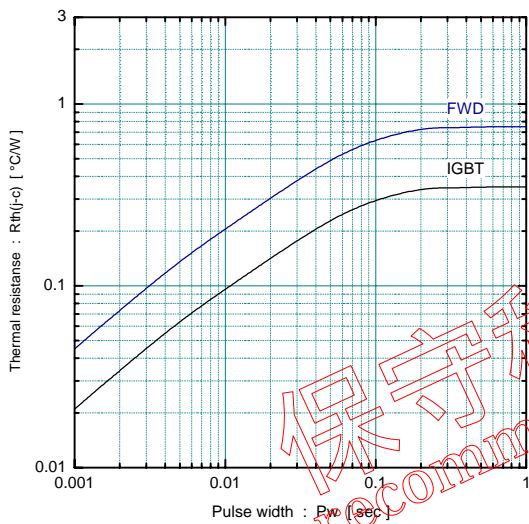
Forward current vs. Forward on voltage (typ.)



Reverse recovery characteristics (typ.)
Vcc=800V, VGE=±15V, Rg=24ohm



Transient thermal resistance



保守移行機種
Not recommend for new design.

■ Outline Drawings, mm

mass : 180g

