

Ratings and characteristics of Fuji IGBT (MBT) Module

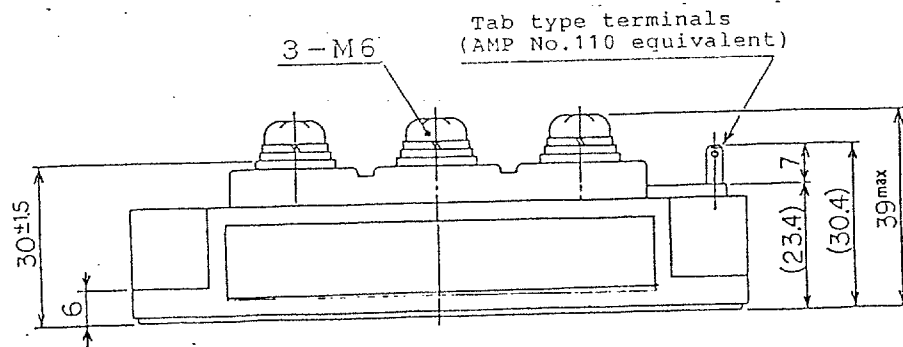
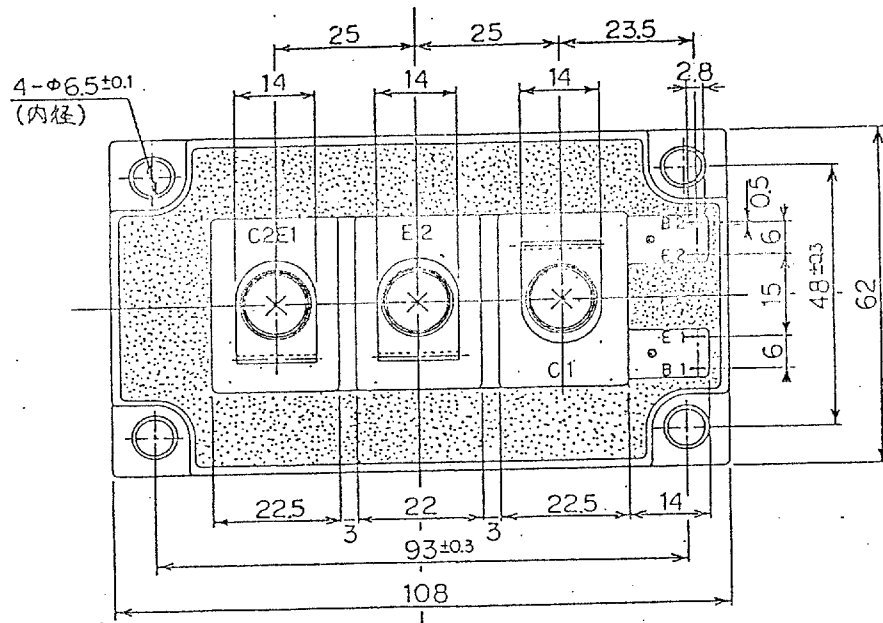
2MBI300J-060 (TENTATIVE)

1. Outline Drawing

Unit : mm

* Isolation Voltage : AC 2500 V 1 minute

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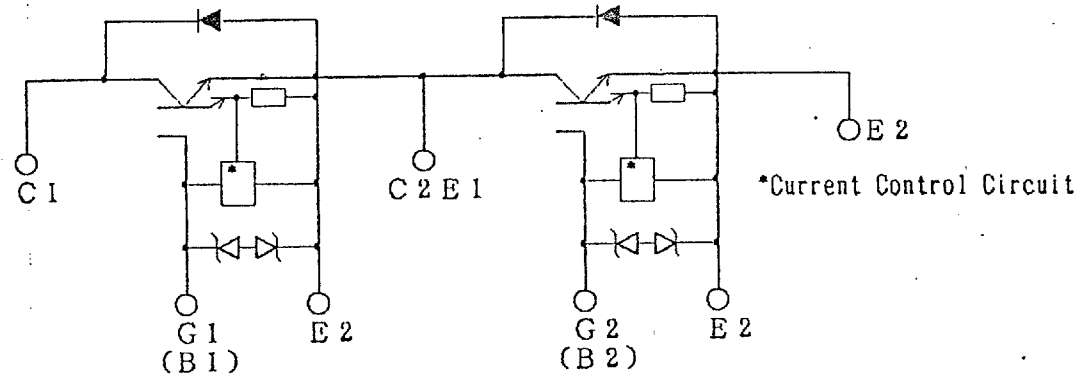
a) Revised page 3.4 and added page 4-11, Dec. 9 '92 A. Yamaguchi
b) Revised page 2.4, 9.10, Apr. 6 '93 A. Yamaguchi

