

---

# Connector Technical Information

---

## GENERAL NOTES ON USING SMD TYPE CONNECTORS

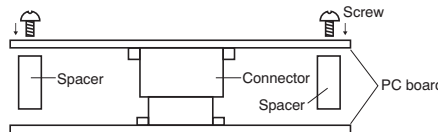
---

### Regarding the design of devices and PC board patterns

1. When connecting several connectors together by stacking, make sure to maintain proper accuracy in the design of structure and mounting equipment so that the connectors are not subjected to twisting and torsional forces.
2. With mounting equipment, there may be up to a  $\pm 0.2$  to 0.3-mm error in positioning. Be sure to design PC boards and patterns while taking into consideration the performance and abilities of the required equipment.
3. Some connectors have tabs embossed on the body to aid in positioning. When using these connectors, make sure that the PC board is designed with positioning holes to match these tabs.
4. To ensure the required mechanical strength when soldering the connector terminals, make sure the PC board meets recommended PC board pattern design dimensions given.
5. For all connectors of the narrow-pitch series, to prevent the PC board from coming off during vibrations or impacts, and to prevent loads from falling directly on the soldered

portions, be sure to design some means to fix the PC board in place.

Example) Secure in place with screws



When connecting PC boards, take appropriate measures to prevent the connector from coming off.

6. Notes when using a FPC:

(1) When the connector is soldered to an FPC board, during its insertion and removal procedures, forces may be applied to the terminals and cause the soldering to come off. It is recommended to use a reinforcement board on the backside of the FPC board to which the connector is being connected. Please make the reinforcement board dimensions bigger than the outer limits of the recommended PC board pattern (should be approximately 1 mm greater than the outer limit). Material should be glass epoxy or polyimide, and the thickness should be between 0.2 and 0.3 mm.

(2) Collisions, impacts, or turning of FPC boards, may apply forces on the connector and cause it to come loose. Therefore, make to design retaining plates or screws that will fix the connector in place.

7. The narrow-pitch connector series is designed to be compact and thin. Although ease of handling has been taken into account, take care when mating the connectors, as displacement or angled mating could damage or deform the connector.

---

### Regarding the selection of the connector placement machine and the mounting procedures

1. Select the placement machine taking into consideration the connector height, required positioning accuracy, and packaging conditions.
2. Be aware that if the catching force of the placement machine is too great, it may deform the shape of the connector body or connector terminals.
3. Be aware that during mounting, external forces may be applied to the connector contact surfaces and terminals and cause deformations.
4. Depending on the size of the connector being used, self alignment may not be possible. In such cases, be sure to carefully position the terminal with the PC board pattern.
5. The positioning bosses give an approximate alignment for positioning on the PC board. For accurate positioning of the connector when mounting it to the PC board, we recommend using an automatic positioning machine.

# Connector Technical Information

## Regarding soldering

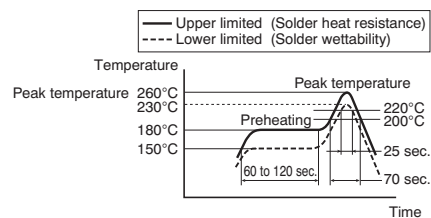
### ■ Reflow soldering

1. Measure the recommended profile temperature for reflow soldering by placing a sensor on the PC board near the connector surface or terminals. (The setting for the sensor will differ depending on the sensor used, so be sure to carefully read the instructions that comes with it.)
2. As for cream solder printing, screen printing is recommended.
3. See the specifications and drawings for the product in question for the metal mask pattern diagrams.
4. When mounting on both sides of the PC board and the connector is mounting on the underside, use adhesives or other means to ensure the connector is properly fixed to the PC board. (Double reflow soldering on the same side is possible.)
5. N<sub>2</sub> reflow, conducting reflow soldering in a nitrogen atmosphere, increases the solder flow too greatly, enabling wicking to occur. Make sure that the solder feed rate and temperature profile are appropriate.

