

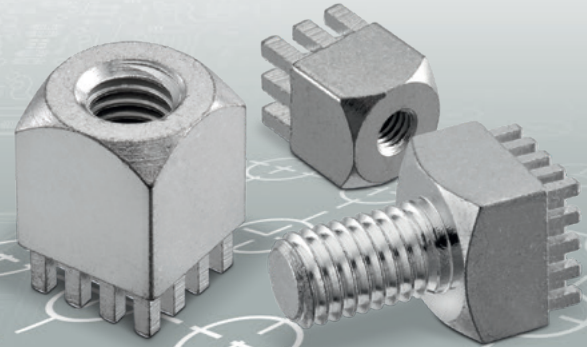
# PowerOne

## Single-Piece Powerelements



Original  
**POWEELEMENT**

**1000 A** configurable  
reliable established  
mechanically usable/deployable  
individual design  
individual dimensions



PowerOne High Current Contacts are one-piece Powerelements in solid design which are used for the supply and distribution of high currents to PCBs. They are RoHS & REACH compliant, flexibly configurable and successfully in use in thousands of various designs. Depending on the pin arrangement and the layout, currents of up to 1.000 amperes are possible.

### Application Possibilities

- Board-to-board over 90° or packaging
- Wire-to-board screw connection of ring terminals
- Electromechanics such as hinges and case mounting, spacers
- Retainers/fastenings of switches, fuses, IGBTs
- Any combination of all these and much more

### Processing

PowerOne Powerelements from Würth Elektronik ICS are pressed-in into the circuit board. Soldering is not necessary, temperature stress does not occur in the first place. The manufacturing step easily fits into the process chain and is highly cost effective. With the aid of the corresponding tools, several Powerelements can be pressed in simultaneously.

### Processing information

- For assembling prototypes, no special equipment is needed for pressing-in, a simple toggle press is sufficient
- The circuit board needs support during the pressing procedure
- The pressing force must be executed in a 90° angle to the circuit board
- Plated through holes of the circuit board must be executed according to our indications

### Technical Data

Current carrying capacity per pin at 20 °C	~ 10/15 A (areal/circumferential pins)
Current carrying capacity per pin at 85 °C	~ 6/10 A (areal/circumferential pins)
Material	CuZn39Pb3
Surfaces	tin-plated (standard) further surfaces such as nickel, silver, nickel/gold and others on demand

### Dimensions

Length x width	from 5x5 to 22x22 mm
Height	from 3 mm individually
Height above PCB	from 3 mm individually
Pin length	up to 7.5 mm (standard of 3.5 mm)
Pin diagonal	1.6 mm standard others on demand

### Circuit Board

Base material	FR4 (EP-GC-)
PCB thickness	from 1.5 mm
Drilling diameter	1.6 - 0.025 mm
Final diameter	HAL surface: 1.45 +/- 0.05 mm chemical surface: 1.475 +/- 0.05 mm
Copper in hole thickness	min. 25 µm, max. 80 µm

### Processing Parameters

Press-in force	min. 60 N per Pin max. 250 N per Pin
Retention force	60–80 % of the press-in force
Press-in speed	100–250 mm/min

### Compliant





# PowerOne

## Single-Piece Powerelements

### Circuit Board Design

For the solid press-fit technology the PCBs are to be finished according to the Würth Elektronik ICS Press-Fit Specification (see product details). Particular attention should be paid to the drill diameter and the copper thickness. Due to the different layer thicknesses of Hot Air Levelling compared to chemical surfaces, the final diameters vary.

### Torques

The torques indicated in the table are based on DIN 267 part 25. Different material combinations or different thread lengths of the connectors are not regarded here.

### Current Carrying Capacity

The current carrying capacity of a press-fit connection must always be considered in the context of the overall system. The press-fit zone has a very low electrical contact resistance of 100 – 200 µOhm. The limiting factor therefore usually lies in the circuit board layout or in the connection of a feed line.

Reference values for a pre-dimensioning can be found under Technical Data on page 1.

### Würth Elektronik ICS – Press-Fit-Specification 5.1

<b>Drill Ø</b>		drill tool drill hole	1.60 mm 1.60 - 0.025 mm
<b>Cu</b>		<b>Cu – in Hole</b> <b>Annular Ring</b>	Average 30 – 60 µm min. 25 µm, max. 80 µm* min. 125 µm
<b>End Ø</b>		<b>depends on surface</b> <b>HAL</b> <b>chem. surfaces</b>	(1.45 +/- 0.05 mm) (1.475 +/- 0.05 mm)

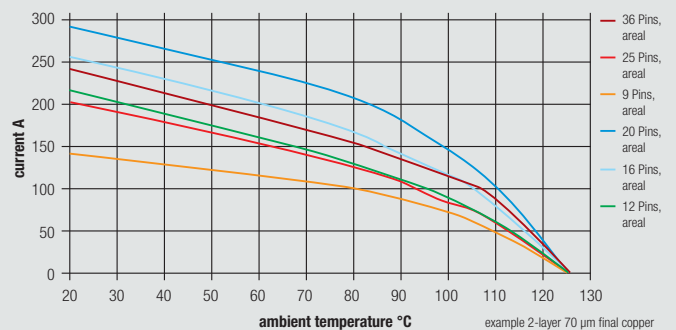
**Note:** For press-fit technology, drill Ø and copper thickness are fix. End Ø for reference only.

\*single measurement points in microsection

### Torques for Brass

Thread	M 2.5	M 3	M 4	M 5	M 6	M 8	M 10	M 12
(Nm)	0.3	0.5	1.2	2.2	3.9	9.0	17.0	35.0

### Derating Curve



### Overview of Standard Products

<b>available products</b>	138	85	22	93	32	2176
<b>construction form</b>	bush blind hole vertical	bush through hole vertical	bush through hole horizontal	bolt	bracket through hole horizontal	customer specific
<b>Pins</b>						
<b>5</b>	4, 6, 9			M 2.5 - M 3 · Ø 2.6 - Ø 3.4		
<b>7</b>	4, 6, 9			M 2.5 - M 5 · Ø 2.6 - Ø 5.5		
<b>9</b>	4, 8, 12, 16			M 3 - M 6 · Ø 3.2 - Ø 6.6		
<b>10</b>	4, 8, 12, 16			M 3 - M 6 · Ø 3.2 - Ø 6.6		
<b>12</b>	4, 10, 16, 25			M 4 - M 6 · Ø 4.2 - Ø 6.6		
<b>13</b>	4, 10, 16, 25			M 4 - M 8 · Ø 4.2 - Ø 9.0		
<b>16</b>	12, 20, 36			M 5 - M 10 · Ø 5.2 - Ø 10.5		
<b>18</b>	14, 24, 40, 49			M 5 - M 10 · Ø 5.2 - Ø 10.5		
<b>20</b>	16, 28, 48, 64			M 5 - M 10 · Ø 5.2 - Ø 10.5		
<b>22</b>	18, 32, 56, 81			M 5 - M 10 · Ø 5.2 - Ø 10.5		

All threads are also available in UNC.

### Supplies

Under the product category PowerCover, we offer a large choice of twist and contact protection elements. Press-fit tools and die plates are available on demand.

For more information visit us at:  
[www.we-online.com/pe](http://www.we-online.com/pe)  
 or call our Hotline: +49 7940 9810-4444