

Ratings and characteristics of Fuji IGBT (MBT) Module

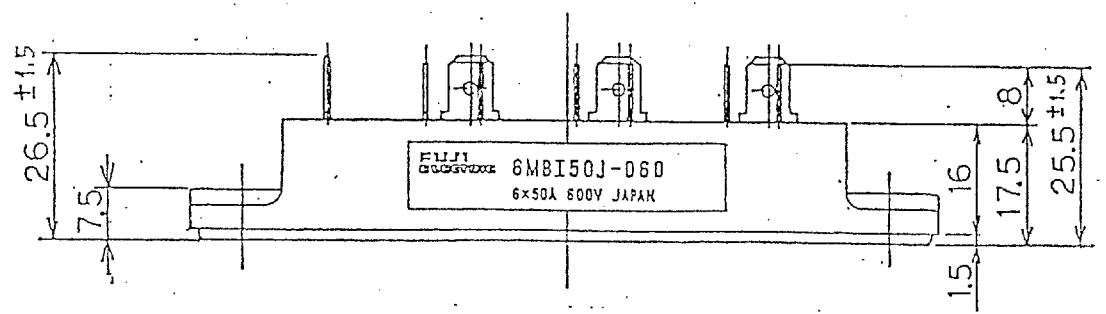
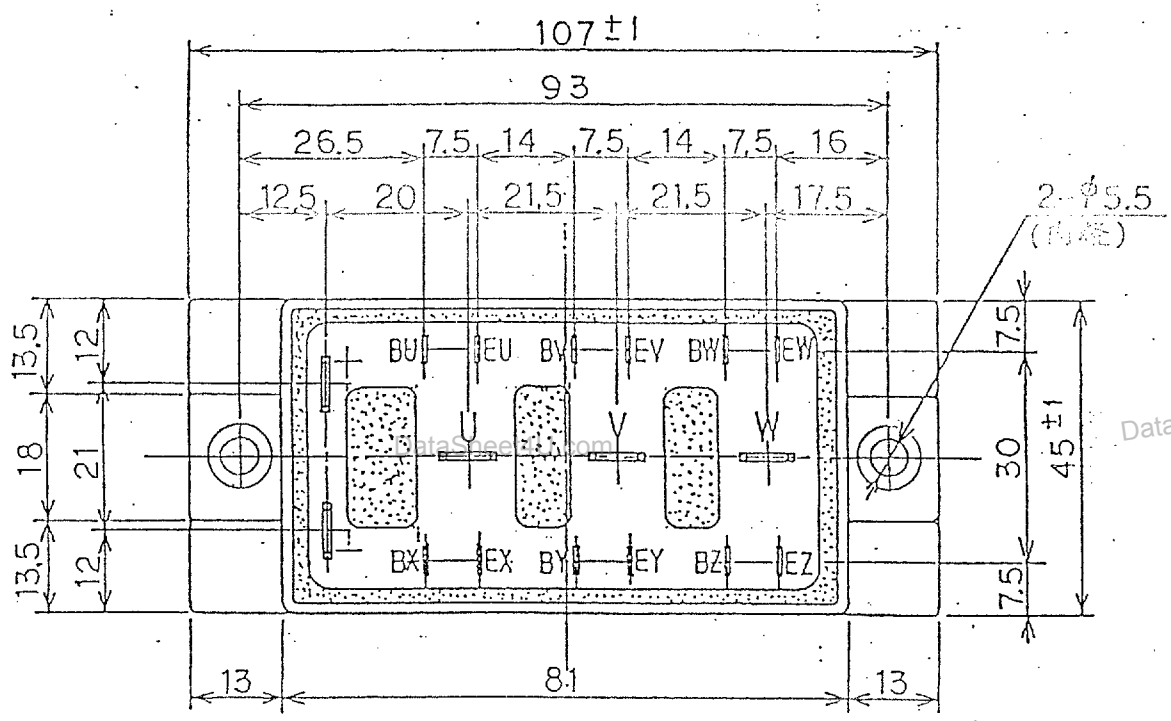
6MBI50J-060 (TENTATIVE)

