

# 6MBI50S-120

IGBT Modules

## IGBT MODULE ( S series) 1200V / 50A 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	$V_{GES}$	$\pm 20$	V	
Collector current	Continuous	$T_c=25^\circ\text{C}$	75	A
		$T_c=80^\circ\text{C}$	50	
	1ms	$T_c=25^\circ\text{C}$	150	A
		$T_c=80^\circ\text{C}$	100	
		-Ic	50	A
	1ms	-Ic 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	$V_{is}$	AC 2500 (1min.)	V	
Screw torque	Mounting *1	3.5	N·m	

\*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	$V_{CE}=0\text{V}$ , $V_{GE}=\pm 20\text{V}$	$\mu\text{A}$	
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	$V_{CE(sat)}$	-	2.3	2.65	$T_j=25^\circ\text{C}$	$V_{GE}=15\text{V}$ , $I_c=50\text{A}$	V
		-	2.8	-	$T_j=125^\circ\text{C}$		
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	$V_{CC}=600\text{V}$ $I_c=50\text{A}$ $V_{GE}=\pm 15\text{V}$	$\mu\text{s}$	
	$t_r$	-	0.25	0.6			
	$t_{r(i)}$	-	0.1	-			
Turn-off time	$t_{off}$	-	0.45	1.0	$R_G=24\Omega$		
	$t_f$	-	0.08	0.3			
Diode forward on voltage	$V_F$	-	2.5	3.3	$T_j=25^\circ\text{C}$	$I_F=50\text{A}$ , $V_{GE}=0\text{V}$	V
		-	2.0	-	$T_j=125^\circ\text{C}$		
Reverse recovery time	$t_{rr}$	-	-	0.35	$I_F=50\text{A}$	$\mu\text{s}$	

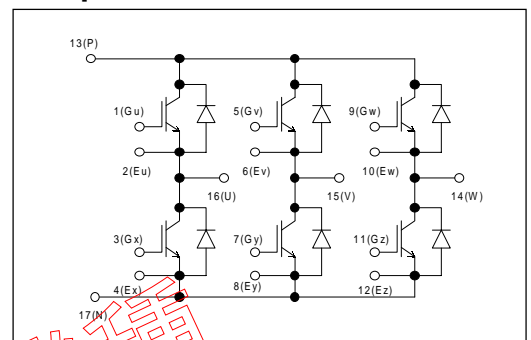
#### ● Thermal resistance characteristics

