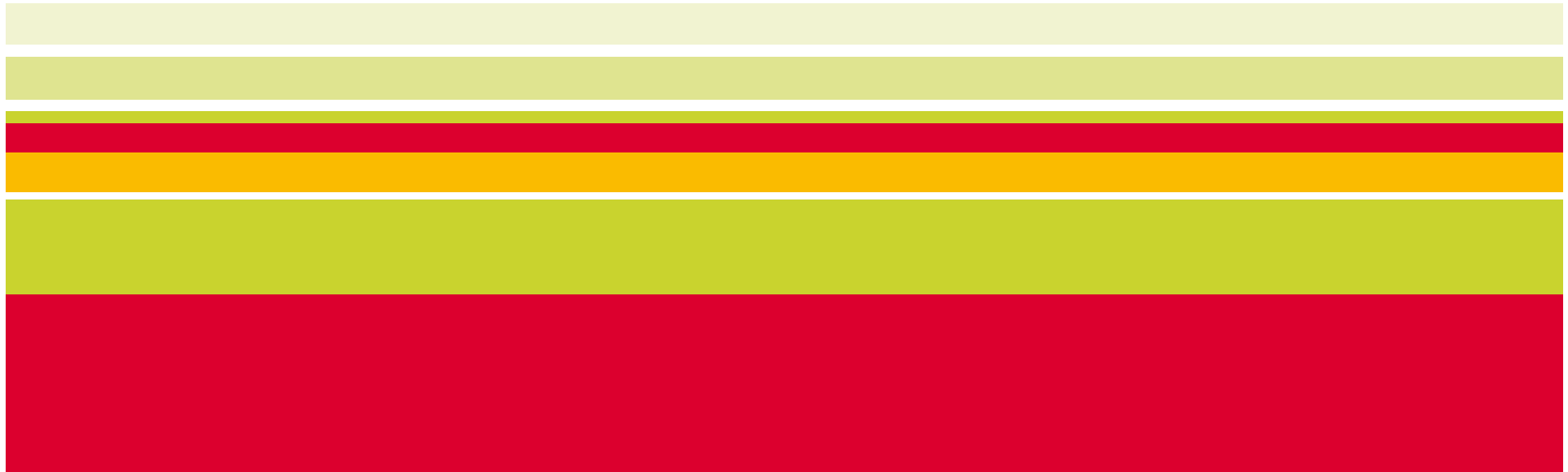




Pin-in-Paste Technology and Products

FCI March 2009

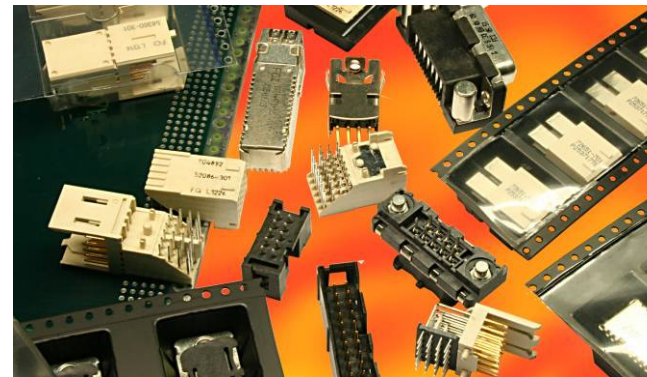


- What is Pin-in-Paste (PIP)?
- Features and benefits of PIP
- The PIP process and connector design
- PIP vs Surface Mount Technology
- FCI PIP product offering
 - Basics+
 - D-Sub
 - Metral[®]
 - Sofix[®]
 - Millipacs[®]

What is Pin-in-Paste (PiP)?