1. Outline Drawing

Unit : mm

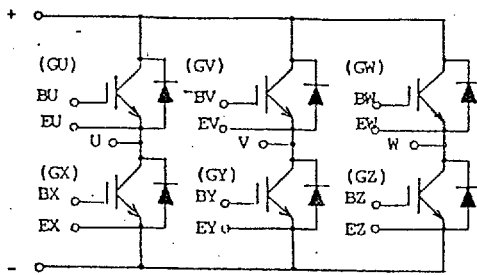
\* Isolation Voltage : AC 2500 V 1 minute

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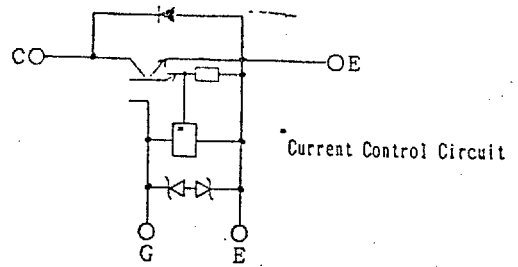


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2. Equivalent Circuit of Module



3. Equivalent Circuit



4. Absolute Maximum Ratings (Tj=25 °C)

Items	Symbols	Ratings	Units
Collector-emitter voltage	$V_{CES}$	600	V
Gate-emitter voltage	$V_{GES}$	$\pm 20$	V
Collector current	Continuous	$I_c$	50
	1 ms	$I_c$ pulse	100
		$-I_c$	50
	1 ms	$-I_c$ pulse	100
Max.power dissipation	PC	150	W
Operating temperature	Tj	+150	°C
Storage temperature	Tstg	-40 ~ +125	°C
Isolation voltage	Vis	AC 2500 (1 min)	V
Screw Torque	Mounting *1	3.5	N·m

Note : \*1 Recommendable Value : 2.5 ~ 3.5 N·m (M5)

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5. Static electrical characteristics ( at  $T_j=25^\circ\text{C}$  unless otherwise specified )

Items	Symbols	Characteristics			Conditions		Units
		min.	typ.	max.			
Zero gate voltage collector current	$I_{CES}$			1.0	$T_j = 25^\circ\text{C}$	$V_{GE} = 0\text{V}$	m A
					$T_j = 125^\circ\text{C}$	$V_{CE} = 600\text{V}$	m A
Gate-emitter leakage current	$I_{GES}$			15	$V_{CE} = 0\text{V}$	$V_{GE} = \pm 2.0\text{V}$	$\mu\text{A}$
Gate-emitter threshold voltage	$V_{GE(th)}$	3.5	5.0	6.5	$V_{CE} = 2.0\text{V}$	$I_C = 5.0\text{mA}$	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		1.7	2.5	$V_{GE} = 1.5\text{V}$	$I_C = 5.0\text{A}$	V

6. Dynamic ratings ( at  $T_j=25^\circ\text{C}$  unless otherwise specified )

Items	Symbols	Characteristics			Conditions	Units
		min.	typ.	max.		
Input capacitance	$C_{ies}$		3200		$V_{GE} = 0\text{V}$	p F
Output capacitance	$C_{oes}$				$V_{CE} = 1.0\text{V}$	
Reverse transfer capacitance	$C_{res}$				$f = 1\text{MHz}$	
Turn-on time	$t_{on}$		0.6	1.2	$V_{CC} = 300\text{V}$ $I_C = 50\text{A}$ $V_{GE} = \pm 15\text{V}$ $R_G = 51\Omega$	$\mu\text{s}$
	$t_r$		0.2	0.6		
Turn-off time	$t_{off}$		0.8	1.5		
	$t_f$		0.15	0.35		

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7. Characteristics of reverse diode ( at Tj=25°C unless otherwise specified )

Items	Symbols	Characteristics			Conditions	Units
		min.	typ.	max.		
Diode forward on-voltage	V <sub>F</sub>		2.3	3.0	I <sub>F</sub> = 50A V <sub>GE</sub> = 0V	V
Reverse recovery time	t <sub>rr</sub>			300	I <sub>F</sub> = 50A -di/dt = 150A/μs	ns

8. Thermal resistance characteristics

Items	Symbols	Characteristics			Conditions	Units
		min.	typ.	max.		
Thermal resistance	R <sub>th(j-c)</sub>			0.833	IGBT	°C/W
	R <sub>th(j-c)</sub>			2.00	Diode	
	* R <sub>th(c-f)</sub>		0.05		the base to cooling fin	

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

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