

▣ Products for solder-to-board applications  
MINITEK™ Headers for Pin-in-Paste Processes



## DESCRIPTION

Minitek is FCI's brand for board-to-board and wire/cable-to-board connectors in 2.00 mm 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.

## 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.

**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.

**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 1.6 mm thickness.

**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.

## TECHNICAL DATA

### Unshrouded / Stacking:

<b>Materials</b>	Housing: high temperature thermoplastic Colour: black Flammability rating: UL 94 V-O Pin: Phosphor bronze Plating: Gold and tin over 1,27 µm nickel
<b>Electrical performance</b>	Current rating: 1A continuous Insulation resistance: 1000 MΩ min. Dielectric withstanding voltage: 650 V
<b>Mechanical performance</b>	Pin retention: 7 N min.
<b>Operating temperature range</b>	-55°C to +125°C
<b>Processing information</b>	Compatible with IR reflow soldering processes
<b>RoHS information</b>	This product is RoHS compatible according to the European Union Directive 2002/95/IEC
<b>Reference information</b>	 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

### Shrouded:

<b>Materials</b>	Housing: high temperature thermoplastic Colour: cream Flammability rating: UL 94 V-O Pin: Phosphor bronze Plating: Gold and tin over 1,27 µm nickel
<b>Electrical performance</b>	Current rating: 2A continuous Insulation resistance: 1000 MΩ min. Dielectric withstanding voltage: 650 V
<b>Mechanical performance</b>	Pin retention: 7 N min.
<b>Operating temperature range</b>	-40°C to +125°C
<b>Processing information</b>	Compatible with IR reflow soldering processes
<b>RoHS information</b>	This product is RoHS compatible according to the European Union Directive 2002/95/IEC
<b>Reference information</b>	 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

## 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

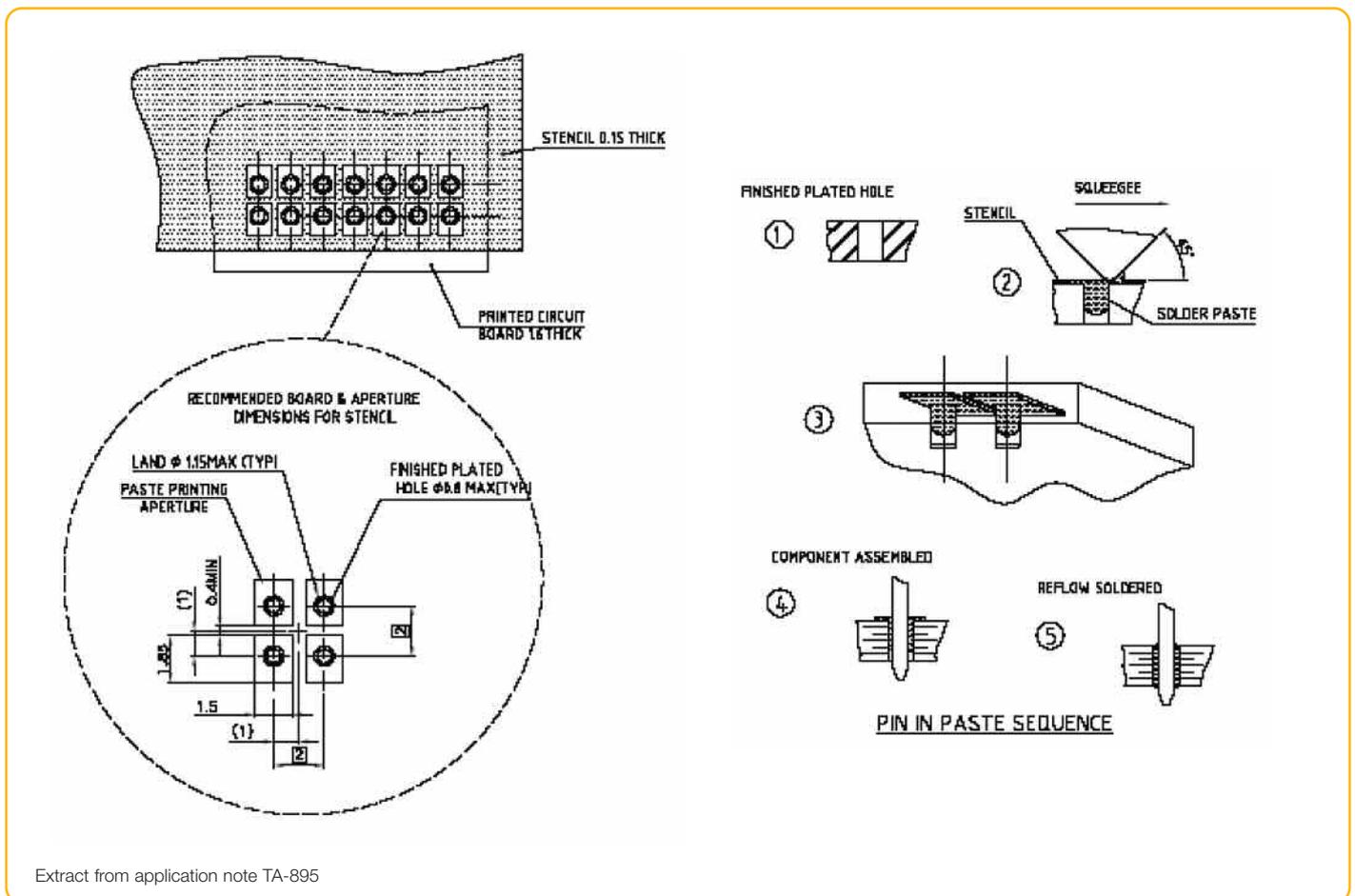
### PASTE APPLICATION:

