

# MINITEK® HEADERS FOR PIN-IN-PASTE PROCESSES

## Products for solder-to-board applications

### OVERVIEW

Minitek® is FCI's brand for board-to-board and wire/cable-to-board connectors in 2.00mm pitch. The Minitek® product range includes PCB Card Connectors, Shrouded and Unshrouded headers and IDC/CTW receptacles.

FCI is adding five new series of Minitek® Headers to its product range, dedicated to Pin-in-Paste soldering processes. This brochure gives additional information for the correct use of Minitek® PIP connectors in the application process.





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## **PIN-IN-PASTE**

Pin-in-Paste (PiP) technology allows the use of TMT products in SMT manufacturing processes. The connectors are automatically or manually placed on the board, then soldered in the same operation as the SMT components. Despite this, the mechanical strength of the TMT soldering is maintained – still an important requirement for connectors nowadays in many industrial or automotive applications.

### **CONNECTOR DESIGN**

In order to achieve optimum soldering results, FCI launches dedicated Pin-in-Paste connectors in the basics+ product range. These connectors are fully adapted to Pin-in-Paste processing in all aspects, including plastic material, housing design, pin length, and packaging.

#### **PLASTIC MATERIAL**

Minitek PiP headers are moulded in high temperature thermoplastic and are able to withstand exposure to 260°C peak temperature for 30 seconds maximum in a convection, infra-red or vapour phase reflow oven.

#### **PIN LENGTH**

The connector lead length beyond the bottom of the PCB is shorter than for traditional TMT products. Thus, the risk of pushing out the solder paste when inserting the pin into the PCB hole is very much limited. The solder paste will not stick on the pin tip or even fall off completely, but stays around the pin for free flow during soldering. FCI uses a solder tail length of  $2 \pm 0.2$ mm for Minitek Headers for a standard PCB of 1.6mm thickness.

#### **HOUSING DESIGN**

Standoffs raise the housing body slightly above the PCB surface and thus allow the molten solder paste to flow freely from its printed position into the board hole and around the pin. The standoffs are correctly positioned for a good solder paste deposit around the pin. Please respect the stencil design guidelines below in order to avoid paste deposit around the standoffs.

#### **PACKAGING**

For combining SMT and TMT components not only in the soldering process, but also in the assembly process, FCI proposes a choice of pick-and-place packaging for PiP connectors. The most common part numbers are available in tape-on-reel packaging, all others in tube.

## **MINITEK® HEADERS FOR PIN-IN-PASTE PROCESSES**

### **TECHNICAL INFORMATION** **UNSHROUDED/STACKING**

#### **MATERIALS**

- Housing: high temperature thermoplastic
- Colour: black
- Flammability rating: UL94V-0
- Pin: Phosphor bronze
- Plating: Gold and tin over 1.27µm nickel

#### **ELECTRICAL PERFORMANCE**

- Current rating: 1A continuous
- Insulation resistance: 1000ΩM min.
- Dielectric withstanding voltage: 650V

#### **ENVIRONMENTAL**

- Operating temperature range: -55°C to +125°C

#### **SHROUDED:**

#### **MATERIALS**

- Housing: high temperature thermoplastic
- Colour: black
- Flammability rating: UL94V-0
- Pin: Phosphor bronze
- Plating: Gold and tin over 1.27µm nickel

#### **ELECTRICAL PERFORMANCE**

- Current rating: 2A continuous
- Insulation resistance: 1000ΩM min.
- Dielectric withstanding voltage: 650V



#### **ENVIRONMENTAL**

- Operating temperature range: -40°C to +125°C

#### **MECHANICAL PERFORMANCE**

- Pin retention: 7 N min.

#### **SPECIFICATIONS**

-  File no. E66906
-  File no. LR46923
- Product drawing: by 8-digit base part number
- Product specification: DPS-12-011 and GS-12-163
- Application specification: TA-895
- Reflow profile: TA-842

#### **PROCESSING INFORMATION**

- Compatible with IR reflow soldering processes



#### **APPROVALS AND CERTIFICATIONS**

- This product is RoHS compatible according to the European Union Directive 2002/95/IEC

#### **MECHANICAL PERFORMANCE**

- Pin retention: 7 N min.

