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**Specification**

( 900A/1200V-2in1 IGBT-Module )

Device Name : IGBT-Module  
(RoHS compliant product)

Type Name : 2MBI900VXA-120-50

Spec. No. : MT5F21710

Fuji Electric Device Technology Co.,Ltd.  
Matsumoto Factory

|         | DATE      | NAME        | APPROVAL |  | Fuji Electric Device Technology Co.,Ltd. |           |       |  |  |
|---------|-----------|-------------|----------|--|------------------------------------------|-----------|-------|--|--|
| DRAWN   | 28-Apr-09 | T.Yamamoto  | M.Otsuki |  | DWG.No.                                  | MT5F21710 | 1 / 5 |  |  |
| CHECKED | 28-Apr-09 | T.Nishimura |          |  |                                          |           |       |  |  |
|         |           |             |          |  |                                          |           |       |  |  |
|         |           |             |          |  |                                          |           |       |  |  |

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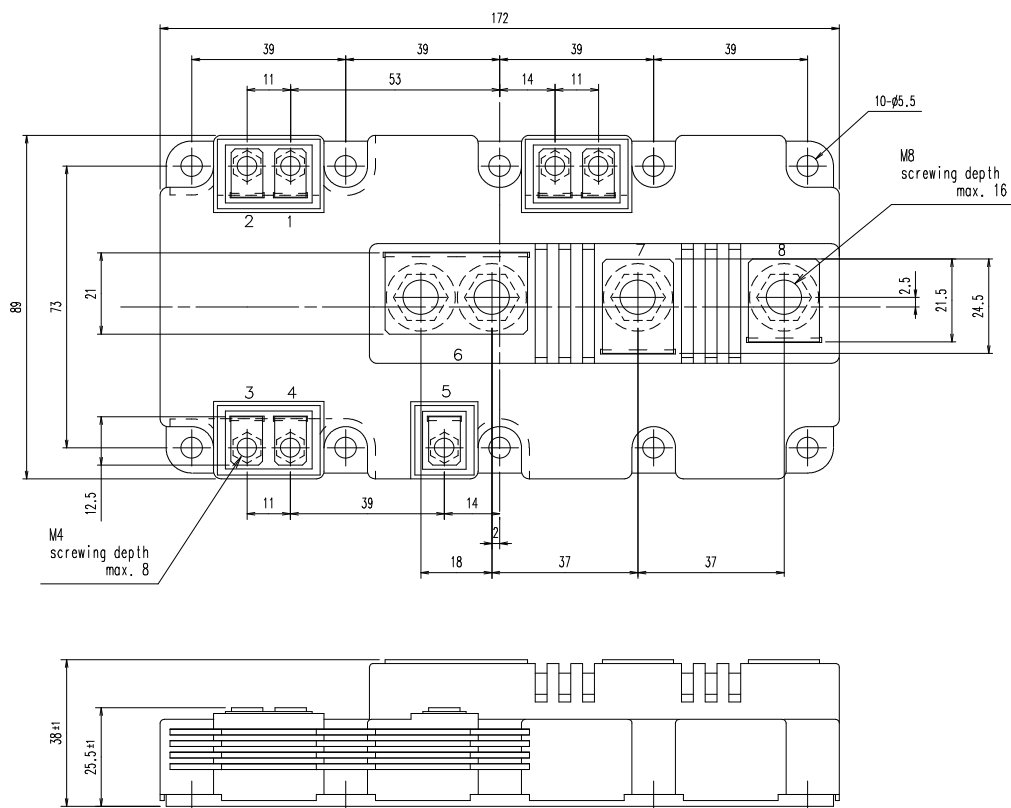
Revised Records