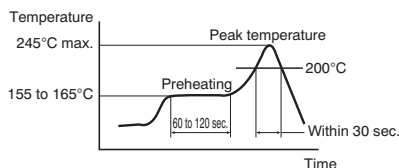
### Soldering conditions

Please use the reflow temperature profile conditions recommended below for reflow soldering. Please contact us before using a temperature profile other than that described below (e.g. lead-free solder).

- Narrow-pitch connectors (except P5 floating and P8 type)



- Narrow-pitch connector (P5 floating, P8)



For products other than the ones above, please refer to the latest product specifications.

6. The temperatures are measured at the surface of the PC board near the connector terminals. (The setting for the sensor will differ depending on the sensor used, so be sure to carefully read the instructions that comes with it.)

7. The temperature profiles given in this catalog are values measured when using the connector on a resin-based PC board. When performed reflow soldering on a metal board (iron, aluminum, etc.) or a metal table to mount on a FPC, make sure there is no deformation or discoloration of the connector beforehand and then begin mounting.
8. When soldering the shell terminals of, for example, I/O connectors, avoid applying an excessive amount of solder, or it may flow into the shell.

#### Example:

Inflidge Industrial, Ltd.  
Super Air Heater  
Digital temperature controller  
Air heater with internal temperature sensor

### ■ Solder reworking

1. Finish reworking in one operation.
2. For reworking of the solder bridge, use a soldering iron with a flat tip. To prevent flux from climbing up to the contact surfaces, do not add more flux.
3. Keep the soldering iron tip temperature below the temperature given in Table A.
4. When soldering the shell terminals of, for example, I/O connectors, avoid applying an excessive amount of solder, or it may flow into the shell.

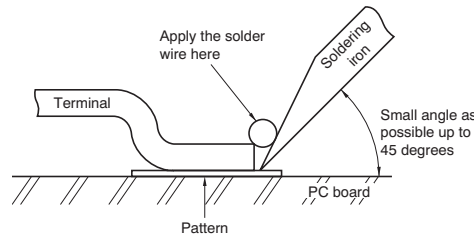
### ■ Hand soldering

1. Set the soldering iron so that the tip temperature is less than that given in the table below.

Table A

SMD type connectors	300°C within 5 sec. 350°C within 3 sec.
---------------------	--

2. Do not allow flux to spread onto the connector leads or PC board. This may lead to flux rising up to the connector inside.
3. Touch the soldering iron to the foot pattern. After the foot pattern and connector terminal are heated, apply the solder wire so it melts at the end of the connector terminals.



4. Be aware that soldering while applying a load on the connector terminals may cause improper operation of the connector.
5. Thoroughly clean the soldering iron.
6. Flux from the solder wire may get on the contact surfaces during soldering operations. After soldering, carefully check the contact surfaces and clean off any solder before use.
7. For soldering of prototype devices during product development, you can perform soldering at the necessary locations by heating with a hot-air gun by applying cream solder to the foot pattern beforehand. However, at this time, make sure that the air pressure does not move connectors by carefully holding them down with tweezers or other similar tool. Also, be careful not to go too close to the connectors and melt any of the molded components.

## ■ Handling Single Components

1. Make sure not to drop or allow parts to fall from work bench
2. Excessive force applied to the terminals could cause them to warp, come out, or weaken the adhesive strength of the solder. Handle with care.
3. Repeated bending of the terminals may break them.
4. Do not use alcohol for cleaning. Doing so may whiten the surface of molded parts.

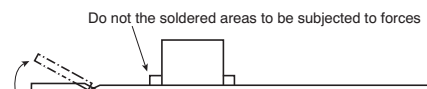
## ■ Cleaning flux from PC board

1. To increase the cleanliness of the cleaning fluid and cleaning operations, prepare equipment for a cleaning process that begins with boil cleaning, ultrasonic cleaning, and then to vapor cleaning.
2. Carefully oversee the cleanliness of the cleaning fluids to make sure that the contact surfaces do not become dirty from the cleaning fluid itself.
3. Since some powerful cleaning may dissolve molded components of the connector and wipe off printed letters, we recommend aqua pura electronic parts cleaners. Consult us if you wish other types of cleaning fluids.