#### **SPECIFICATIONS**

-  File no. E66906
-  File no. LR46923
- Product drawing: by 8-digit base part number
- Product specification: DPS-12-011 and GS-12-163
- Application specification: TA-896
- Reflow profile: TA-842

#### **PROCESSING INFORMATION**

- Compatible with IR reflow soldering processes

#### **APPROVALS AND CERTIFICATIONS**

- This product is RoHS compatible according to the European Union Directive 2002/95/IEC



## APPLICATION DESIGN GUIDELINES

For application in a Pin-in-Paste process, FCI recommends the application design guidelines below.

### STENCIL DESIGN

The stencil design is crucial for a good solder joint. It determines the quantity of paste and the position of the paste print on the board. Each PCB hole has its own stencil aperture with enough spacing in between in order to have separate solder deposits.

This prevents solder robbing from one hole to another and guarantees the correct quantity of solder paste for each hole. The print position is slightly asymmetrical so as to optimise the flow of molten solder paste.

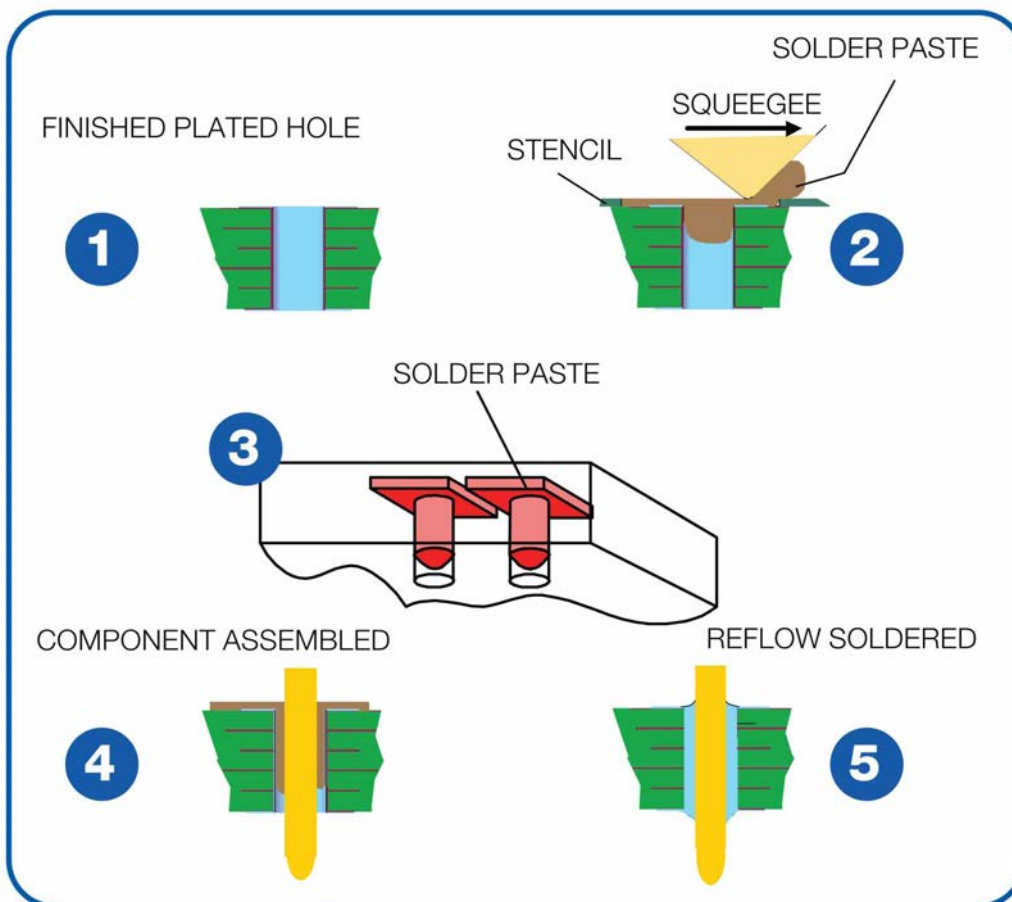
### PASTE APPLICATION

The quantity of paste for each hole depends on the soldering process parameters and the degree of hole filling. For the squeegee, FCI recommends a 45° angle. You can use a smaller angle for an even greater degree of hole filling. The squeegee moves in parallel with the shorter sides of the stencil apertures.

