# “NanoMultispring” Press-in zone for automotive use

| | |
|---|---|
| **PCB Hole size** | **0.55…0.60…0.65 mm** |
| **Board thickness** | **>=1.6 mm (nominal)** |
| **Stock thickness** | **0.40 mm** |

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## 1. SCOPE .

This specification covers the information as required in the IEC 60352-5 (Issue 4; Feb 2012) for a NanoMultispring Press-In zone (further named "NanoMultispring") for nominal hole-Ø 0,60 mm and made from a material with 0,40 mm stock thickness.

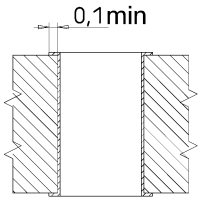
The IEC requirements are supplemented with the requirements for automotive use based on the "Arbeitskreis Prüfrichtlinie für KFZ-Steckverbinder".

## 2. PRINTED BOARD AND HOLE INFORMATION

- Printed board material according to :
  IEC 61249-2-7 (replacement for the IEC 60249-2-4/5/11/12)
  Other board materials have to be tested on request.

- Maximum number of conductive layers: not limited.
- Printed board thickness: Min = 1.6 mm ±0.14 mm (without Cu & lacquer); max = not limited.
  Other smaller board thicknesses have to be tested.

- Plated-Through-Hole dimensions :
  Hole-Ø prior to plating = 0.70±0.02 mm
  Thickness of the PTH-wall > 25 µm Cu
  Finished hole-Ø = 0.55-0.65 mm




- Printed board plating material :
  Chemical Sn > 0.5µm
  Other plating materials have to be tested on request.

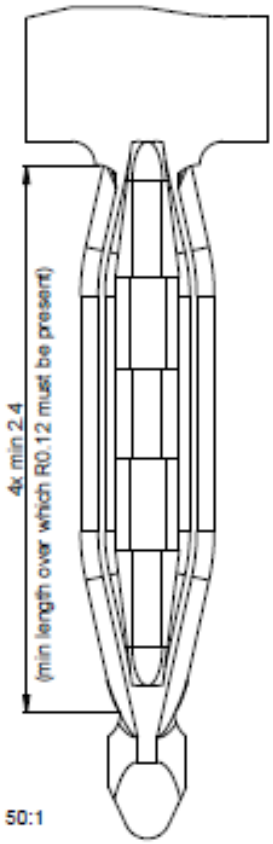
## 3. PRESS-IN ZONE INFORMATION

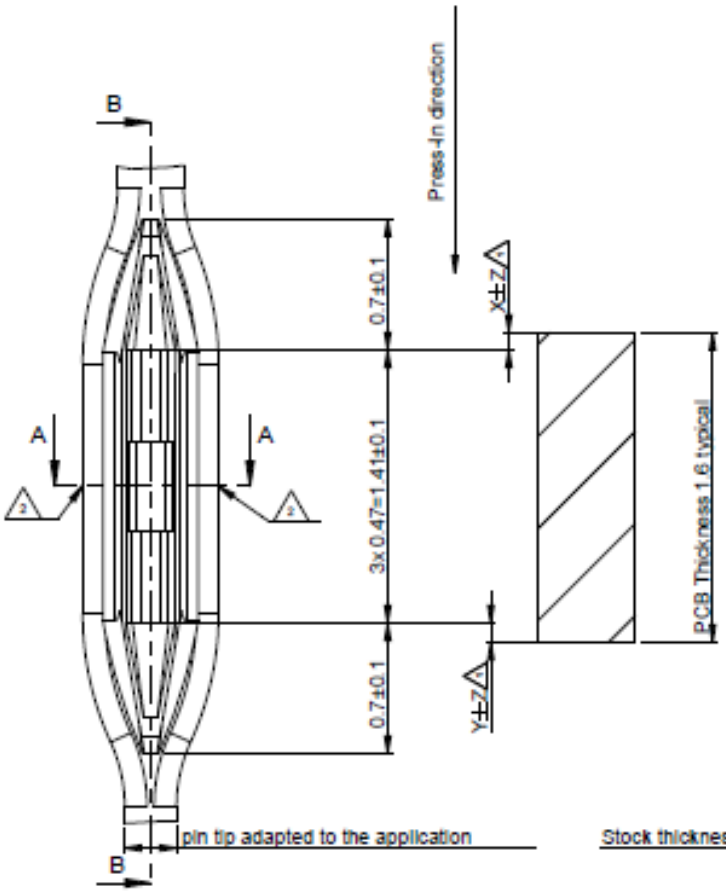
- Design : see dimensional drawing on page 3