4. Please note that the surfaces of molded parts may whiten when cleaned with alcohol.

## ■ Handling the PC board

- Handling the PC board after mounting the connector
- When cutting or bending the PC board after mounting the connector, be careful that the soldered sections are subjected to excessive forces.



## Storage of connectors

1. To prevent trouble from voids or air pockets by heat of reflow soldering, avoid storing the connectors in areas of high humidity. When storing the connectors for more than six months, be sure to store them in a storage area where the humidity is properly controlled.
2. Depending on the connector type, the color of the connector may vary from connector to connector if produced at

different times, and some connectors more even change color slightly if subjected to ultraviolet rays during storage. This is normal and will not affect the operation of the connector.

3. When storing the connectors with the PC boards assembled and components already set, be careful not to stack them up so the connectors are subjected to excessive forces.

4. Avoid storing the connectors in locations with excessive dust. The dust may accumulate and cause improper connections at the contact surfaces.

## Other Notes

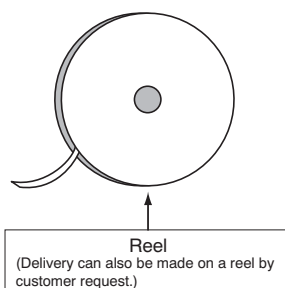
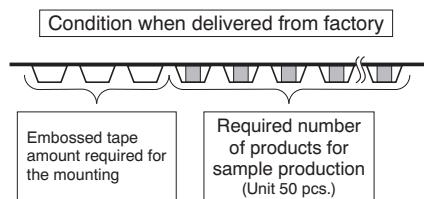
1. These products are made for the design of compact and lightweight devices and therefore the thickness of the molded components has been made very thin. Therefore, be careful during insertion and removal operations for excessive forces applied may damage the products.
2. Dropping of the products or rugged mishandling may bend or damage the terminals and even hinder proper reflow soldering.

3. Before soldering, try not to insert or remove the connector more than absolutely necessary.
4. When coating the PC board after soldering the connector to prevent the deterioration of insulation, perform the coating in such a way so that the coating does not get on the connector.
5. There may be variations in the colors of products from different production lots. This is normal.

6. The connectors are not meant to be used for switching.
7. Be sure not to allow external pressure to act on connectors when assembling PCBs or moving in block assemblies.

## Regarding sample orders to confirm proper mounting

When ordering samples to confirm proper mounting with the placement machine, connectors are delivered in 50-piece units in the condition given right. Consult a sales representative for ordering sample units.



**For other details, please refer to the latest product specifications.**

## GENERAL NOTES ON USING ADVANCED SERIES NARROW-PITCH CONNECTORS

### ■ Connector mounting

In case the connector is picked up by chucking during mounting, an excessive moulder chucking force may deform the molded or metal part of the connector. Consult us in advance if chucking is to be applied.

### ■ Soldering

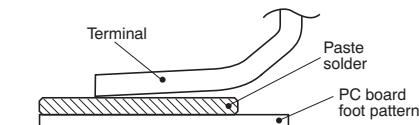
#### 1. Manual soldering

- Due to the low profile, if an excessive amount of solder is applied to this product during manual soldering, the solder may creep up to near the contact points, or interference by solder may cause imperfect contact.
- Make sure that the soldering iron tip is heated within the temperature and time limits indicated in the specifications.
- Flux from the solder wire may adhere to the contact surfaces during soldering operations. After soldering, carefully check the contact surfaces and clean off any flux before use.
- Be aware that a load applied to the connector terminals while soldering may displace the contact.
- Thoroughly clean the iron tip.

#### 2. Reflow soldering

- Screen-printing is recommended for printing paste solder.
- To determine the relationship between the screen opening area and the PC-board foot pattern area, refer to the diagrams in the recommended patterns for PC boards and metal masks. Make sure to use the terminal tip as a reference position when setting.

