FUJI IGBT Modeules U Series
Mounting Instructions 2MBI400U(4)H-120

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This manual describes the recommended method to install and use 2MBI400U(4)H-120 safely.

1 Mounting

1.1 Mounting on heat sink

Since thermal resistance varies according to the position of the mounted modules, pay attention to the following points:

a. When mounting only one module, position it in the center of the heat sink in order to minimize the thermal resistance.
b. When mounting several modules, determine the individual positions on the heat sink according to the amount of heat that each module generates. Leave more space for modules that generate more heat.

1.2 Heat sink surface finishing (module mounting area)

The mounting surface of the heat sink should be finished to the roughness of 10μm or less and a warp based on a length of 100mm should be 50μm or less.
If the surface of the heat sink is not flat enough, there will be a sharp increase in the contact thermal resistance (Rth(c-f)). If the flatness of the heat sink does not meet the above requirements, the mounted module will experience extreme stress on the DBC substrate possibly destroying its insulating barrier.
Roughness: 10μm max.
Flatness of the heat sink: 50μm max. (based on a length of 100mm)

1.3 Thermal compound application

To reduce the contact thermal resistance, we recommend applying thermal compound with screen printing, rollers or spatulas between the heat sink and the base plate of the module. Recommended thickness of the compound is approx.100µm.

Recommended thermal compound for your reference

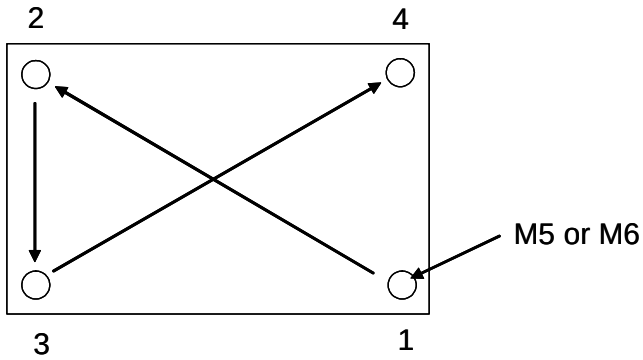
Penetration (typ.)	338 min.
Thermal conductivity	0.92 W/m·k min.
Thickness of the compound	100µm±30µm

Note:

1) The contact thermal resistance is dependent on the compound's efficiency and thickness.
   The thickness of the compound could be lessened if the warp of the heat sink could be reduced.
   Use the above table as a reference to decide the thickness of the compound being used.
2) Confirm the expansion of the compound when the module is installed with high viscosity compound. On the other hand, note that low viscosity compound may flow out due to the temperature cycle.

1.4 Mounting procedure

1) Recommended tightening torques: 2.5 to 3.5 N•m (M5 or M6)
2) Initial: Torque 0.5 to 1.0 (N•m), sequence (1)-(2)-(3)-(4)
3) Final: Full specified torque (3.5 N•m), sequence (1)-(2)-(3)-(4)



1.5 ESD

If excessive static electricity is applied to the control terminals, the devices could be broken. Some countermeasures against static electricity is necessary. Refer to the Chapter 3-2 of the Application Manual (REH984).

2 Main terminal connection

2.1 Bus bar connection

1) Screw: M6
2) Screw length: Bus bar thickness + (7.5mm to 9.5mm)
3) Tightening torque: 3.5 to 4.5 [N•m]
4) Allowable terminal temperature: 100°C max.
5) Allowable terminal pull force: 40N max.

Note:
In case of connecting a bus bar to the main terminal, avoid excessive force to a terminal part.
Especially, the applied force at the opposide end of the copper bar will act as much bigger to the terminal part, because the moment force is proportional to the copper bar length.
Moreover, if a screw will be tightened when there is position gap between a terminal and a copper bar, stress will be generated continuously in the terminal part, and becomes the cause of damage.
Fasten the screw so that position gap does not occur.

3 Dimensions