- Pin-in-Paste is a through hole technology to solder connectors to the PCB by using a reflow process (Surface Mount; SMT) instead of a traditional wave soldering or press-fit. Typically boards are populated using automatic pick & place processes.
- Other terms used in the industry for PIP are;
 - Through Mount Reflow (TMT)
 - Through Hole Reflow (THR)
 - Pin-in-Hole Reflow (PIH)



■ Time saving/applied cost reduction

- Pin-in-Paste connectors can be automatically positioned on the board using an automatic „pick-and-place“ process (vacuum nozzle or gripper) whereas solder to board requires manual placement
- Elimination of a second process step; all components will be processed by a reflow mount soldering process
- PIP requires no manual additional operation

■ Improved quality

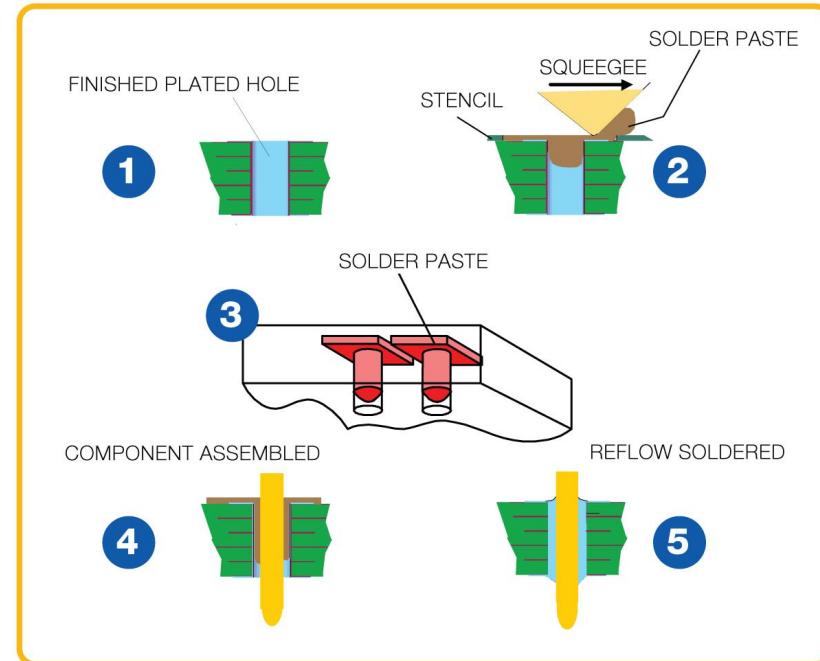
- Pin-in-Paste is a more stabilized all along the time compared with solder-to-board; high robustness of the solder connection.
- Less control time and less re-work time for repairing

Other Advantages

- Through Mount connectors that are made suitable for PIP technology, in almost all cases, require less board space than Surface Mount (SMT) designed connectors.
- No coplanarity issues with the solder tails; True position requirements are easier to control.
- Repair is possible with PIP technology; not easy with fine pitch SMT.
- Reflow process is more stable.
- Enables 2 sided SMT populated PCB's.

How are Pin-in-Paste components applied?

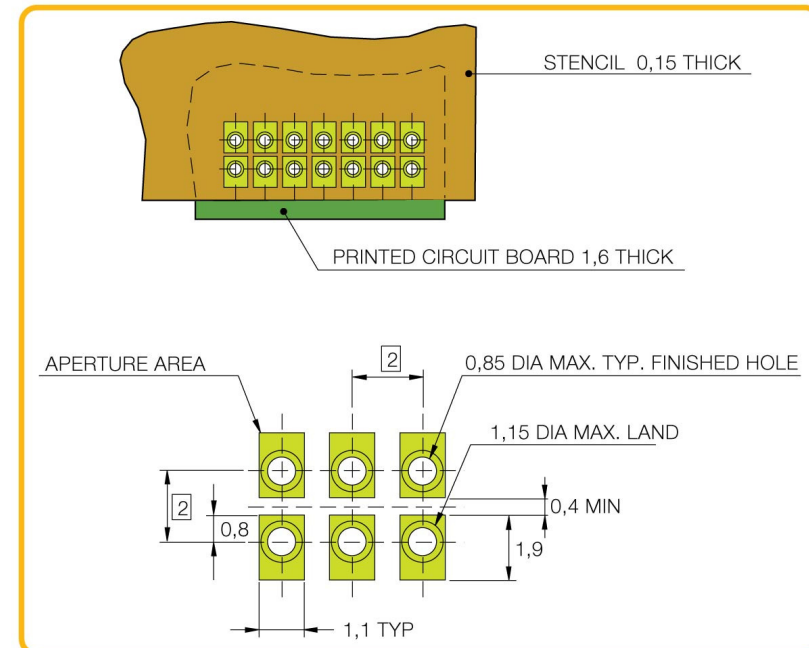
- 1 – Place stencil on finished plated PCB hole
- 2 – Apply paste
- 3 – Remove stencil
- 4 – Assemble component onto the PCB
- 5 – Solder in a reflow oven