### BOARD LAYOUT

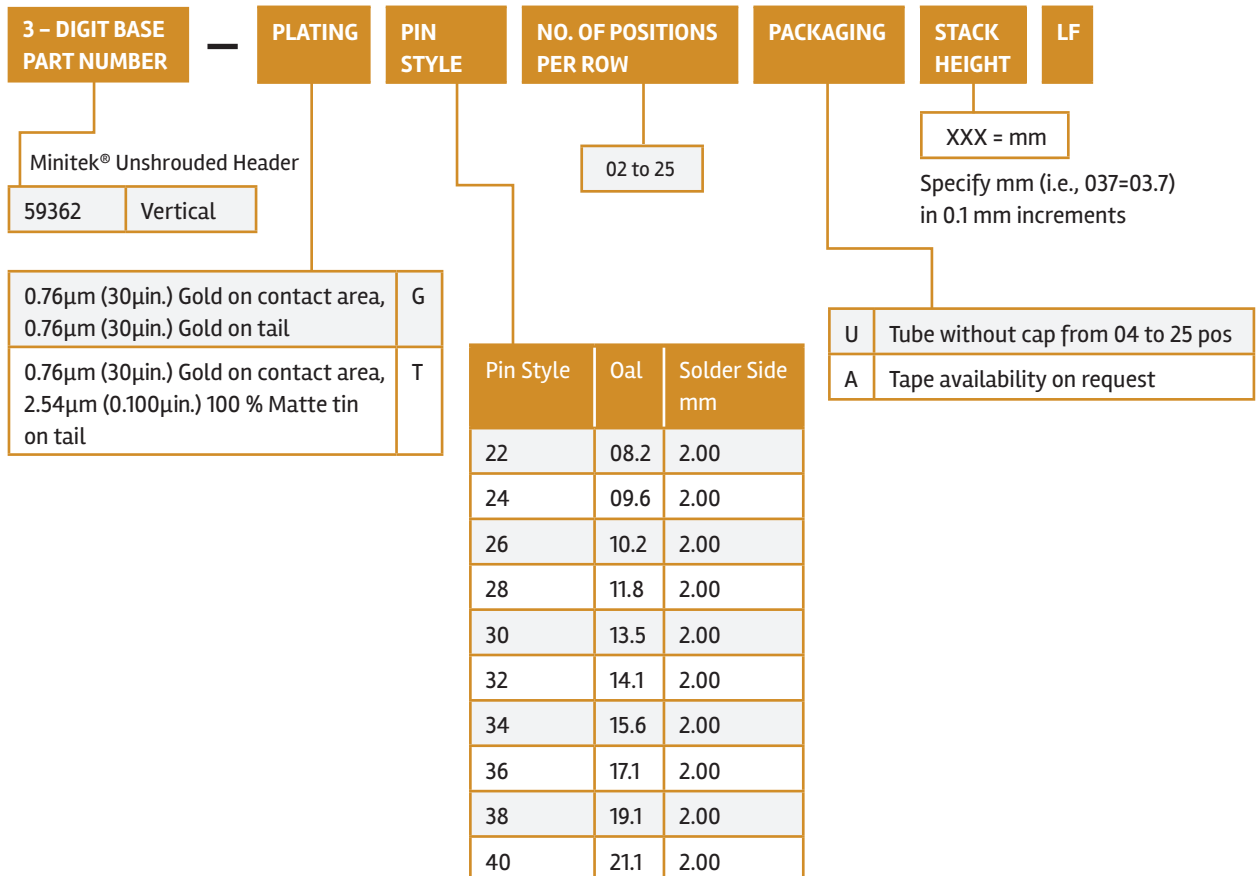
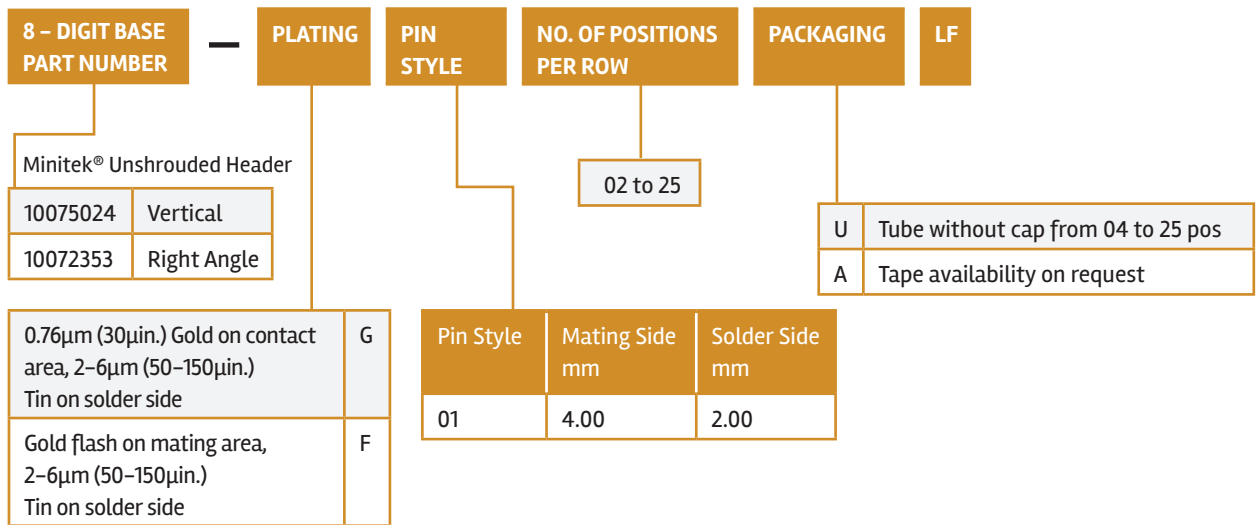
Please use a hole of 0.8mm (right angle headers) or 0.85mm (vertical headers)  $\pm$  0.05mm for an optimum paste deposit. For automatic pick-and-place, lean towards the upper end of the tolerance.

