LF POWERTWO PRESS-FIT

Powerelements

LF PowerTwo Press-fit Powerelements are two-piece lead-free high current contacts and a solution patented by Würth Elektronik ICS for the screw technology on PCBs. They enable a permanent and reliable connection or mounting on the PCB without adding stress. Depending on the pin arrangement and the corresponding layout, currents of up to 500 amperes are possible.

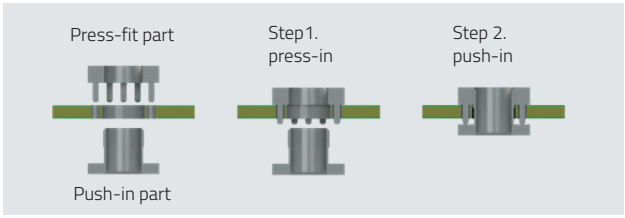
The LF Powerelements from Würth Elektronik ICS are lead-free high current contacts with the same performance and application range as the original Powerelements. However, they already now meet the future requirements of the RoHS Directive without any exemptions.

Applications

- Contacting / mounting of switches, fuses, IGBTs, etc.
- Wire-to-board screw connection of the cable lugs
- Board-to-board
- Electromechanics such as mounting of housings and space

Processing

LF PowerTwo Press-fit Powerelements are pressed into the PCB. With the aid of corresponding tools, several Powerelements can be pressed in simultaneously.



Processing information

- For assembling prototypes, no special equipment is required for pressing-in, a simple toggle press is sufficient.
- The PCB must be supported during the press-fit process.
- The press force has to be applied at a 90° angle to the PCB.
- After the pressing process, the pins should stand out of the drilled hole.
- The LF PowerTwo Press-fit high current contacts are designed for pressing-in, a soldering process is not intended.
- Only use suitable press-fit tools.

Technical data	
Current carrying capacity	see table on the back
Material	brass lead-free (max. 0.1% Pb)
Surfaces	tin-plated (standard)
	further surfaces such as nickel, silver, nickel/gold and others on demand

Dimensions (standard)	
Length x width	from 9 x 9 mm
Height above PCB	from 3 mm
Pin length	3.5 mm, others on demand
Pin diagonal	1.6 mm, others on demand

PCB	
Base material	FR4 (EP-GC-)
PCB thickness	from 1.5 mm
Drilling diameter	1.60 - 0.025 mm
Final diameter ▪ HAL surface ▪ chemical surface	 1.45 +/- 0.05 mm 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

REACH COMPLIANT RoHS COMPLIANT

All products of the standard portfolio can also be individualised as customer-specific variants.

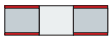
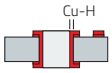
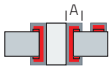
PCB design
The PCB has to be designed in accordance with the latest edition of IPC A 600.
For solid press-fit technology, the PCBs are finished according to the Würth Elektronik ICS Press-fit specifications. Particular attention should be paid to the drill diameter and the copper thickness.

Torques
Torque values for the various thread dimensions can be found in the table opposite. Different material combinations or different thread lengths of the connectors are not listed here. Depending on the thread length, the bushes can be tightened with higher torques.

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

Qualification
LF PowerTwo Press-fit high current contacts have successfully passed the vibration test and the mechanical shock test according to the ISO 16750-3 standard.
Vibration test according to ISO 16750-3:2012 4.1.2.7 Random Test VII.
Mechanical shock test according to ISO 16750-3:2012 4.2.3 Severity 2.

Würth Elektronik ICS – Press-fit specification 5.1 (Example for 1.6 mm pin)

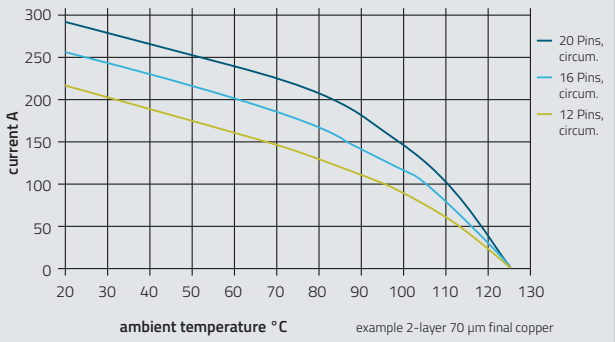
Drill Ø 	drill tool drill hole	1.60 mm 1.60 - 0.025 mm
Cu 	**Cu** - in **H**ole **A**nnular Ring	Average 30 – 60 µm min. 25 µm, max. 80 µm* min. 125 µm
End Ø 	**depends on surface** **HAL** **chem. surfaces**	 (1.45 +/- 0.05 mm) (1.475 +/- 0.05 mm)
Note: For press-fit technology, drill Ø and copper thickness are fix. End Ø for reference only.		

*single measurement points in microsection

Torques for brass

Thead	M2.5	M3	M4	M5	M6	M8	M10
Nm	0.3	0.5	1.2	2.2	3.9	9.0	17.0

Derating curve LF PowerTwo Press-fit



Overview of LF PowerTwo Press-fit standard products

Construction form	 basic element, pins circumferential	 basic element, pins double-row	 push-in element, bush vertical, through hole	 push-in element, bolt
Pins	**Current carrying capacity at 20°C* / 85°C***		**Dimensions**	
4, 8, 12	~ 60 – 180 A / ~ 36 – 108 A		M 3 – M 4 with Ø 3.1 – Ø 4.2	
8, 16	~ 120 – 240 A / ~ 72 – 144 A		M 4 – M 5 with Ø 4.1 – Ø 5.3	
10, 16	~ 150 – 240 A / ~ 90 – 144 A		M 5 – M 6 with Ø 4.1 – Ø 6.4	
12, 16, 20, 24	~ 180 – 360 A / ~ 108 – 216 A		M 6 – M 8 with Ø 6.1 – Ø 8.5	
20, 25, 28, 40, 42	~ 300 – 630 A / ~ 180 – 378 A		M 6 – M 8 with Ø 6.1 – Ø 8.5	
24, 32	~ 360 – 480 A / ~ 216 – 288 A		M 8 – M 10 with Ø 8.1 – Ø 10.5	
28, 32, 56	~ 420 – 840 A / ~ 252 – 504 A		M 8 – M 10 with Ø 2.6 – Ø 10.5	

* referred to a limit temperature of 125 °C

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

For more information visit us at:
www.powerelement.com
or call: **+49 7940 9810-4444**

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