The Pin-in-Paste process and connector design



- What are the requirements for Pin-in-Paste components?
 - High temperature resistant material
 - Housing design, standoffs
 - For heat evacuation
 - For optimum solder paste flow (no paste robbery, no paste deposit around the standoffs)
 - Pin length, solder tail
 - Optimized;
 - 0.20 – 0.40mm overlap to PCB thickness
 - Standard;
 - 2,90mm according to IEC 61076-4-104
 - Recommended stencil design
 - Packaging in tape preferred
 - Flat surface for vacuum nozzle

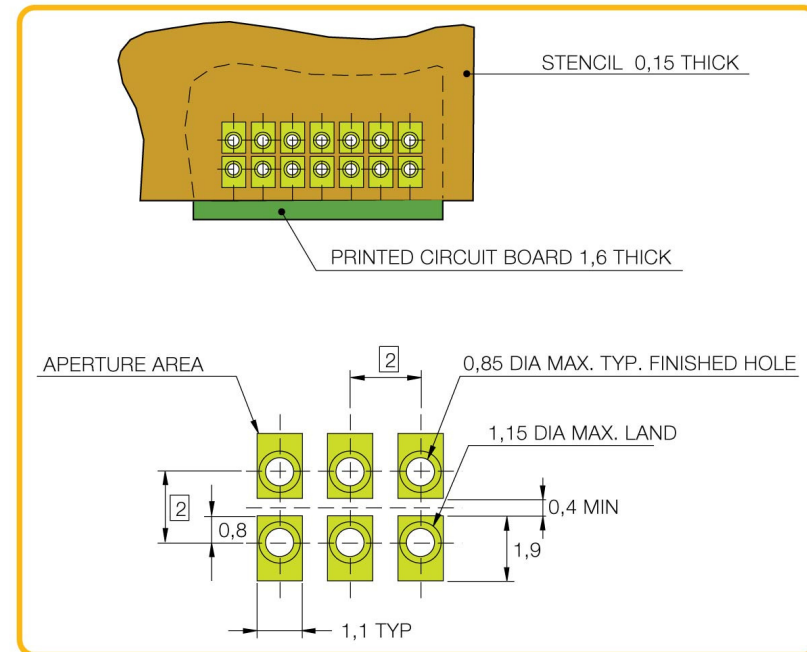


The Pin-in-Paste Connector Design



FCI has extensively tested PIP connectors and offers full application support including recommendation for:

- stencil design,
- paste application,
- and board layout.



- Why Pin In Paste versus Surface Mount Technology ?
 - Fast and easy move from a wave soldering/press-fit to a reflow process
 - Surface Mount Technology require a specific PCB design
 - No significant re-design of the board for PIP:
 - same lay-outs
 - same hole diameters for signal contacts
 - Higher robustness than with standard SMT products :
 - Due to the through hole pins
 - Easier control and possible repairing
 - After reflow visual inspection is easier in PIP than SMT,
 - Easy repairing in PIP

■ BASICS+

■ Minitek

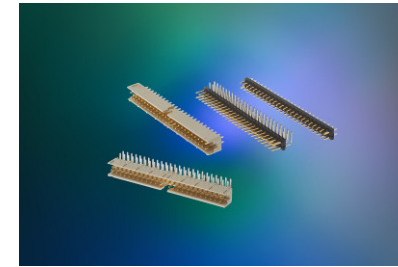
- Unshrouded Vertical
- Unshrouded Right Angle
- Shrouded Vertical
- Shrouded R/A
- Unshrouded Stacking Header

