

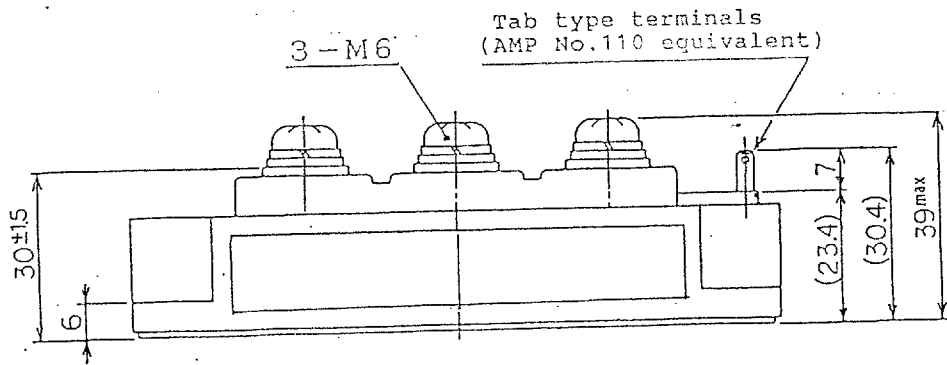
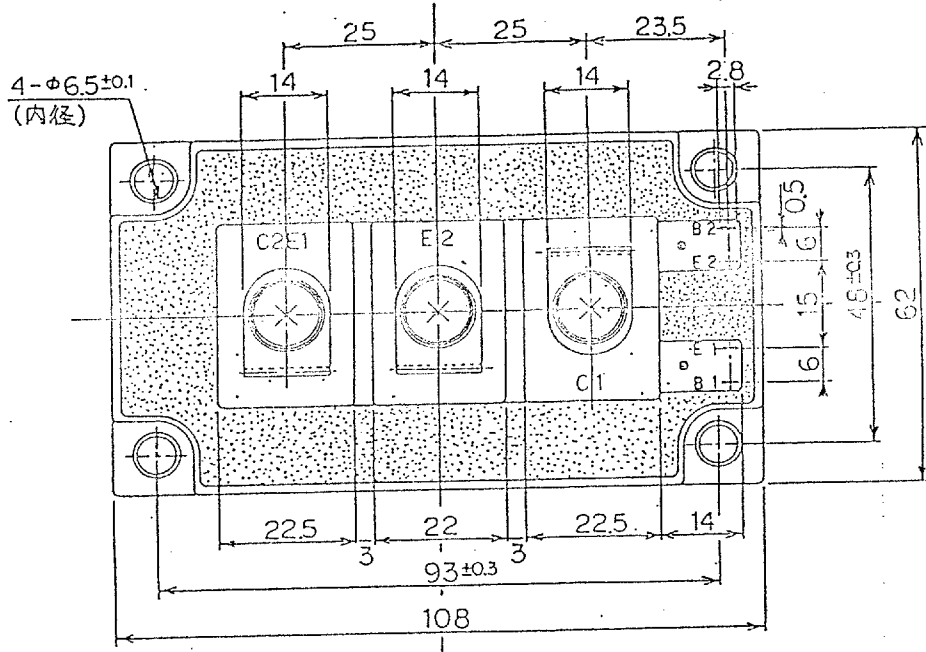
Ratings and characteristics of Fuji IGBT (MBT) Module

2MBI150J-120 (TENTATIVE)

1. Outline Drawing

Unit : mm

\* Isolation Voltage : AC 2500 V 1 minute



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2) Revised page 2~4 and added page 2~11 Feb. 4. '93 A. Yamaguchi  
 3) Revised page 3, 7, 8, Apr. 5. '93 A. Yamaguchi, T.M.

| REVISIONS | DATE       | NAME         | APPROVED |
|-----------|------------|--------------|----------|
| DRAWN     | Dec -11-92 | A. Yamaguchi |          |
| CHECKED   | Dec -15-92 | T. H. Yasuda |          |

