PAF500F24 Series

Installation

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PAF500F24-SERIES Installation

1. Circuit Board Mounting

When mounting power module on circuit board, use mounting method described in Fig. 1-1.

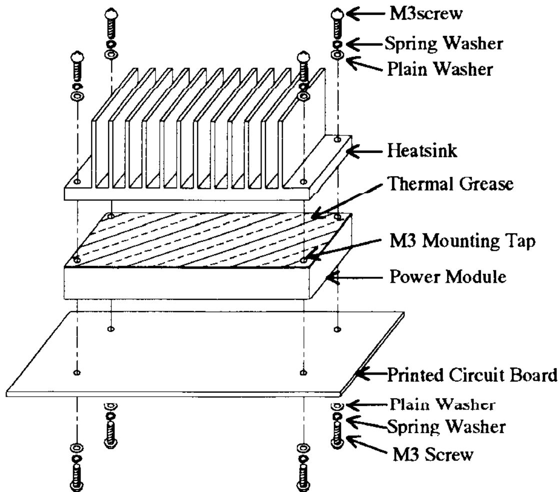

Fig.1-1 PCB and heatsink mounting method

(1) Fixing method

To fix power module onto printed circuit board, use M3 mounting tapped holes (4 places) at the resin case side (input/output terminal pin side). Use M3 screws. Recommended torque is 0.54N･m.

(2) M3 Mounting Tapped Holes

M3 mounting tapped holes are connected to the baseplate. Connect baseplate to FG (Frame Ground) by using this M3 mounting tapped holes.

(3)Printed Circuit Board Mounting Holes

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

Input/Output Terminal Pin (ϕ2.0 mm)
- Hole Diameter : ϕ2.5 mm
- Land Diameter : ϕ5.0 mm

Signal Terminal Pin (ϕ1.0 mm)
- Hole Diameter : ϕ1.5 mm
- Land Diameter : ϕ3.0 mm

M3 Screw Mounting Tap (FG)
- Hole Diameter : ϕ3.5 mm
- Land Diameter : ϕ7.0 mm

For location of the holes, refer to outline 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=1.6mm, more than 35 um thickness of copper.)

(5) Output Terminal Pin

Connect +Vin,-Vin,+V,-V terminal pins such that the contact resistance becomes minimal. Note that large contact resistance could result into reduction of efficiency, abnormal temperature rise, etc. that could damage the power module.

(6) Output Pattern Width

Several Amperes to tens of Amperes of output current flows through the output pattern. If pattern is too narrow, voltage drop will occur and heat on pattern will increase. Relationship of current and pattern width varies depending on material of printed circuit board, conductor width, maximum allowable temperature rise of the pattern,etc. As an example, 35 μm thick copper glass epoxy printed circuit board characteristics is shown in Fig. 1-2.

For example, if 5A flows and temperature rise has to be set below 10°C, for a copper thickness of 35 μm, pattern width should be 4.2mm above (generally, 1 mm/A is standard).

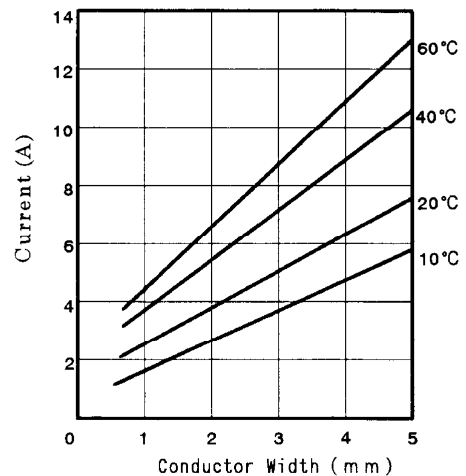

Fig.1-2 Characteristics of Current vs. Conductor Width for 35μm Copper Plate

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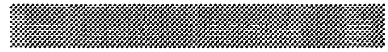

Also, characteristics shown in Fig. 1-2 varies according to printed circuit board maker, Therefore, be sure to verify when designing.

2. Heatsink Installation

(1) Fixing method

When fixing the power mdoule onto the heatsnk, use M3 mounting tapped holes (4 places) at the baseplate side. Use M3 screws.

Recommended torque is 0.54N·m.

When heatsink is mounted to the power module, be sure to use with thermal grease or thermal sheet in between heatsink and baseplate to minimize the contact resistance and to enhance the heat conductivity.

Also, use heatsink without curve to ensure contact between baseplate and heatsink.

(2)Heatsink Mouting Hole

Refer to hole diameter below when selecting heatsink mounting hole size.

Hole diameter : φ3.5 mm

3. Vibration

Power Module withstand vibration specification value is defined as the value when power module alone is mounted on the printed circuit board. Therefore, when using large size heatsink, to prevent excessive force to the module and printed circuit board, fix the heatsink to the device chassis as well as to the module.

4. Recommended Soldering Condition

Soldering temperature should be within conditions described below.

(1) When using Soldering Dip

・・・・・・260°C within 10 seconds

Preheat Condition

・・・・・・110°C、30～40 seconds

(2) When using Soldering Iron

φ1 mm Pin・・・・Setting temperature of iron 350°C(60W) within 3 seconds

φ2mm Pin・・・・Setting temperature of iron 350°C(150W) within 20 seconds

The condition will change by iron and pattern of PCB.

5. Recommended Cleaning Condition

Recommended cleaning method after soldering is as follows. Also, for other cleaning conditions, please contact us.

(1) Recommended Solvent

I P A (Iso-prophyl Alcohol)

(2) Procedure

Use brush to prevent penetration of the solvent into the module. Dry the solvent completely.