■ Quickie

- Vertical Header
- Right Angle Header

■ BergStik

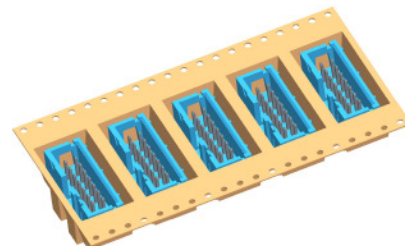
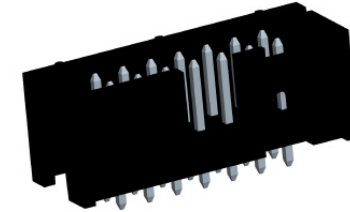
- Unshrouded Vertical and Right-Angle



Quickie Low Profile Header Pin-in-Paste



- Product range
 - Series 10056844: Vertical
 - Series 10056845: Right Angle
 - Available in 6, 8, 10, 14, 16, 20, 26, 30, 34, 40 positions
 - 0.76 μm selective gold plating
- Tape packaging immediately available in 10, 16, 20, 26, 40 positions for vertical header
- Application specification:
 - TA-894
- Quickie PIP is part of the Basics+ program (www.fciconnect.com/basics)



Minitek Header Pin-in-Paste



- Product range:
 - Unshroud Vertical: 10075024
 - Unshroud R/A: 10072353
 - Shrouded Vertical: 10075025
 - Shrouded R/A: 10072354
 - Unshroud Stacking: 59362
- Application specifications:
 - Vertical: TA-896
 - R/A: TA-895
- Minitek PIP is part of the Basics+ program
(www.fciconnect.com/basics)



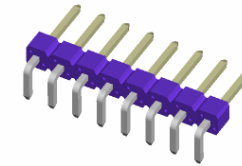
BergStik Pin-in-Paste



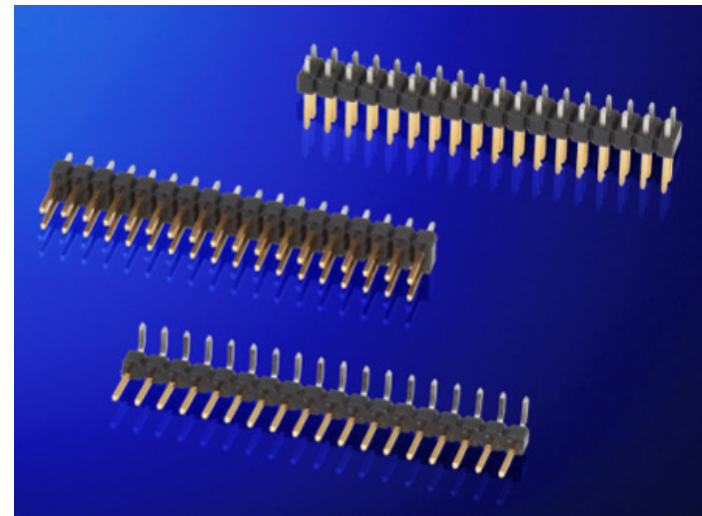
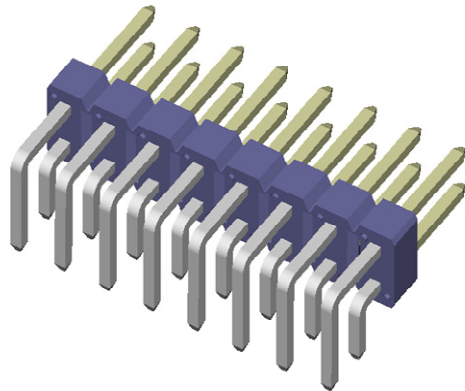
- Product range:
 - DR Straight : 10076801
 - DR R/A : 10082202
 - SR R/A : 10082201