Avoid an excessive amount of solder from being applied, otherwise, interference by the solder will cause an imperfect contact.

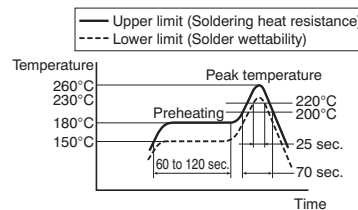


- Consult us when using a screen-printing thickness other than that recommended.

- Depending on the size of the connector being used, self alignment may not be possible. Accordingly, carefully position the terminal with the PC board pattern.

- The recommended reflow temperature profile is given in the figure below

#### Recommended reflow temperature profile



- The temperature is measured on the surface of the PC board near the connector terminal.
- Some solder and flux types may cause serious solder creeping. Take the solder and flux characteristics into consideration when setting the reflow soldering conditions.
- When performing reflow soldering on the back of the PC board after reflow soldering the connector, secure the connector using, for example, an adhesive (Double reflow soldering on the same side is possible)

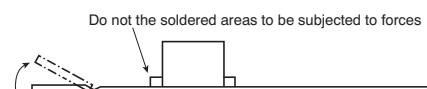
#### 3. Reworking on a soldered portion

- Finish reworking in one operation.
- For reworking of the solder bridge, use a soldering iron with a flat tip. Do not add flux, otherwise, the flux may creep to the contact parts.
- Use a soldering iron whose tip temperature is within the temperature range specified in the specifications.

- **Do not drop the product or handle it carelessly. Otherwise, the terminals may become deformed due to excessive force or the solderability during reflow soldering may degrade.**

- **Do not insert or remove the connector when it is not soldered. Also, forcibly applied external pressure on the terminals can weaken the adherence of the terminals to the molded part or cause the terminals to lose their evenness.**

- **When cutting or bending the PC board after mounting the connector, be careful that the soldered sections are subjected to excessive forces.**



### ■ Notes when using a FPC

- When the connector is soldered to an FPC board, during its insertion and removal procedures, forces may be applied to the terminals and cause the soldering to come off. It is recommended to use a reinforcement board on the backside of the FPC board to which the connector is being connected. Make sure that the reinforcing plate is larger than the outline of the recommended PC board pattern (Outline + approx. 1 mm). The reinforcing plate is made of SUS, glass epoxy or polyimide that is 0.2 to 0.3 mm thick.
- This connector employs a simple locking structure. However, the connector may come off depending on the size and weight of the FPC, layout and reaction force of FPC, or by drop impact. Make sure to fully check the equipment's condition. To prevent any problem with loose connectors, adopt measures to prevent the connector from coming off inside the equipment.

### ■ Other Notes

When coating the PC board after soldering the connector to prevent the deterioration of insulation, perform the coating in such a way so that the coating does not get on the connector. The connectors are not meant to be used for switching.

**For other details, please refer to the latest product specifications.**

## GENERAL NOTES FOR USING FPC CONNECTORS

### ■ PC board design

Design the recommended foot pattern in order to secure the mechanical strength in the soldered areas of the terminal.

### ■ FPC and equipment design

Design the FPC based on the recommended dimensions to ensure the required connector performance. In addition, carefully check the equipment design and take required measures for the equipment to prevent the FPC from being removed subsequent to a fall, vibration, or other impact due to the FPC size, weight, or the reaction force of the routed FPC.

### ■ Connector mounting

In case the connector is picked up by chucking during mounting, an excessive mounter chucking force may deform the molded or metal part of the connector. Consult us in advance if chucking is to be applied.