Refer also to TA-895 (for Headers right angle Shrouded and Unshrouded) et TA-896 (for Headers vertical Shrouded and Unshrouded).



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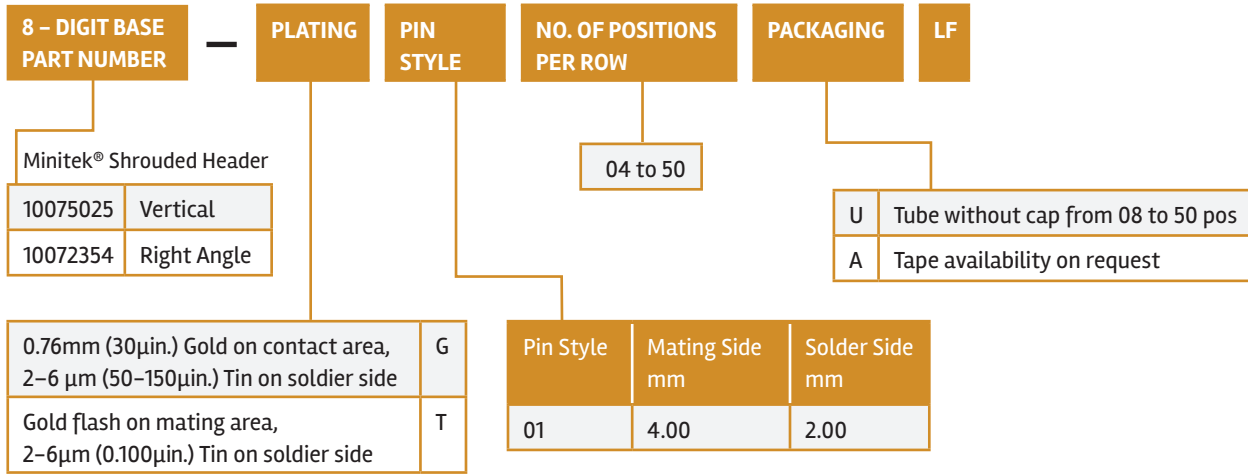
## PART NUMBER



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**PART NUMBER**



BWBMMNTHPI115EA4