- Application specifications:
 - Vertical: TA-897
 - R/A: TA-894

- BergStik PIP is part of the Basics+ program
(www.fciconnect.com/basics)



- Standardized product offering
- Large choice of pin counts, plating and packaging options
- Easy Basics+ service program
- Stencil design available for every product



■ D-SUB

- DELTA D Signal Right Angle
 - 9 – 15 – 25 – 37 contacts
 - Pin (Male) and Socket (Female)
 - Europe and US Standard
 - 1,6mm PCB thickness
 - Tray or tape-on-reel packaging

- DELTA D Signal Straight
 - 9-15-25-37-50 contacts
 - Pin (Male) and Socket (Female)
 - 1,6mm and 2,4mm PCB thickness
 - Tray or tape-on-reel packaging with pick-up cap option for vacuum nozzle



Features and Benefits of D-SUB PIP products



- Low insertion force metal peg : compatible with standard pick and place devices and providing higher connection robustness.
- Specific weight balance for right angle versions : good stability on the board before reflow soldering.
- Improved contact true positioning thanks to contact heat staking operation for right versions and 100% grid control: high performance for automatic placement on the board.
- Enlarged area around the metal peg : no paste interaction between the plastic back housing and the PCB.
- Recommended solder paste pattern available for every D-Sub PIP product



FCI METRAL® PIP product offering



Metral®

Right Angle Headers

Signal

- 4Row: 58361-101LF

- 5Row: HM1L51FDP000H6PLF

Power

- 4Row: HM1K41DFP000H6PLF

- 5Row: HM1K51DFP000H6PLF

Right Angle Receptacle

Signal

- 4Row: 52048-101LF

- 5Row: 52049-101LF

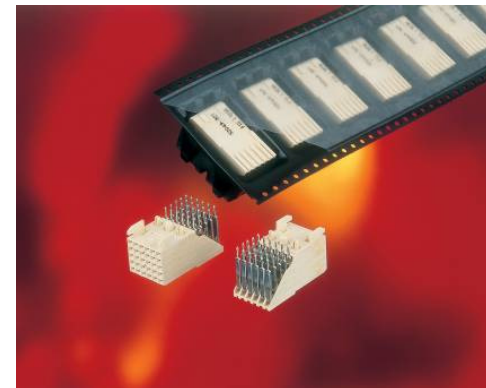
Power

- 5Row: 63793-101LF

Application Specific Designs

Monoblock

Hold Down Features



FCI SOFIX® PIP product offering

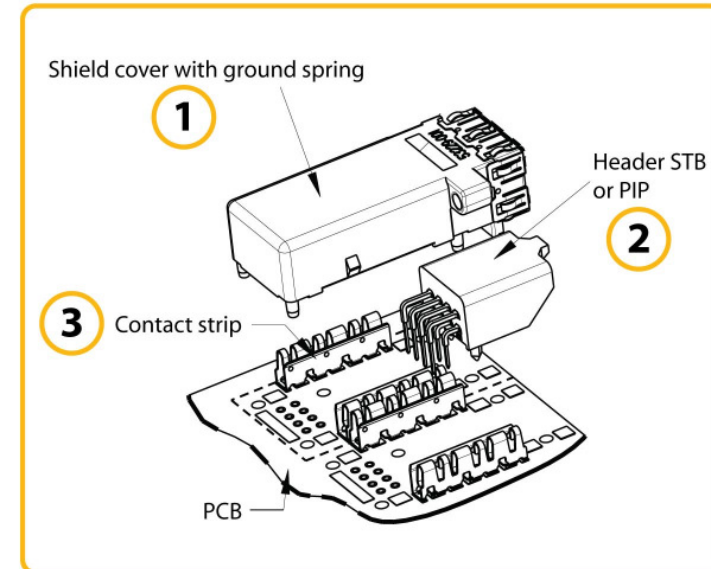
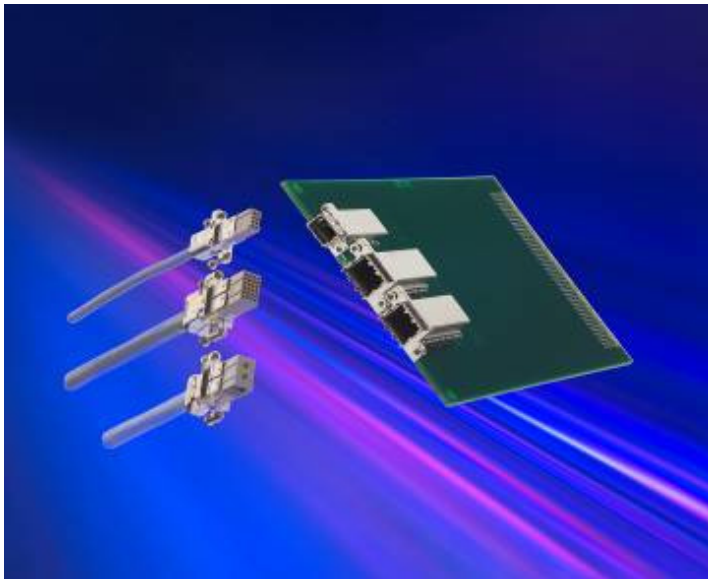


