

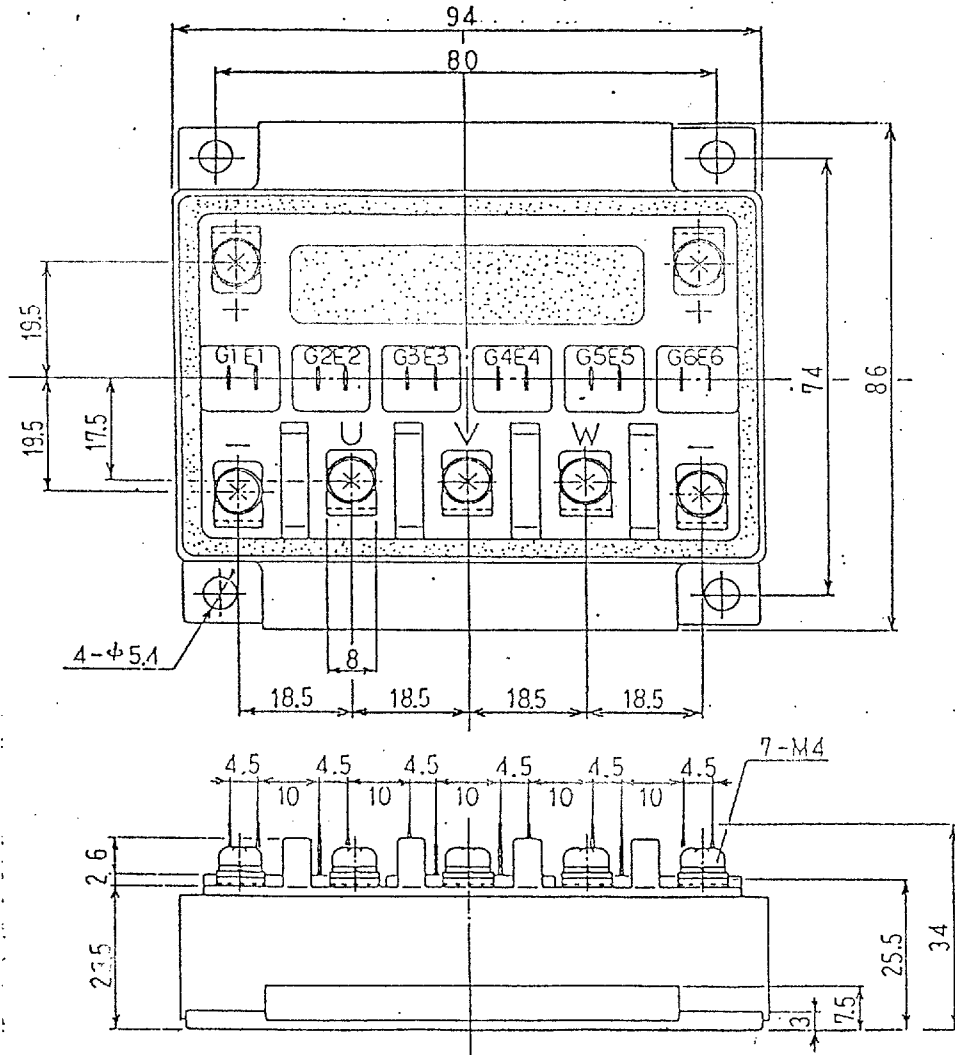
6MBI50J-120

(TENTATIVE)

1. Outline Drawing

Unit : mm

* Isolation Voltage : AC 2500 V 1 minute



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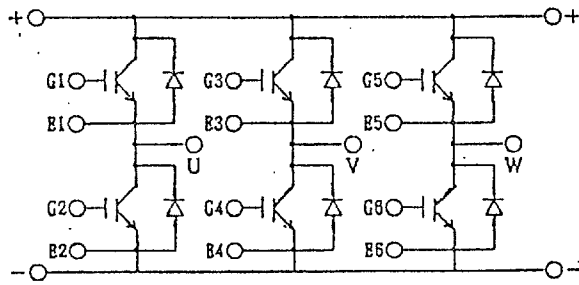
2) Revised base 2-11, Feb. 2 '93 A. Yamaguchi
 b) Revised page 3, 7, 8 Apr. 5 '93 A. Yamaguchi, T. U.