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	DRAWN	Aug-31-92 H. Yamaguchi					
	CHECKED	Aug-31-92 T. Miyasaka					

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2. Equivalent Circuit



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

Items		Symbols	Ratings	Units
Collector-emitter voltage		V_{CES}	600	V
Gate-emitter voltage		V_{GES}	± 20	V
Collector current	Continuous	I_C	300	A
	1 ms	I_C pulse	600	
		$-I_C$	300	
	1 ms	$-I_C$ pulse	600	
Max. power dissipation		PC	900	W
Operating temperature		TJ	+150	°C
Storage temperature		Tstg	-40 ~ +125	°C
Isolation voltage	1min	Vis	AC 2500 (1 min)	V
Screw Torque		Mounting *1	3.5	N·m
		Terminals *2	4.5	

Note : *1 Recommendable Value : 2.5 ~ 3.5 N·m (M5)
 *2 Recommendable Value : 3.5 ~ 4.5 N·m (M6)

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4. 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_{CKS}			2.0	$T_j = 25^{\circ}\text{C}$ $V_{\text{GR}} = 0\text{V}$	mA
					$T_j = 125^{\circ}\text{C}$ $V_{\text{GR}} = 600\text{V}$	mA
Gate-emitter leakage current	I_{GRS}			30	$V_{\text{GR}} = 0\text{V}$ $V_{\text{GR}} = \pm 20\text{V}$	μA
Gate-emitter threshold voltage	$V_{\text{GB}}(\text{th})$	3.5	5.0	6.5	$V_{\text{CK}} = 20\text{V}$ $I_{\text{C}} = 300\text{mA}$	V
Collector-emitter saturation voltage	$V_{\text{CE}}(\text{sat})$		1.8	2.5	$V_{\text{GB}} = 15\text{V}$ $I_{\text{C}} = 300\text{A}$	V

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

Items	Symbols	Characteristics			Conditions	Units
		min.	typ.	max.		
Input capacitance	C_{ies}		19200		$V_{\text{GR}} = 0\text{V}$	pF
Output capacitance	C_{oes}				$V_{\text{CK}} = 10\text{V}$	
Reverse transfer capacitance	C_{res}				$f = 1\text{MHz}$	
Turn-on time	t_{on}		0.6	1.2	$V_{\text{CC}} = 300\text{V}$ $I_{\text{C}} = 300\text{A}$ $V_{\text{GR}} = \pm 15\text{V}$ $R_{\text{G}} = 6.8\Omega$	μs
	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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6. Characteristics of reverse diode (at $T_j=25^{\circ}\text{C}$ unless otherwise specified)

Items	Symbols	Characteristics			Conditions	Units
		min.	typ.	max.		
Diode forward on-voltage	V_F		2.3	3.0	$I_F=300\text{A}$ $V_{GE}=0\text{V}$	V
Reverse recovery time	t_{rr}			300	$I_F=300\text{A}$ $-di/dt=900\text{A}/\mu\text{s}$	ns

7. Thermal resistance characteristics

Items	Symbols	Characteristics			Conditions	Units
		min.	typ.	max.		
Thermal resistance	$R_{th(j-c)}$			0.139	IGBT	$^{\circ}\text{C}/\text{W}$
	$R_{th(j-c)}$			0.267	Diode	
	$\times$ $R_{th(c-f)}$		0.025		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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