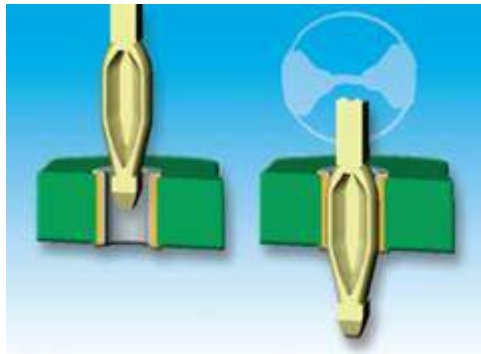


# Recommendations on press-fit technology

(Implementation subject to customer/supplier agreement)

## Objective:

Presentation of different technologies and description of the requirements relevant for PCB production



flexible press-fit zone



solid press-fit zone

Source(2): ZVEI Quality Working Group

# Recommendations on press-fit technology

(Implementation subject to customer/supplier agreement)

## Method:

There are two major types of press-fit technology:

### Solid press-fit technology

- Use of pins in solid design
- The circuit board is deformed around the hole
- When pressing the pin into the PCB, the resulting high friction between pin and plated through-hole creates an electrical, gas-tight connection.
- In addition to the press-fit process, the design of the hole is decisive for highly-reliable and robust press-fit connections, particularly with regard to:
  - Copper plating thickness of barrel.
  - The drill tool diameter specified by the press-pin manufacturer for the press-fit hole must be observed.
  - The final diameter of press-fit hole is of secondary importance.

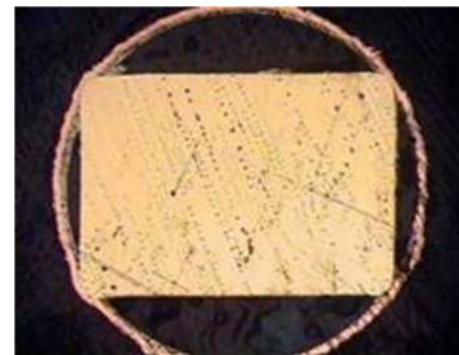
Press-fit power element  
with solid pins



Element pressed-in



Microsection of solid press-fit  
connection



Source(3): ZVEI Quality Working Group

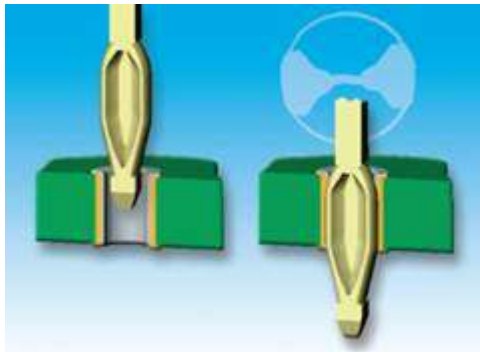
# Recommendations on press-fit technology

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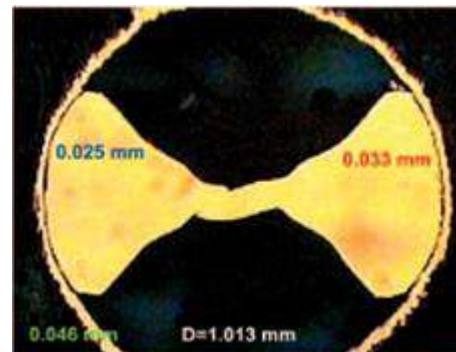
## Flexible (compliant) press-fit technology

- Use of flexible (compliant) pins
- The contact zone of the pin is compressed during insertion of the pin
- When pressing the pin into PCB, the initial tension of the press-fit contact creates an electrical connection between plated through-hole and press-fit contact.
- In addition to the press-fit process, the design of the hole is decisive for highly-reliable and robust press-fit connections, particularly with regard to:
  - Copper plating thickness of barrel.
  - Final diameter of the press-fit hole.
  - The drill tool diameter specified by the press-pin manufacturer for the press-fit hole must be observed.

Elastic deformation of compliant pin during insertion



Microsection of solid press-fit connection



Source(2): ZVEI Quality Working Group

# Recommendations on press-fit technology

(Implementation subject to customer/supplier agreement)

## Parameter recommendations

Order specifications should always be based on the press-fit elements' specifications and include:

- Tool and/or final diameter subject to the relevant press-fit technology  
When specifying tool diameters, consider the availability of the tools (usually in 0.05 mm increments).
- Tool and final diameter tolerances
- Copper plating thickness of hole wall metallisation
- PCB surface: HAL/ HAL lead-free and immersion tin offer good “slippage properties”.
- Other surfaces are only suitable for solid press-fit connections to a limited extent due to their physical properties such as brittleness of the nickel layer.
- Subject to the required final diameter tolerance, chemical surfaces must be used due to reduced tolerances of thickness.
- Base materials containing Teflon are only suitable to a limited extent due to their physical properties (plastic deformation).

General norms and standards on press-fit technology:

|                 |   |
|-----------------|---|
| IPC-9797        | “Press-Fit Standard for Automotive”                     |
| DIN IEC 60352-5 | “Solderless connections - Part 5: Press-in connections” |

**The implementation of press-fit technology requirements sometimes involves considerable additional cost and effort in PCB production and must therefore be agreed with the PCB manufacturer before an order is placed.**