

6MBI75S-120

IGBT Modules

IGBT MODULE (S series) 1200V / 75A 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	Tc=25°C	I _c	100	A
		Tc=80°C		75	
	1ms	Tc=25°C	I _c pulse	200	A
		Tc=80°C		150	
			-I _c	75	A
	1ms		-I _c pulse	150	A
Max. power dissipation (1 device)			P _c	520	W
Operating temperature			T _j	+150	°C
Storage temperature			T _{stg}	-40 to +125	°C
Isolation voltage			V _{is}	AC 2500 (1min.)	V
Screw torque			Mounting *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	$V_{CE}=20\text{V}$, $I_c=75\text{mA}$	V
Collector-Emitter saturation voltage	$V_{CE(sat)}$	—	2.3	2.6	$T_j=25^{\circ}\text{C}$, $V_{GE}=15\text{V}$, $I_c=75\text{A}$	V
		—	2.8	—	$T_j=125^{\circ}\text{C}$	
Input capacitance	C_{ies}	—	9000	—	$V_{GE}=0\text{V}$	pF
Output capacitance	C_{oes}	—	1875	—	$V_{CE}=10\text{V}$	
Reverse transfer capacitance	C_{res}	—	1650	—	$f=1\text{MHz}$	
Turn-on time	t_{on}	—	0.35	1.2	$V_{CC}=600\text{V}$	μs
	t_r	—	0.25	0.6	$I_c=75\text{A}$	
	$t_{r(i)}$	—	0.1	—	$V_{GE}=\pm 15\text{V}$	
Turn-off time	t_{off}	—	0.45	1.0	$R_G=16\Omega$	
	t_f	—	0.08	0.3		
Diode forward on voltage	V_F	—	2.5	3.3	$T_j=25^{\circ}\text{C}$, $I_F=75\text{A}$, $V_{GE}=0\text{V}$	V
		—	2.0	—	$T_j=125^{\circ}\text{C}$	
Reverse recovery time	t_{rr}	—	—	0.35	$I_F=75\text{A}$	μs

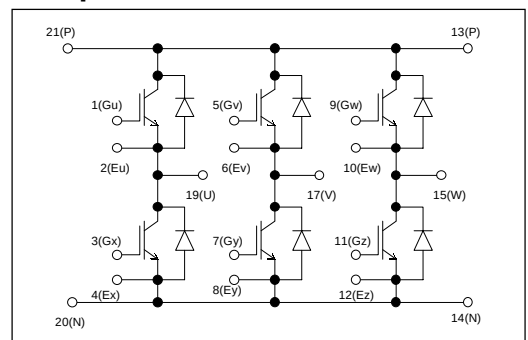
● Thermal resistance characteristics

Item	Symbol	Characteristics			Conditions	Unit
		Min.	Typ.	Max.		
Thermal resistance	$R_{th(j-c)}$	—	—	0.24	IGBT	$^{\circ}\text{C/W}$
	$R_{th(j-c)}$	—	—	0.50	FWD	$^{\circ}\text{C/W}$
	$R_{th(c-f)}\ast_2$	—	0.05	—	the base to cooling fin	$^{\circ}\text{C/W}$

