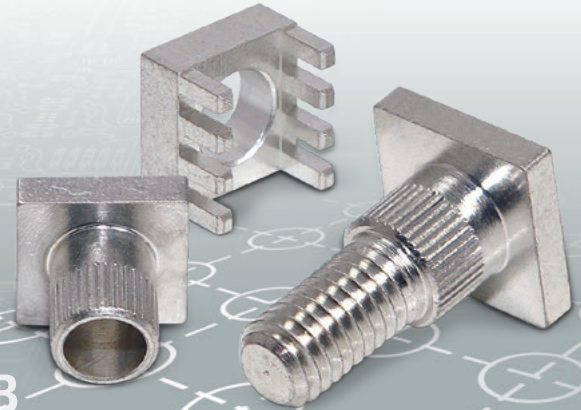


PowerTwo

Two-Piece Powerelements

Original
POWERELEMENT

500 A configurable
reliable established
mechanically usable / deployable
individual dimensions no stress on PCB
high lifelong torque



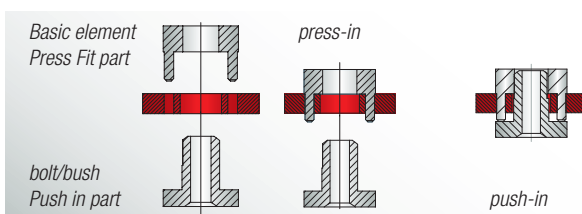
The two-piece Powerelements are a solution for screw technology on circuit boards patented by Würth Elektronik ICS. These power supply terminals enable a durable and reliable connection and mounting on the PCB without stressing it. Depending on the pin arrangement and the layout, currents of up to 500 amperes are possible. The assembly method allows individual adjustments regarding dimensions.

Application Possibilities

- Board-to-board stackable
- Wire-to-board screw connection of ring terminals
- Electromechanics, screw technology, spacers
- Retainers / fastenings of switches, fuses, IGBTs
- Any combination of all these and much more

Processing

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.



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
- After the pressing process the pins should stand out of the drilled hole (ca. 0.2 – 0.5 mm)
- Plated through holes of the circuit board must be executed according to our indications
- PowerTwo High Current Contacts are constructed for pressing, soldering is not intended

Technical Data

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

Dimensions

Length x width	from 9 x 9 to 22 x 22 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	1.60 - 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



PowerTwo

Two-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 table on the side). 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

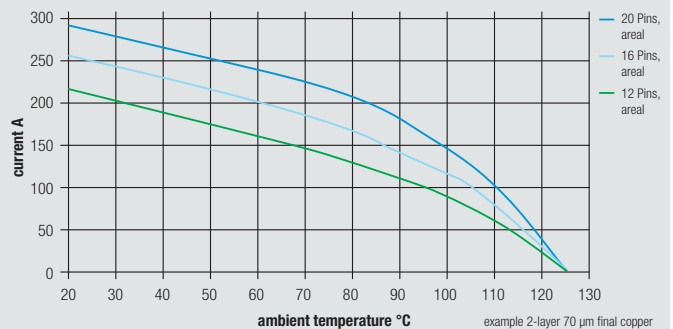
Drill Ø		drill tool drill hole	1.60 mm 1.60 - 0.025 mm
Cu		Cu – in Hole Annular Ring	Average 30 – 60 µm min. 25 µm, max. 80 µm* min. 125 µm
End Ø		depends on surface HAL chem. surfaces	(1.45 +/- 0.05 mm) (1.475 +/- 0.05 mm)

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
(Nm)	0.3	0.5	1.2	2.2	3.9	9.0	17.0

Derating Curve



Overview of Standard Products

available products	188	96	60	35	192
construction form	basic element pins circumferential	basic element pins two-rowed	bush through hole vertical	bolt	customer specific
■ Pins					
9	4, 8, 12			M 3 - M 4 · Ø 3.1 - Ø 4.2	
10	4, 8, 12			M 3 - M 4 · Ø 3.1 - Ø 4.2	
12	8, 16			M 4 - M 5 · Ø 4.1 - Ø 5.3	
13	10, 16			M 5 - M 6 · Ø 4.1 - Ø 6.4	
16	12, 16, 20, 24			M 6 - M 8 · Ø 6.1 - Ø 8.5	
18	20, 25, 28, 40, 42			M 6 - M 8 · Ø 6.1 - Ø 8.5	
20	24, 32			M 8 - M 10 · Ø 8.1 - Ø 10.5	
22	28, 32, 56			M 8 - M 10 · Ø 2.6 - Ø 10.5	

All threads are also available in UNC.

Supplies

Press-fit tools and die plates are available on demand.

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