PH-SERIES Installation

1. CIRCUIT BOARD MOUNTING

By the following instruction shown in Figure1-1, mount a power module onto printed circuit board.

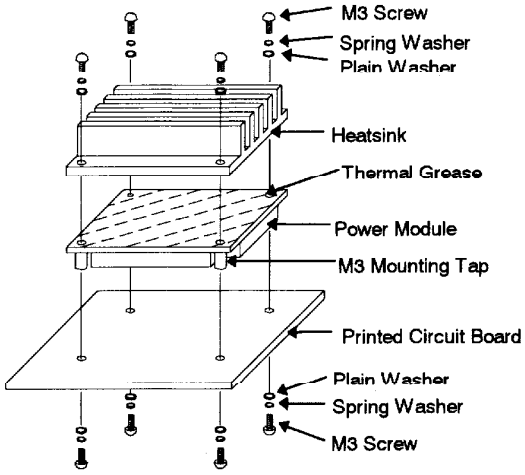

Figure1-1 : Installation of Printed Circuit Board and Heatsink

(1) Method to Fix

To fix a power module onto printed circuit board, through M3 mounting tapped holes (4 places) at the resin case side (input/output terminal pin side.)

Use M3 screws.

Recommended torque is 5.5 kg · cm.

(2) M3 Mounting Tapped Holes

M3 mounting tapped holes of power module are connected to baseplate.

Connect baseplate terminal to FG (Flame Ground) by using this M3 mounting tapped holes.

(3) Mounting Holes on Printed Circuit Board

Refer to the following sizes, determine diameter of hole and land diameter of printed circuit board.

Input/Output Terminal Pin	: ϕ2.0 mm
Hole Diameter	: ϕ2.5 mm
Land Diameter	: ϕ5.0 mm
Signal Terminal Pin	: ϕ0.6 mm
Hole Diameter	: ϕ1.0 mm
Land Diameter	: ϕ2.0 mm
Mounting Tap (FG)	: ϕ3.0 mm
Hole Diameter	: ϕ3.5 mm
Land Diameter	: ϕ7.0 mm

For disposition of the holes, see outward drawing of the power module.

(4) Recommended Material of Printed Circuit Board

Recommended material of the printed circuit board is a double sided glass epoxy with through holes (thickness t = 1.6 mm, more than 35μm thickness of copper.)

(5) Output Pattern Width

When several to tens amperes of current flows to output pattern, voltage would be dropped and then heat generation would be higher for narrow pattern. Relationship between current and pattern width changes depending on material of printed circuit board, thickness of conductor, temperature raise allowance. 35μm copper glass epoxy printed circuit board is shown in Figure1-2 as an example.

For examples, when 5A of current flows and temperature raise below 10°C are expected, pattern width shall be more than 4.2 mm with 35μm copper plate (generally 1mm/A is standard.)

Confirmation is definitely necessary for designing because characteristics shown in Figure1-2 is depend on manufacturers of printed circuit board.

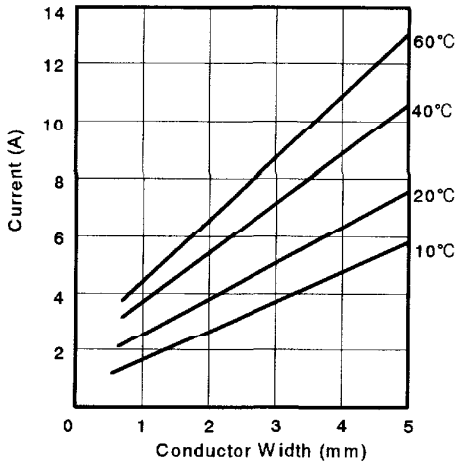

Figure1-2 : Characteristics of Current Allowance vs. Conductor Width for 35μm Copper Plate

2. INSTALLATION OF HEATSINK

(1) Method to Fix

To fix the power module onto heatsink, use M3 mounting tapped holes (4 places) at the baseplate side. Use M3 screws.

Recommended torque is 5.5 kg · cm.

Use with thermal grease or thermal sheet in between heatsink and baseplate to minimize the contact thermal resistance and to enhance the heat conductivity when the heatsink is mounted to the power module.

(2) Mounting Hole of Heatsink

Refer to the following hole diameter to determine the mounting hole side of heatsink.

Hole Diameter : ϕ3.5 mm

3. VIBRATION

The specification about vibration is a value assuming only the power module is mounted on printed circuit board. To prevent excessive force to the module and printed circuit board, fix the heatsink to the chassis as well as to the module when a large size of heatsink is used.

4. RECOMMENDED SOLDERING CONDITION

Recommended soldering temperature is as follow.

(1) Soldering Dip

· · · · · · 260°C within 10 seconds

Preheat Condition

· · · · · · 110°C 30~40 seconds

(2) Soldering Iron

· · · · · · 350°C within 3 seconds

5. RECOMMENDED CLEANING CONDITION

Recommended cleaning conditions after soldering is as follow. For other cleaning methods, contact us.

(1) Recommended solvent

IPA (Iso-Propl Alcohol)

(2) Procedure

Use brush to prevent penetration of the solvent into the power module.

Dry the solvent completely.