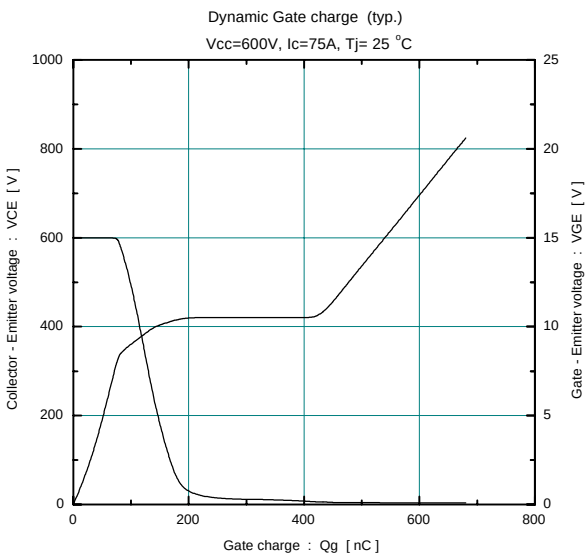
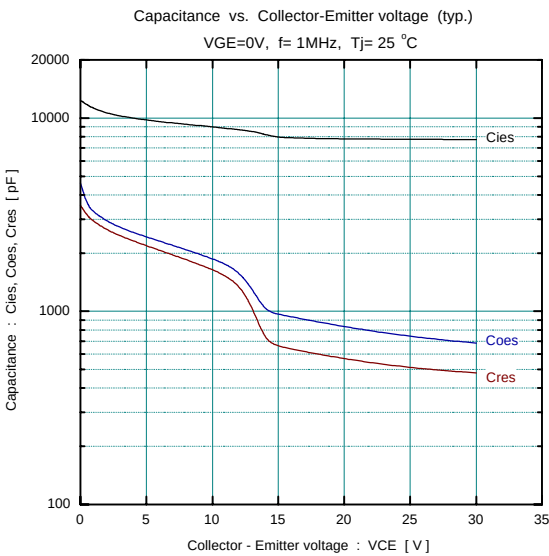
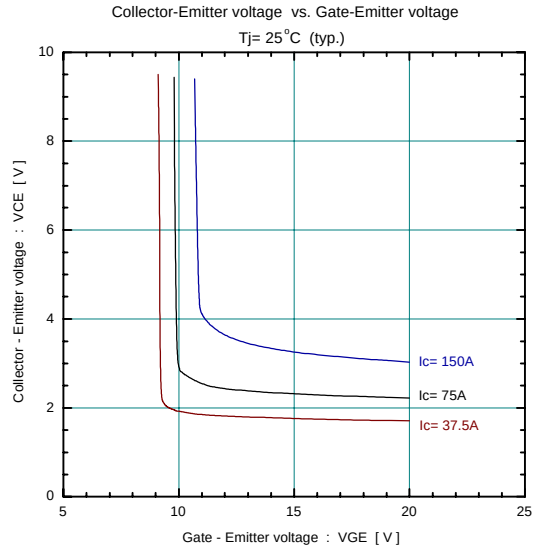
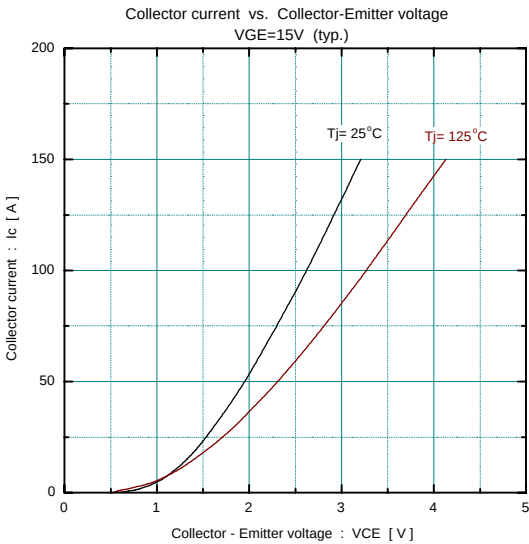
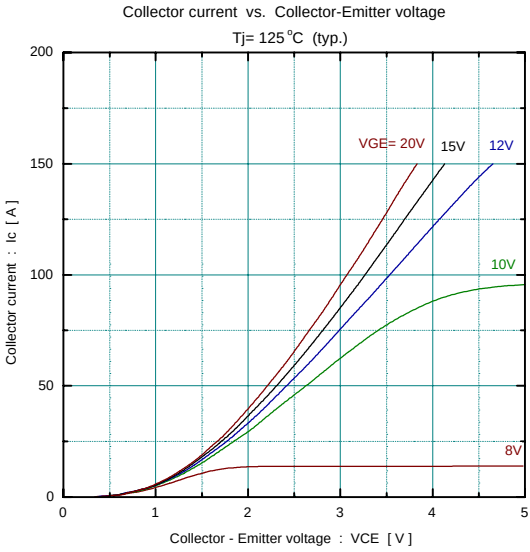
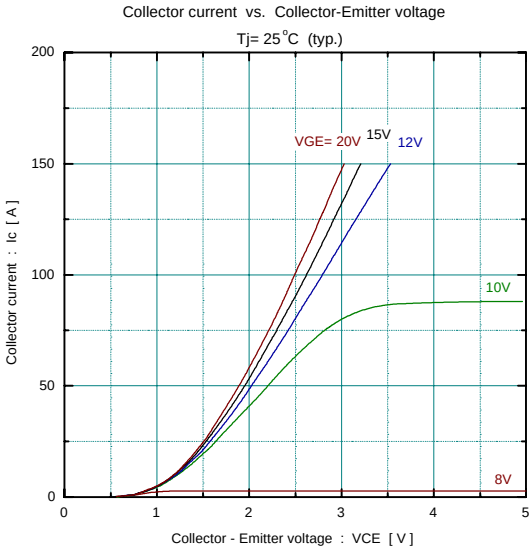
$\ast_2$: This is the value which is defined mounting on the additional cooling fin with thermal compound

