PH300S,600S Installation

Content

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NEMIC-LAMBDA

PH300S,600-SERIES Installation

1. Circuit Board Mounting

Follow the instruction shown in Figure1-1 to mount the power module onto the printed circuit board.

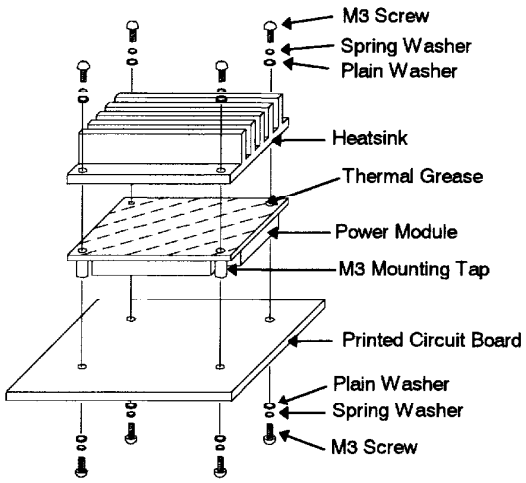


Figure1-1 Installation of Printed Circuit Board and Heatsink

(1) Fix the Power Modules onto the Circuit Board

To fix the power modules onto the 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 5.5kg• cm.

(2) M3 Mounting Tapped Holes

M3 mounting tapped holes of power module are connected to baseplate. Connect this M3 mounting taps to FG (Frame Ground).

(3) Mounting Holes on Printed Circuit Board

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

PH300S

Input/Output Terminals (ϕ 2.0 mm)
- Hole Diameter : ϕ 2.5 mm
- Land Diameter : ϕ 5.0 mm

Signal Terminal Pin (ϕ 0.8 mm)
- Hole Diameter : ϕ 1.2 mm
- Land Diameter : ϕ 2.4 mm

M3 Mounting Tap (FG)
- Hole Diameter : ϕ 3.5 mm
- Land Diameter : ϕ 7.0 mm

PH600S

Input Terminal (ϕ 2.0 mm)
- Hole Diameter : ϕ 2.5 mm
- Land Diameter : ϕ 5.0 mm

Output Terminal (ϕ 2.0 mm)
- Hole : □2.8 mm
- Land : □5.0 mm

Signal Terminal Pin (ϕ 0.8 mm)
- Hole Diameter : ϕ 1.2 mm
- Land Diameter : ϕ 2.4 mm

M3 Mounting Tap (FG)
- Hole Diameter : ϕ 3.5 mm
- Land Diameter : ϕ 7.0 mm

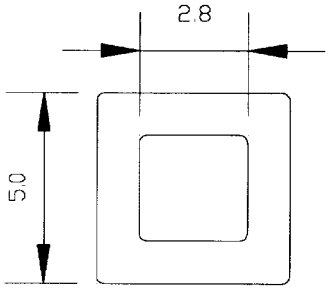
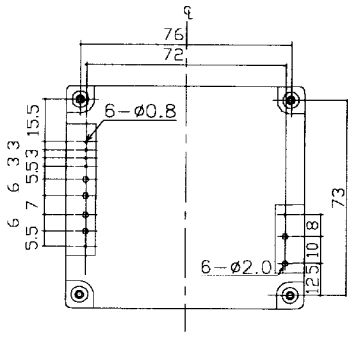


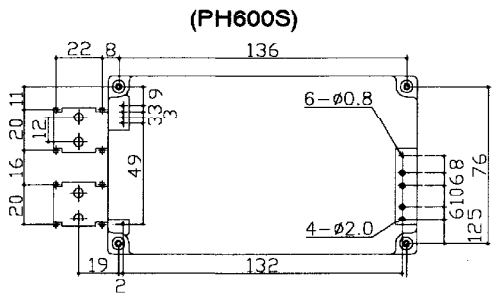
Figure1-2 PH600S Series Hole and Land Diameters of Output Pin

Refer to the following diagram for dispositions of mounting holes on the printed circuit board.

(PH300S)



(Component Side View)



(Component Side View)

Figure1-3 Disposition of Mounting Holes on Printed Circuit Board.

(4) Recommended Material of Printed Circuit Board

Recommended material of printed circuit board is a double sided glass epoxy with through holes (thickness : t = 1.6mm, 35 μ m copper thickness).

(5) Output Terminal Pin and Output Cover

Connect +Vin, -Vin, +V, and -V terminal pins for PH300S and PH600S as low contact resistance. As higher contact resistance, lower efficiency. Also, it would be a cause of damage by heat problem.
Prevent excessive force to the output buss bar for PH600S.

(6) Output Pattern Width

When several to tens amperes of current flows in 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 rise allowance.
35 μ m copper glass epoxy printed circuit board is shown in Figure1-2 for an example.
For examples, a case that is using 5A current and keep temperature rise below 10°C, it is necessary to keep the pattern width 4.2mm for 35 μ m copper. (generally 1mm/A is standard.)
For PH600S series, M4 screws through output buss bar and output is supplied by wiring is recommended. Use enough size of wire as higher output current allowance. At that time, fix output terminal pin (ϕ 2.0 mm×8) certainly by soldering.

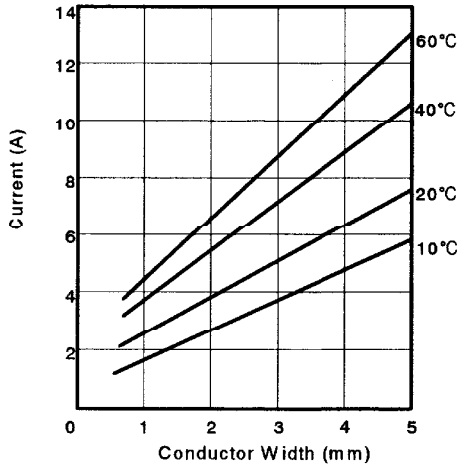


Figure1-4 Characteristics of Allowed Current vs. Conductor Width for 35 μ m Copper

Characteristics of Allowed Current vs. Conductor Width for 35 μ m Copper shown in Figure1-4 depends on printed circuit board manufacturers, therefore, confirmation is definitely necessary upon designing.

2. Installation of Heatsink

(1) Fix the Power Module onto Heatsink

To fix the power module onto the heatsink, use M3 mounting tapped holes (4 places) at the baseplate side. Use M3 screws. Recommended torque is 5.5kg·cm.
Use either of thermal grease or thermal sheet in between heatsink and baseplate to minimize the contact thermal resistance and to enhance the heat conductive when the heatsink is mounted to the power module.
Use no warped heatsink and ensure good contact with baseplate.

(2) Mounting Hole of Heatsink

Refer to the following size for determining the diameter of mounting holes on heatsink.

Hole Diameter : ϕ 3.5 mm

3. Vibration

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

4. Recommended Soldering Conditions

Recommended soldering temperature is as follow.

(1) Soldering Dip

・・・・・・260℃ within 10 seconds

Preheat Condition

・・・・・・110℃ for 30~40 seconds

(2) Soldering Iron

・・・・・・350℃ within 3 seconds

5. Recommended Cleaning Conditions

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. Then completely dry the solvent.