  In order not to damage the PTH-hole during the press-in operation, the geometry of the guiding pin has to be rounded and have a smooth transition to the actual multispring geometry

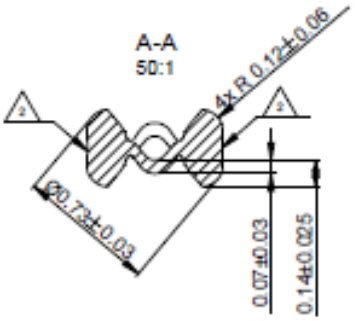
- Material : CuSn6 Tensile strength between 560-650 N/mm²
  Other materials have to be tested on request

- Plating: measuring point: 0.25...0.58 µm Sn over 1.27...2.20 µm Ni.
  0.4…1.5 µm Sn/SnPb over 1.27…2.20µm Ni.
  .



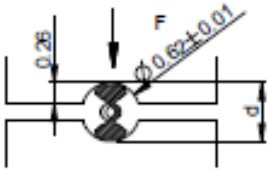




Alternative variant
in case of shoulders/ pintop
close to the press-fit zone




Radial deformation force measurement

| d | Force (N) |
|---|---|
| 0.58 | max 120 |
| 0.66 | min 45 |




1 Press-in depth
depending on which side the detection
of the press-in tool is situated
values for X,Y and Z: see page 4
2 Measuring point plating thickness

**Visual inspection**

## 4. INFORMATION ON THE APPLICATION.

The NanoMultispring press-fit zone as described can be used as a
Individual press-in termination.
Straight or right angle termination.
Rear plug up.
Connector or module with pre-assembled press-in terminations.

## 5. INSTRUCTION AND TOOLS FOR THE PRESS-IN OPERATION.

- Replacement and repairs with a new press-in termination has not been tested. This can be tested on request if needed.

- Press-in depth:
  See the dimensional drawing on page 3 for the nominal thickness printed board (1.6mm).

  For thicker printed boards the position of the press-in zone should be preferably in the middle or in the upper half of the printed board thickness. See the application drawing and table.

  For complex geometry with a high number of pins, the dimension of X±0.2mm can be interpreted of the mean of all press-in depths. The maximum single press-in depth should however been within X±0.3mm.

| PCB Thickness | Nominal Press-in dimension X | Nominal Press-in dimension Y | Tolerance Press-in dimension Z |
|---|---|---|---|
| > 1.6 mm | 0.1 … 0.1-k | | +-0.2 |
| 1.6 mm | 0.1 | 0.1 | |
| *0.8…1.6 mm *)* | *0.1 - k* | *0.1 - k* | |

  With k = (1.6 – PCB Thickness) / 2

  Depending on the detection side of the press-in tooling, dimension X or Y can be used.

  *) The use of thinner printed circuit boards has not been tested. The normal granted retention forces and PCB deformations can deviate from the usual allowed limits when using a thinner PCB. This should be tested on request if needed.

  Press in force / distance should be controlled.

- Press-in speed:
  Maximum 5mm/s for headers, housings & modules. Maximum 200 mm/s for stitched pins.

- Tool information:
  The press-in tool has to be adapted to the actual application. To ensure an optimal quality of the applied TE Connectivity products, we recommend the utilization of application equipment from TE Connectivity.
  The latest news and detailed information can be found on http://www.te.com/en/products/application-tooling.html
  Contact person: hnollek@te.com

## 6. PRESS-IN CHARACTERISTICS.

### 6.1 Mechanical

Press-in forces (performed on single multispring terminations)

| Plating multispring | Max. press-in forces *)**) | Typical *) |
|---|---|---|
| Sn | 100 N | 30…60 N |
| SnPb | 100 N | 30…60 N |
| AgenTin | tbd | tbd |
| Au | tbd | tbd |

*) Values in chemical tin-plated printed boards (based on the qualification parts 09/2013)
**) Value pro press-in zone

Minimum push-out force per termination: 20N. (15N End of life)

Values in other printed circuit boards: have to be tested on request.

### 6.2 Electrical

Contact resistance < 0.5 mOhm (measured values acc. IEC 60352-5 in tin plated printed boards)

### 6.3 Environmental

Temperature Range –40°C /+125°C (CuSn6)
Extended temperature range of –40°C /+150°C (CuNiSi) not yet available (test planned).

## 7. REQUIREMENTS

Qualification tests based on IEC 60352-5. Test group C based on more severe automotive requirements

## 8. RELATED DOCUMENTS

### 8.1 Test-Reports

tbd