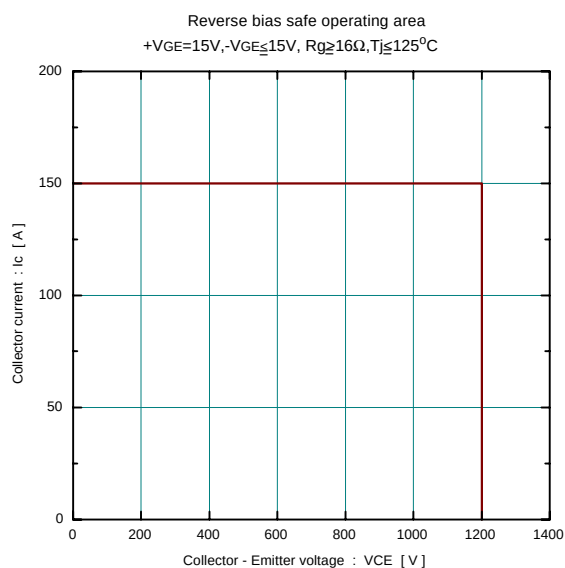
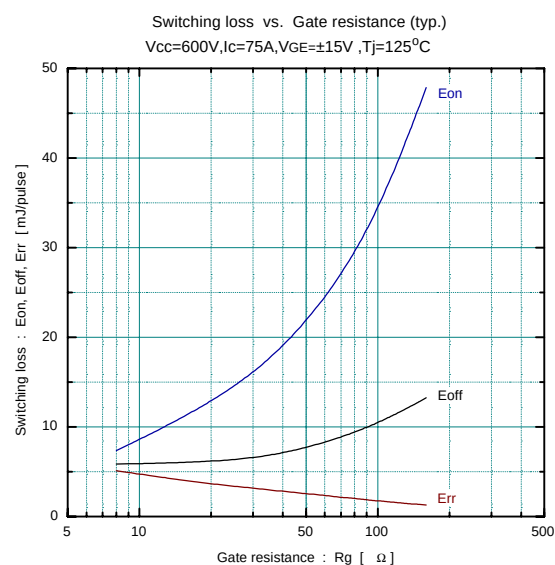
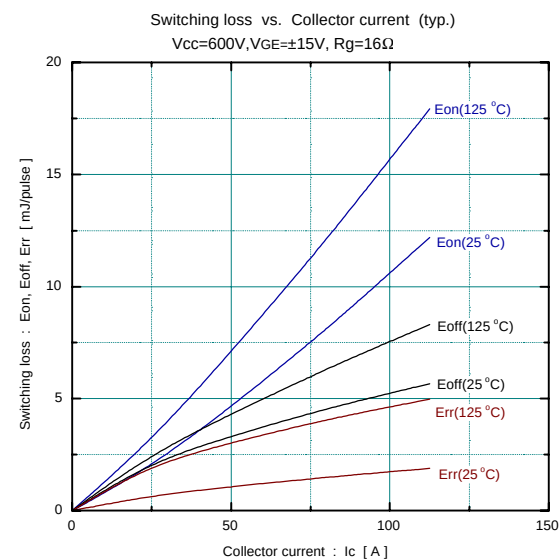
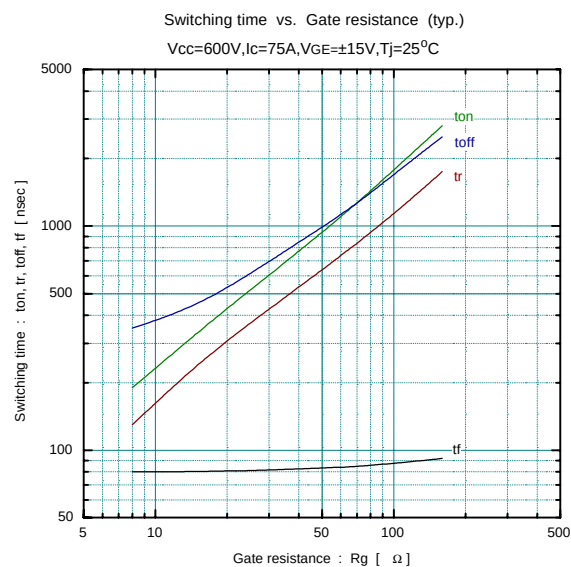
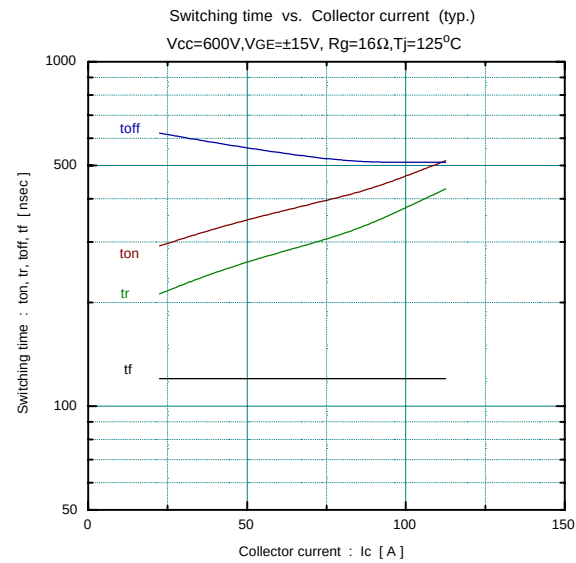
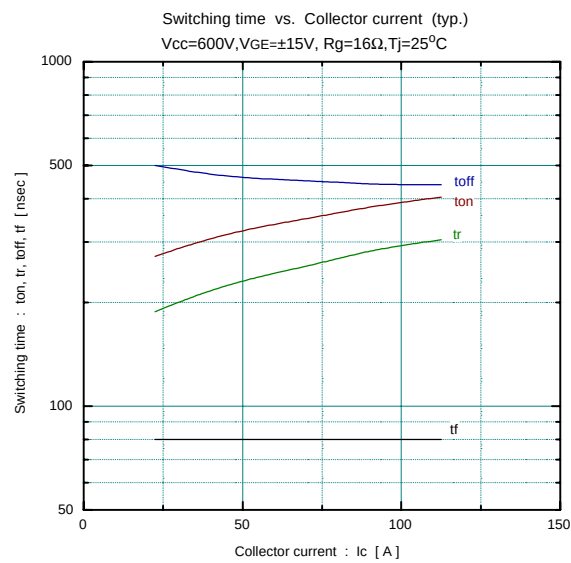