SOFIX®

Right Angle Headers

Signal

- Kit 4x6 positions: 72850-101LF
- Kit 2x4 positions: 72860-103LF

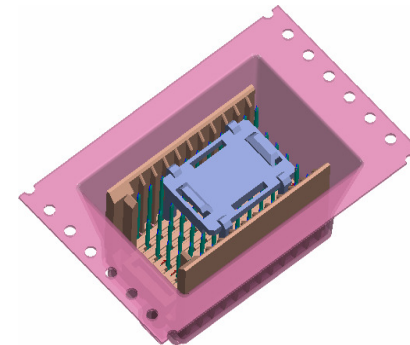
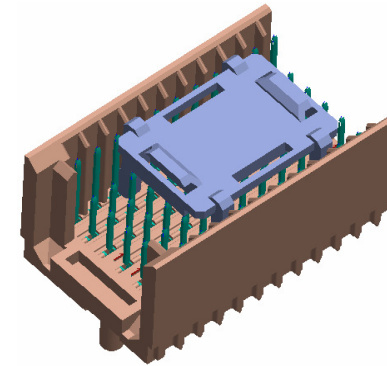




- Comply with international packaging standards
 - Tape-on-Reel or Tube packaging
 - Suitable for Standard pick and place equipment
- Allow pick-up by gripper or vacuum nozzle
- Vision/ inspection system references consistent across product range
- Easy board placement:
 - Automatic centralizing
 - True position of soldertails
 - Spring pegs for easy insertion with fixing for process transport vibrations
- Materials are reflow process compatible
- Product and Process are RoHS compatible

■ Millipacs®

- HM2 Straight Headers
 - Type C 55 Position Connector
 - Part Number HM2P09S.....
 - Three different Contact Lengths





- The HM2 Header Type C is a 55 position Connector with a reflow temperature resistant resin and is packed in tapes.
- Black color housing for easy recognition as a through hole component
- Pickup cap option available for automatic pickup and place by vacuum nozzle on to the board assembly
- Locating Peg/Hold down feature to ensure connector remains in position while soldering
- The Type C Header is currently offered with three most popular different mating lengths and any customer specific combination of these contacts within the Type C layout can be offered. An unique part number would be provided for each specific application.
- ROHS Compliant & Meets all requirements of IEC 61076-4-101

- Catalogues and Application notes
 - Pin-In-Paste connectors
 - Quickie Cable-to-board connectors for Pin-In-Paste
 - Minitek Pin-In-Paste
 - Bergstik Pin-In-Paste
 - D-Subminiature Pin-In-Paste connectors
 - Pin-In-Paste application guide
- Pin-In-Paste product presentation
- Pin-In-Paste flash animation
- Pin-In-Paste designer-kit/samplebox