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.

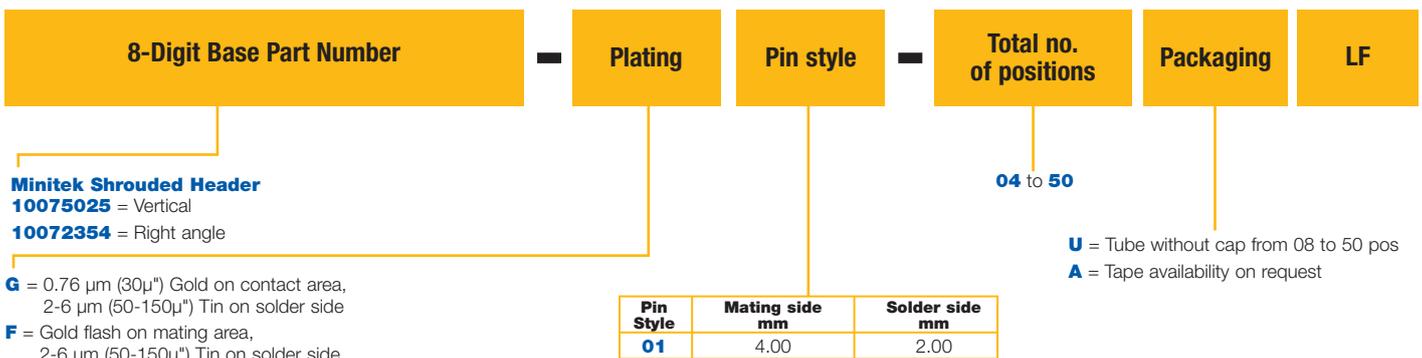
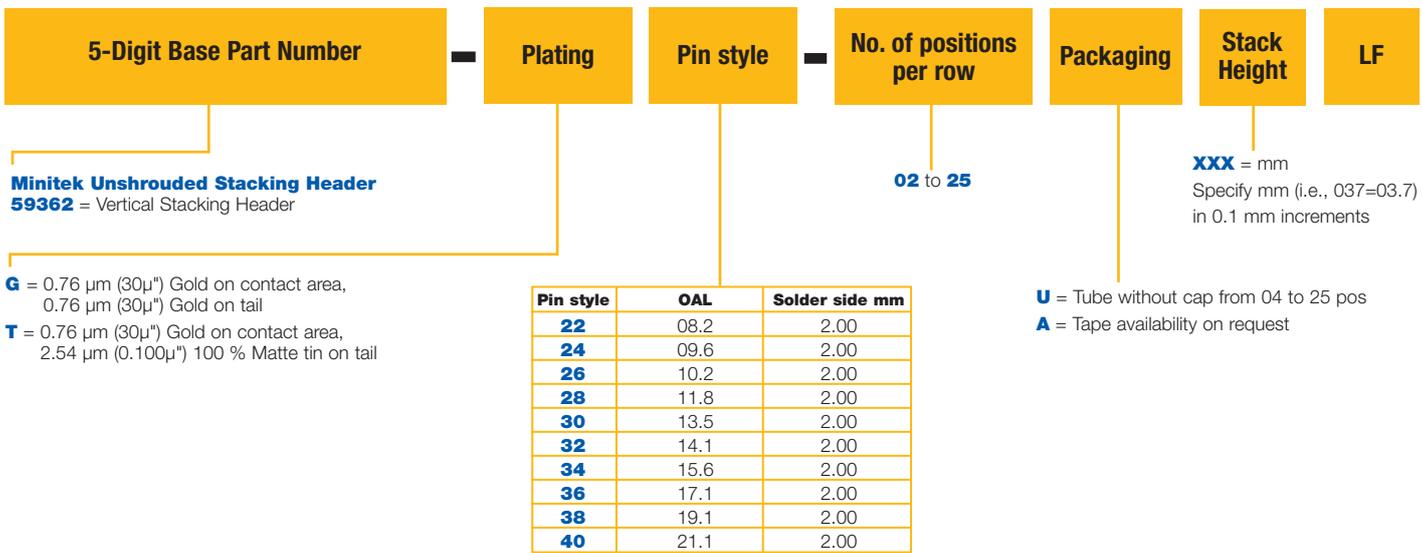
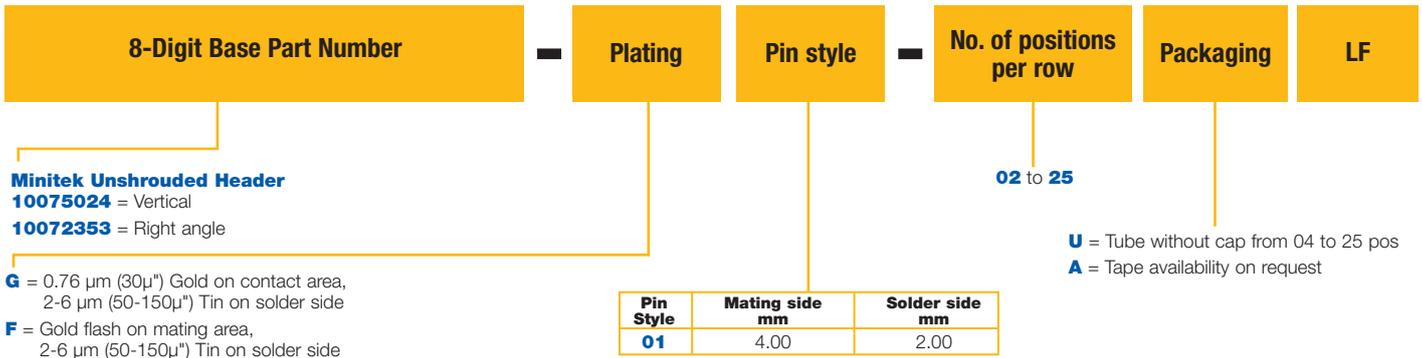
### BOARD LAYOUT:

Please use a hole of 0.8 mm (right angle headers) or 0.85 mm (vertical headers) ± 0.05 mm 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).



## PART NUMBER



### BASICS+ SERVICE PROGRAM

Minitek is a part of the Basics+ product range. Basics+ program built around 2.54 mm and 2 mm pitch connectors for board-to-board, wire-to-board and cable-to-board applications.

Basics+ makes the entire product design-in-process very simple, with easy-to-use product selection, technical hot line, fast sample service, and core range products. Included are established, proven brands such as BergStik, Dubox, Quickie, Minitek and BergCon PV.