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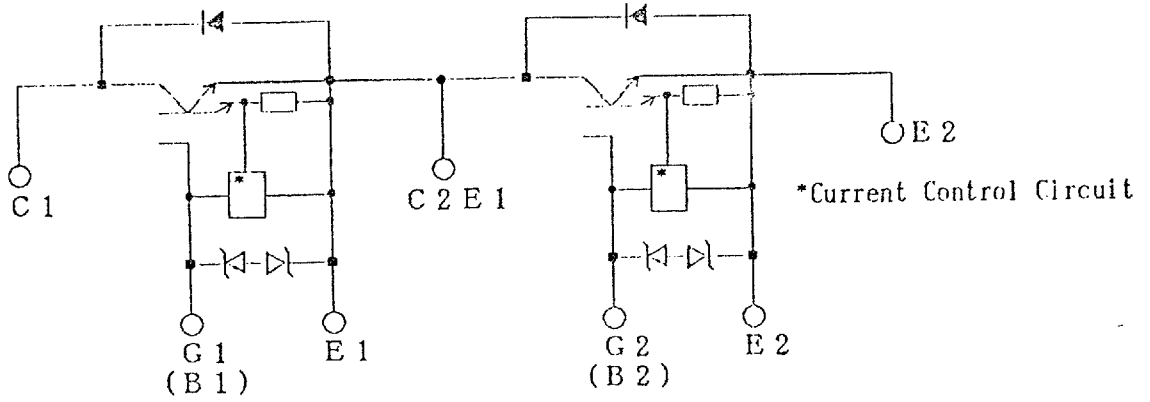
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## 2. Equivalent Circuit



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

| Items                     |            | Symbols      | Ratings        | Units |
|---------------------------|------------|--------------|----------------|-------|
| Collector-emitter voltage |            | $V_{CES}$    | 1200           | V     |
| Gate-emitter voltage      |            | $V_{GES}$    | $\pm 20$       | V     |
| Collector current         | Continuous | $I_c$        | 150            | A     |
|                           | 1 ms       | $I_c$ pulse  | 300            |       |
|                           |            | $-I_c$       | 150            |       |
|                           | 1 ms       | $-I_c$ pulse | 300            |       |
| Max. power dissipation    |            | PC           | 960            | W     |
| Operating temperature     |            | Tj           | 150            | °C    |
| Storage temperature       |            | Tstg         | -40 ~ +125     | °C    |
| Isolation voltage         |            | Vis          | AC 2500 (1min) | 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  | $I_{CES}$     |                 |      | 2.0  | $T_j=25^\circ\text{C}$  | $V_{GE}=0\text{V}$      | $\text{mA}$   |
|                                      |               |                 |      |      | $T_j=125^\circ\text{C}$ | $V_{CE}=1200\text{V}$   | $\text{mA}$   |
| Gate-emitter leakage current         | $I_{GES}$     |                 |      | 30   | $V_{CE}=0\text{V}$      | $V_{GE}=\pm 20\text{V}$ | $\mu\text{A}$ |
| Gate-emitter threshold voltage       | $V_{GE(LH)}$  |                 | 5.0  |      | $V_{CE}=20\text{V}$     | $I_C=150\text{mA}$      | $\text{V}$    |
| Collector-emitter saturation voltage | $V_{CE(SAT)}$ |                 | 2.2  |      | $V_{GE}=15\text{V}$     | $I_C=150\text{A}$       | $\text{V}$    |

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

| Items                        | Symbols   | Characteristics |       |      | Conditions  | Units         |
|------------------------------|-----------|-----------------|-------|------|---|---------------|
|                              |           | min.            | typ.  | max. |   |               |
| Input capacitance            | $C_{ies}$ |                 | 18000 |      | $V_{GE}=0\text{V}$  | $\text{pF}$   |
| Output capacitance           | $C_{oes}$ |                 | --    |      | $V_{CE}=10\text{V}$   |               |
| Reverse transfer capacitance | $C_{res}$ |                 | --    |      | $f=1\text{MHz}$   |               |
| Turn-on time                 | $t_{on}$  |                 | 0.85  |      | $V_{CC}=600\text{V}$<br>$I_C=150\text{A}$<br>$V_{GE}=\pm 15\text{V}$<br>$R_G=5.6\Omega$ | $\mu\text{s}$ |
|                              | $t_r$     |                 | 0.30  |      |   |               |
| Turn-off time                | $t_{off}$ |                 | 1.05  |      |   |               |
|                              | $t_f$     |                 | 0.20  |      |   |               |

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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 <sub>F</sub>  |                 | 2.5  |      | I <sub>F</sub> = 150A<br>V <sub>GE</sub> = 0V | V     |
| Reverse recovery time    | t <sub>rr</sub> |                 |      | 350  | I <sub>F</sub> = 150A<br>-di/dt = 450A/μs     | ns    |

7. Thermal resistance characteristics

| Items              | Symbols                   | Characteristics |       |       | Conditions              | Units |
|--------------------|---------------------------|-----------------|-------|-------|-------------------------|-------|
|                    |                           | min.            | typ.  | max.  |                         |       |
| Thermal resistance | R <sub>th(j-c)</sub>      |                 |       | 0.130 | IGBT(HBT)               | °C/W  |
|                    | R <sub>th(j-c)</sub>      |                 |       | 0.250 | Diode                   |       |
|                    | ※<br>R <sub>th(c-f)</sub> |                 | 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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