■ Equivalent Circuit Schematic

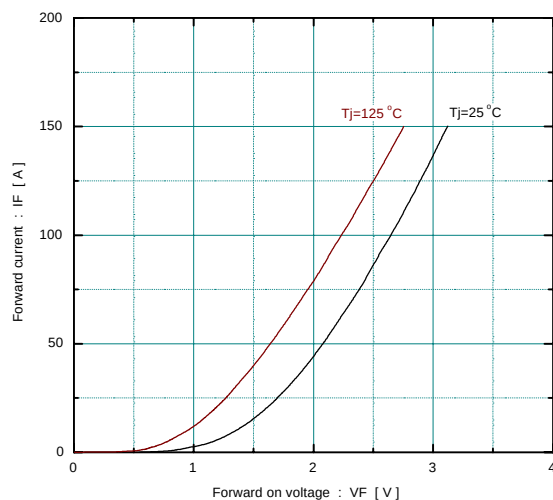


Characteristics

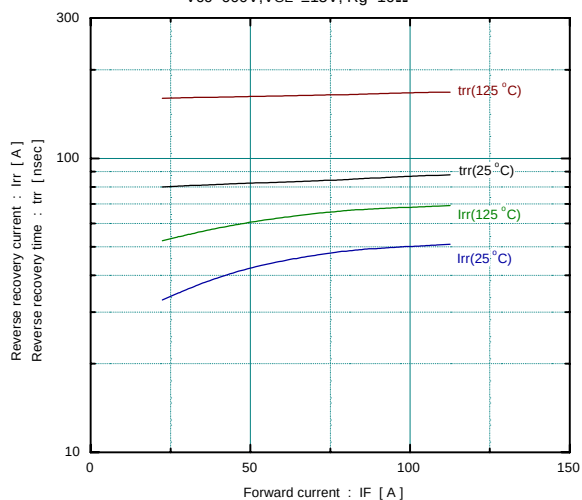




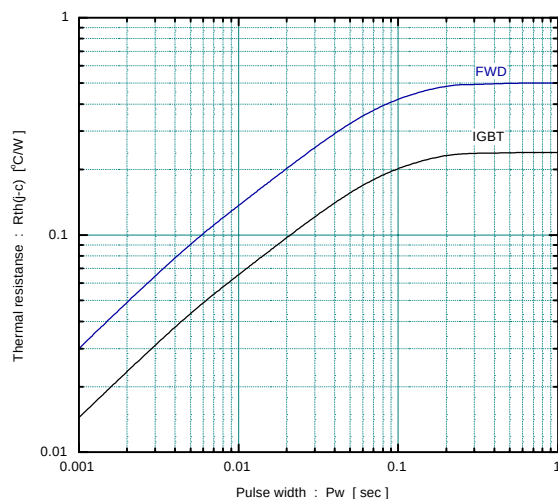
Forward current vs. Forward on voltage (typ.)



Reverse recovery characteristics (typ.)

 $V_{CC}=600\text{V}, V_{GE}=\pm 15\text{V}, R_g=16\Omega$


Transient thermal resistance



Outline Drawings, mm