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|--------------------|-------------|----------|----------------------------|------|
| DRAWN Dec-11-'92 | H. Arikawa | | DWG. NO. MT5 F 4956 | 1/11 |
| CHECKED Dec-15-'92 | T. Miyasaka | | | |
| REVISIONS | | | | |

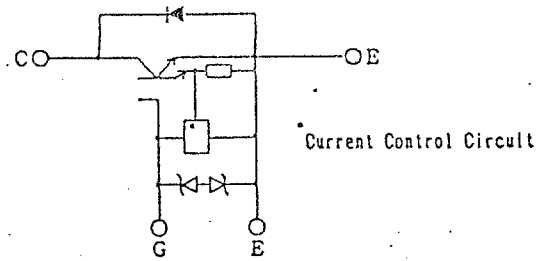
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2. Equivalent Circuit of Module



3. Equivalent Circuit



4. Absolute Maximum Ratings (Tj=25°C)

| Items | | Symbols | Ratings | Units |
|---------------------------|------------|---------------|-------------------|-------|
| Collector-emitter voltage | | V_{CES} | 1 2 0 0 | V |
| Gate-emitter voltage | | V_{GES} | $\pm 2 0$ | V |
| Collector current | Continuous | I_c | 5 0 | A |
| | 1 ms | I_c pulse | 1 0 0 | |
| | | $-I_c$ | 5 0 | |
| | 1 ms | $-I_c$ pulse | 1 0 0 | |
| Max.power dissipation | | PC | 3 2 0 | W |
| Operating temperature | | Tj | +1 5 0 | °C |
| Storage temperature | | Tstg | -4 0 ~ +1 2 5 | °C |
| Isolation voltage | | Vis | AC 2 5 0 0 (1min) | V |
| Screw Torque | | Mounting * 1 | 3 . 5 | N · m |
| | | Terminals * 2 | 1 . 7 | |

Note : *1 Recommendable Value : 2.5 ~ 3.5 N · m (M5)
 *2 Recommendable Value : 1.3 ~ 1.7 N · m (M4)

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5. Static electrical characteristics (at Tj=25°C unless otherwise specified)

| Items | Symbols | Characteristics | | | Conditions | | Units |
|--------------------------------------|----------------------|-----------------|------|------|-----------------------|------------------------|-------|
| | | min. | typ. | max. | | | |
| Zero gate voltage collector current | I _{ces} | | | 1.0 | T _j = 25°C | V _{GE} =0V | mA |
| | | | | | T _j =125°C | V _{CE} =1200V | mA |
| Gate-emitter leakage current | I _{GES} | | | 15 | V _{CE} = 0 V | V _{GE} =±20V | μA |
| Gate-emitter threshold voltage | V _{GE(th)} | | 5.0 | | V _{CE} =20V | I _c =50mA | V |
| Collector-emitter saturation voltage | V _{CE(sat)} | | 2.2 | | V _{GE} =15V | I _c =50A | V |

6. Dynamic ratings (at Tj=25°C unless otherwise specified)

| Items | Symbols | Characteristics | | | Conditions | Units |
|------------------------------|------------------|-----------------|------|------|------------------------------------------------------------------------------------------------|-------|
| | | min. | typ. | max. | | |
| Input capacitance | C _{ies} | | 6000 | | V _{GE} = 0 V | p F |
| Output capacitance | C _{oes} | | - | | V _{CE} =10V | |
| Reverse transfer capacitance | C _{res} | | - | | f = 1 MHz | |
| Turn-on time | t _{on} | | 0.70 | | V _{CC} =600V I _c = 50A V _{GE} =±15V R _g = 24Ω | μ s |
| | t _r | | 0.30 | | | |
| Turn-off time | t _{off} | | 0.95 | | | |
| | t _f | | 0.20 | | | |

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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 _F | | 2.5 | | I _F = 50A V _{GE} = 0V | V |
| Reverse recovery time | t _{rr} | | | 350 | I _F = 50A -di/dt = 150A/μs | ns |

8. Thermal resistance characteristics

| Items | Symbols | Characteristics | | | Conditions | Units |
|--------------------|------------------------|-----------------|------|-------|-------------------------|-------|
| | | min. | typ. | max. | | |
| Thermal resistance | R _{th(j-c)} | | | 0.391 | IGBT(MBT) | °C/W |
| | R _{th(j-c)} | | | 0.749 | Diode | |
| | * R _{th(c-f)} | | 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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