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

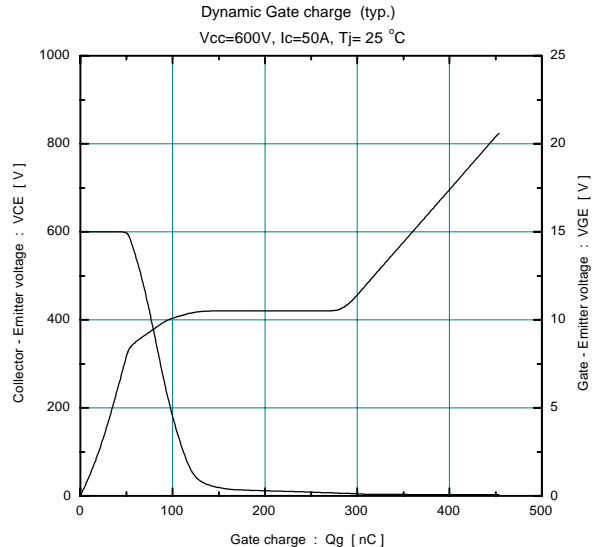
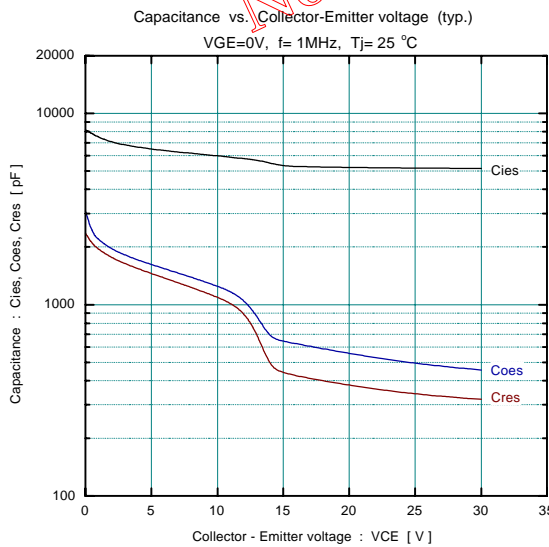
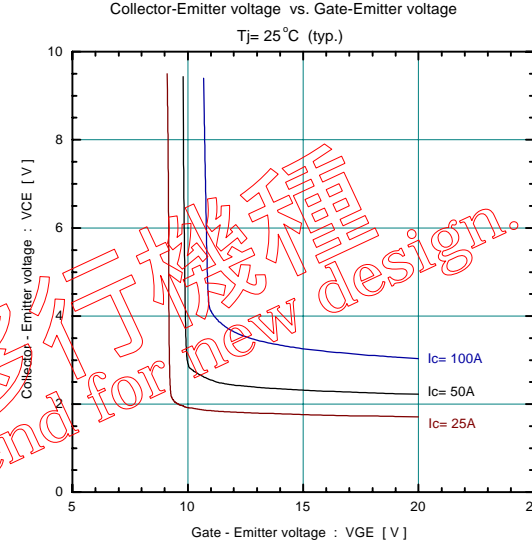
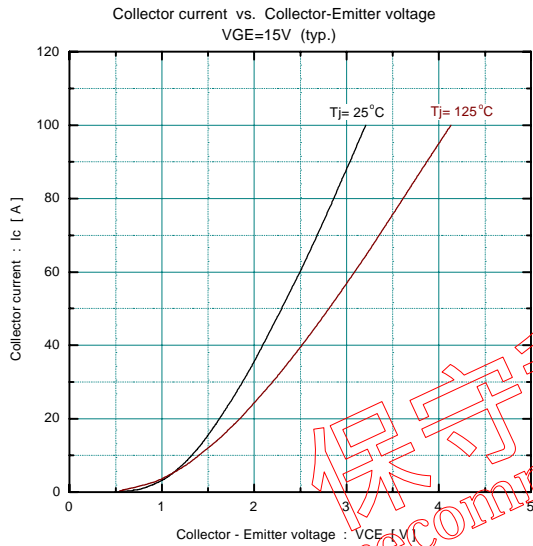
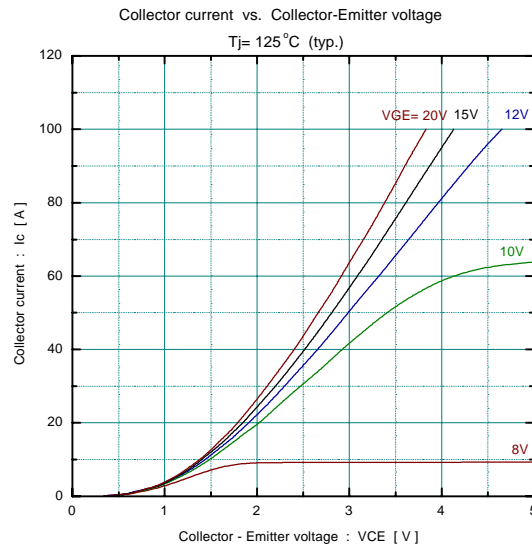
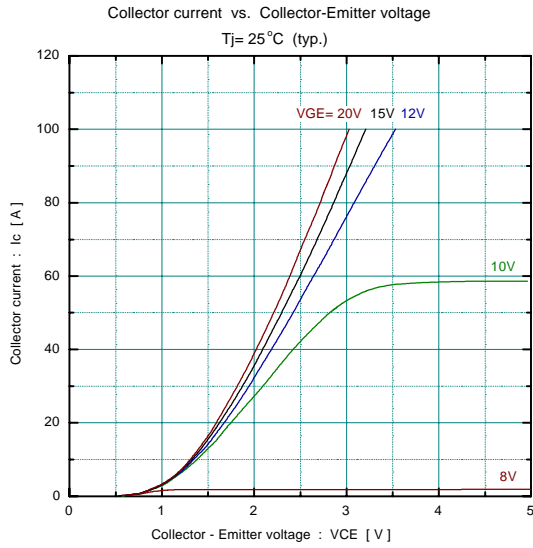