### ■ Soldering

- Manual soldering.
  - Due to the low profile, if an excessive amount of solder is applied to this product during manual soldering, the solder may creep up to near the contact points, or interference by solder may cause imperfect contact.
  - Make sure that the soldering iron tip is heated within the temperature and time limits indicated in the specifications.
  - Flux from the solder wire may adhere to the contact surfaces during soldering operations. After soldering, carefully check the contact surfaces and clean off any flux before use.
  - Be aware that a load applied to the connector terminals while soldering may displace the contact.
  - Thoroughly clean the iron tip.
- Reflow soldering
  - Screen-printing is recommended for printing paste solder.

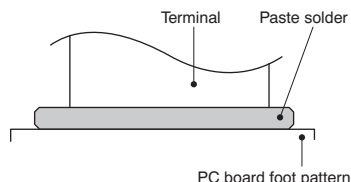
### Y3FT/Y3F/Y3B/Y5F/Y5B/Y5BW

To determine the relationship between the screen opening area and the PC board foot pattern area, refer to the diagrams in the recommended patterns for PC boards and metal masks when setting.

Note that excess solder on the terminals prevents complete insertion of the FPC, and that excess solder on the metal clips prevents the lever from rotating.

### Y5S

Note that excess solder inhibits the slider lock operation.

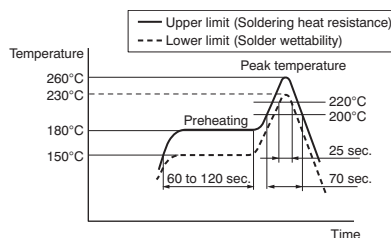


### Y3FT/Y3F/Y3B/Y5S/Y5F/Y5B/Y5BW

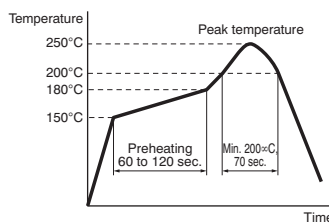
Screen thickness of 120 $\mu$ m is recommended for paste solder printing.

- Consult us when using a screen-printing thickness other than that recommended.
- Depending on the size of the connector being used, self alignment may not be possible. Accordingly, carefully position the terminal with the PC board pattern.
- The recommended reflow temperature profile is given in the figure below

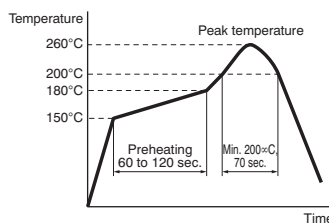
### Recommended reflow temperature profile Y3FT/Y3F/Y3B/Y5B/Y5BW



### Y5S



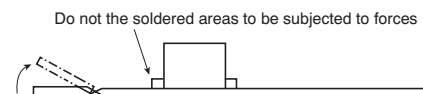
### Y5F



- The temperature is measured on the surface of the PC board near the connector terminal.
- Some solder and flux types may cause serious solder creeping. Take the solder and flux characteristics into con-

sideration when setting the reflow soldering conditions.

- When performing reflow soldering on the back of the PC board after reflow soldering the connector, secure the connector using, for example, an adhesive. (Double reflow soldering on the same side is possible)
- 3. Reworking on a soldered portion
  - Finish reworking in one operation.
  - For reworking of the solder bridge, use a soldering iron with a flat tip. Do not add flux, otherwise, the flux may creep to the contact parts.
  - Use a soldering iron whose tip temperature is within the temperature range specified in the specifications.
- Do not drop the product or handle carelessly. Otherwise, the terminals may become deformed due to excessive force or the solderability during reflow soldering may degrade.**
- Don't open/close the lever or insert/remove an FPC until the connector is soldered. Forcibly applied external pressure on the terminals can weaken the adherence of the terminals to the molded part or cause the terminals to lose their evenness. In addition, do not insert an FPC into the connector before soldering the connector.**
- When cutting or bending the PC board after mounting the connector, be careful that the soldered sections are subjected to excessive forces.**



### ■ Other Notes

When coating the PC board after soldering the connector to prevent the deterioration of insulation, perform the coating in such a way so that the coating does not get on the connector. The connectors are not meant to be used for switching.

**For other details, please refer to the latest product specifications.**