| Date | Classifi - cation | Ind. | Content | Applied date | Drawn | Checked | Checked | Approved |
|------|-------------------|------|---------|--------------|-------|---------|---------|----------|
| - -  | enactment         | -    | -       | Issued data  | -     |         |         |          |
| - -  |                   |      |         | - -          |       |         |         |          |
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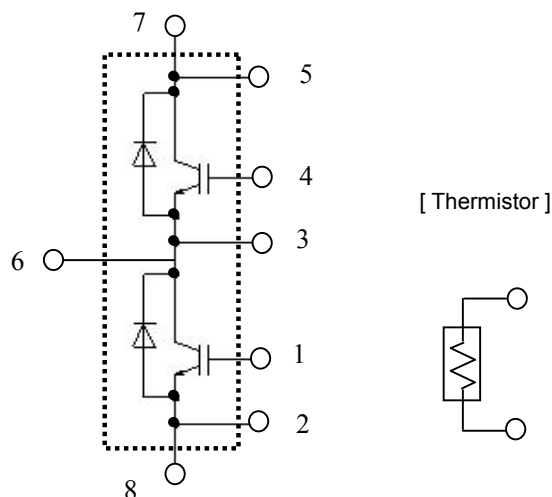
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Type Name : 2MBI900VXA-120-50 / PKG.No. M271

## 1. Outline Drawing ( Unit : mm )



## 2. Equivalent circuit



### 3. Absolute Maximum Ratings ( at Tc= 25°C unless otherwise specified )

| Items                       |                                     | Symbols         | Conditions | Maximum Ratings | Units |
|-----------------------------|-------------------------------------|-----------------|------------|-----------------|-------|
| Collector-Emitter voltage   |                                     | VCES            |            | 1200            | V     |
| Gate-Emitter voltage        |                                     | VGES            |            | ±20             | V     |
| Collector current           | Ic                                  | Continuous      | Tc=25°C    | T.B.D           | A     |
|                             |                                     |                 | Tc=T.B.D°C | 900             |       |
|                             | Icp                                 | 1ms             | Tc=25°C    | T.B.D           |       |
|                             |                                     |                 | Tc=T.B.D°C | 1800            |       |
|                             | -Ic                                 |                 |            | 900             |       |
|                             |                                     | -Ic pulse       | 1ms        | 1800            |       |
| Collector Power Dissipation |                                     | Pc              | 1 device   | 5080            | W     |
| Junction temperature        |                                     | Tj              |            | 175             | °C    |
| Storage temperature         |                                     | Tstg            |            | -40 ~ +150      |       |
| Isolation voltage           | between terminal and copper base *1 | Viso            | AC : 1min. | 4000            | VAC   |
| Screw Torque *2             |                                     | Mounting        |            | 5.0             | N m   |
|                             |                                     | Main Terminals  |            | 10.0            |       |
|                             |                                     | Sense Terminals |            | 2.1             |       |

(\*1) All terminals should be connected together when isolation test will be done.

(\*2) Recommendable Value : Mounting 3.0~5.0 Nm (M5)

Main Terminals 8~10 Nm (M8)

Sense Terminals 1.8~2.1 Nm (M4)