### ■ Equivalent Circuit Schematic

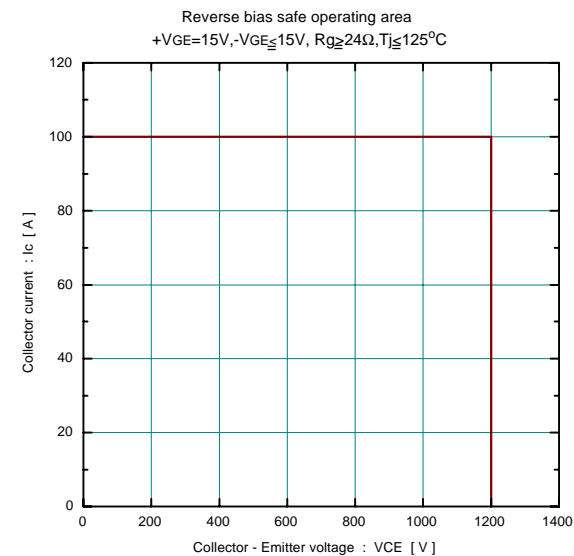
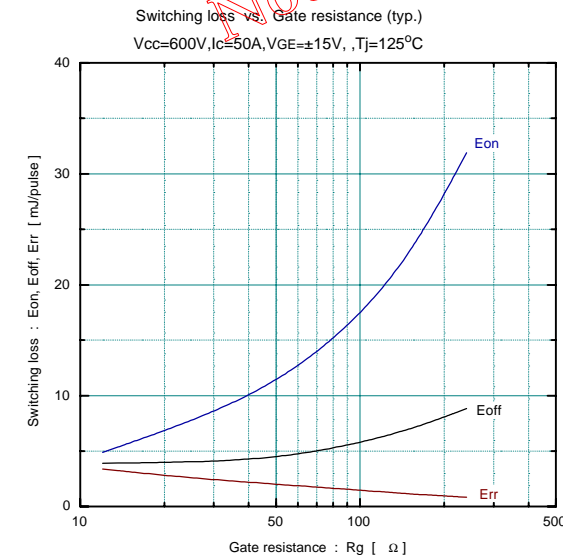
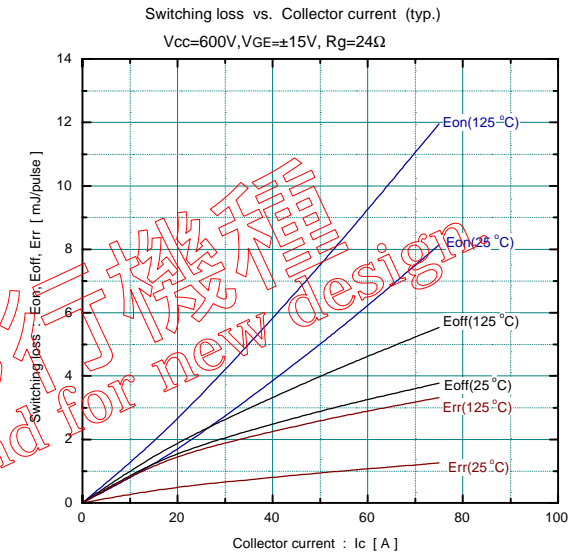
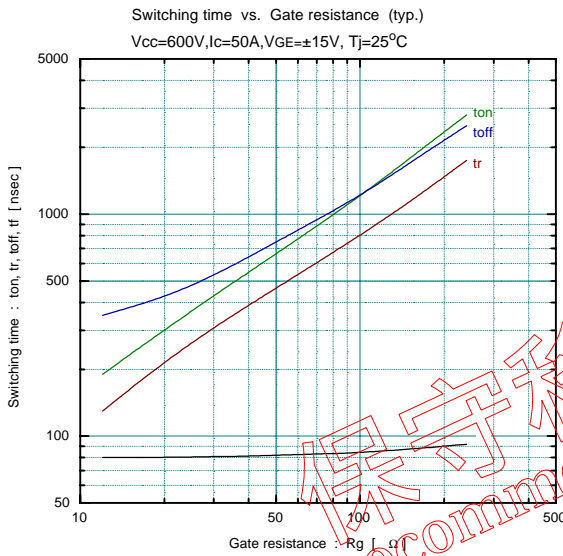
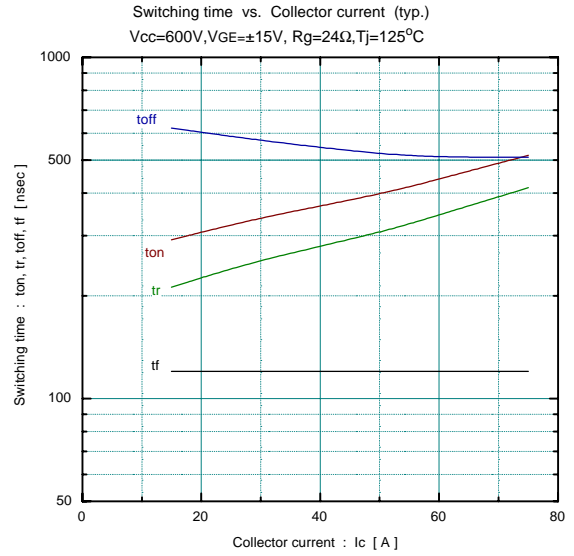
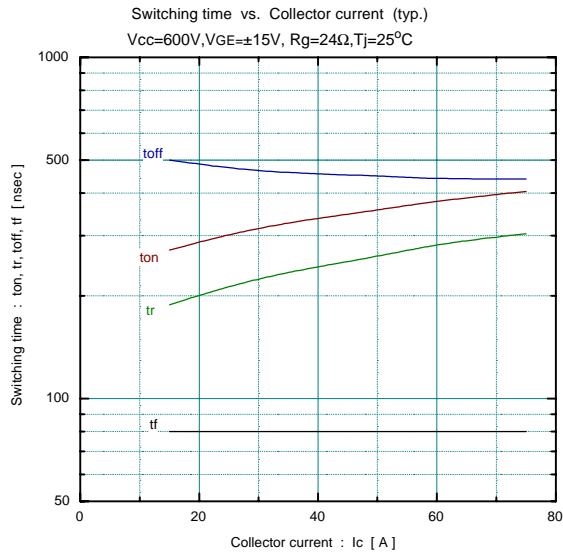


保研行機福  
 Not recommend for new design.

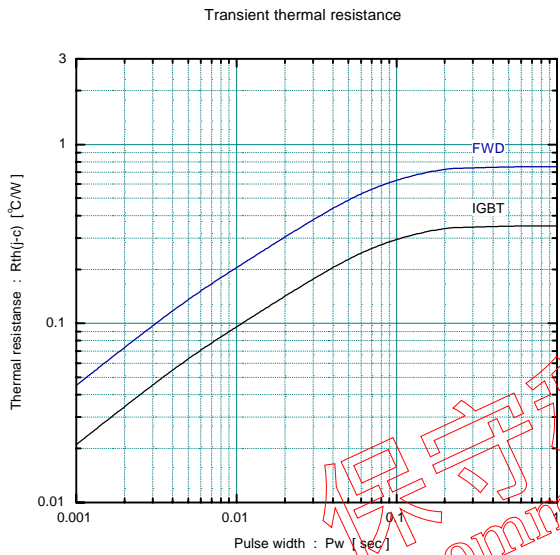
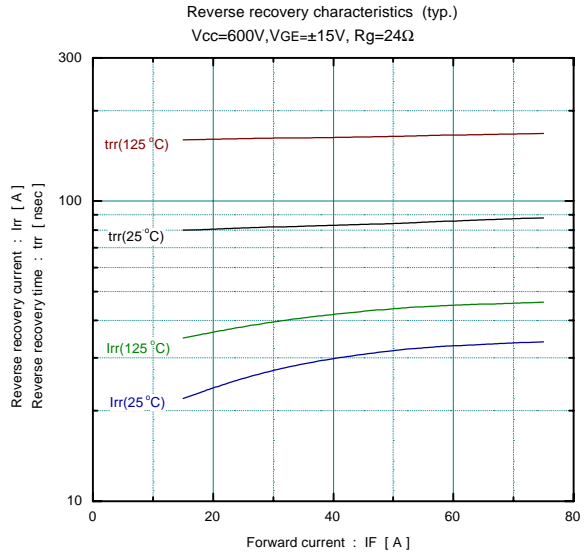
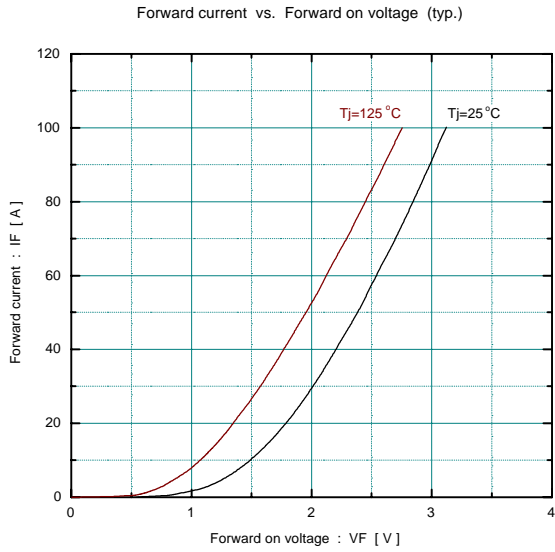
Characteristics



保守移行推奨  
Not recommend for new design.



保守移打機碼  
Not recommend for new design



保守移行機種  
Not recommend for new design.

Outline Drawings, mm