### 4. Electrical characteristics ( at Tj= 25°C unless otherwise specified)

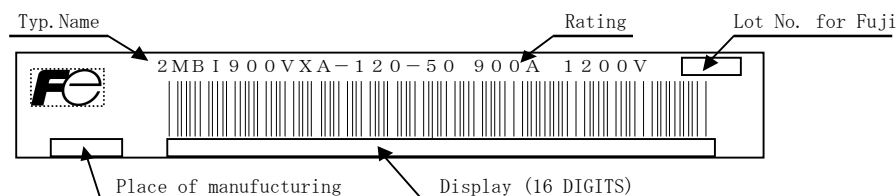
| Items                               | Symbols                       | Conditions              | Characteristics |       |      | Units |
|-------------------------------------|-------------------------------|-------------------------|-----------------|-------|------|-------|
|                                     |                               |                         | min.            | typ.  | max. |       |
| Zero gate voltage Collector current | ICES                          | VGE = 0V<br>VCE = 1200V | -               | -     | 1.0  | mA    |
| Gate-Emitter leakage current        | IGES                          | VCE = 0V<br>VGE=±20V    | -               | -     | 1600 | nA    |
| Gate-Emitter threshold voltage      | VGE(th)                       | VCE = 20V<br>Ic = 900mA | 6.0             | 6.5   | 7.0  | V     |
| Collector-Emitter                   | VCE(sat)<br>[ main terminal ] | VGE=15V                 | Tj= 25°C        | -     | 1.97 | V     |
|                                     |                               |                         | Tj=125°C        | -     | 2.27 |       |
|                                     |                               |                         | Tj=150°C        | -     | 2.37 |       |
|                                     | VCE(sat)<br>[ chip ]          | Ic = 900A               | Tj= 25°C        | -     | 1.70 |       |
|                                     |                               |                         | Tj=125°C        | -     | 2.00 |       |
|                                     |                               |                         | Tj=150°C        | -     | 2.10 |       |
| Input capacitance                   | Cies                          | VCE=10V, VGE=0V, f=1MHz | -               | T.B.D | -    | nF    |
| Turn-on                             | ton                           | Vcc = 600V<br>Ic = 900A | -               | T.B.D | -    | μs    |
|                                     | tr                            | VGE=±15V, Tj=150°C      | -               | T.B.D | -    |       |
| Turn-off                            | toff                          | Rgon=T.B.D Ω            | -               | T.B.D | -    |       |
|                                     | tf                            | Rgon=T.B.D Ω            | -               | T.B.D | -    |       |
| Forward on voltage                  | VF<br>[ main terminal ]       | VGE=0V                  | Tj= 25°C        | -     | 2.02 | V     |
|                                     |                               |                         | Tj=125°C        | -     | 2.28 |       |
|                                     |                               |                         | Tj=150°C        | -     | 2.25 |       |
|                                     | VF<br>[ chip ]                | IF = 900A               | Tj= 25°C        | -     | 1.75 |       |
|                                     |                               |                         | Tj=125°C        | -     | 2.01 |       |
|                                     |                               |                         | Tj=150°C        | -     | 1.98 |       |
| Reverse recovery                    | trr                           | IF = 900A               | -               | T.B.D | -    | μs    |
| Lead resistance, terminal-chip      | R lead                        |                         | -               | 0.30  | -    | mΩ    |

## 5. Thermal resistance characteristics

| Items                               | Symbols  | Conditions                | Characteristics |        |        | Units |
|-------------------------------------|----------|---------------------------|-----------------|--------|--------|-------|
|                                     |          |                           | min.            | typ.   | max.   |       |
| Thermal resistance(1 device)        | Rth(j-c) | IGBT                      | -               | -      | 0.0295 | °C/W  |
|                                     |          | FWD                       | -               | -      | 0.0535 |       |
| Contact Thermal resistance(1module) | Rth(c-f) | with Thermal Compound (*) | -               | 0.0045 | -      |       |

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

## 6. Indication on module



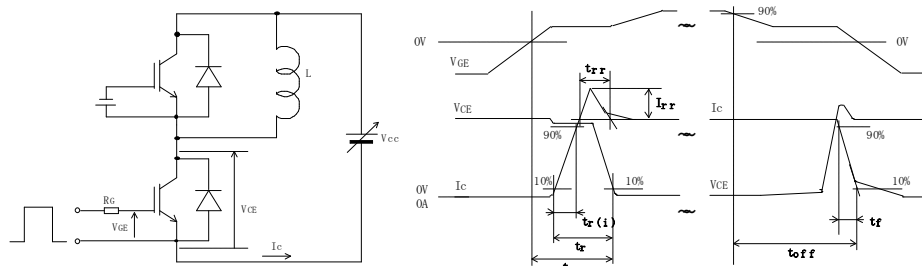
## 7. Applicable category

This specification is applied to IGBT Module named 2MBI900VXA-120-50 .

## 8. Storage and transportation notes

- The module should be stored at a standard temperature of 5 to 35°C and humidity of 45 to 75% .
- Store modules in a place with few temperature changes in order to avoid condensation on the module surface.
- Avoid exposure to corrosive gases and dust.
- Avoid excessive external force on the module.
- Store modules with unprocessed terminals.
- Do not drop or otherwise shock the modules when transporting.

## 9. Definitions of switching time



## 10. Packing and Labeling

Display on the packing box

- Logo of production
- Type name
- Lot No
- Products quantity in a packing box