



PowerPlus

Torque +

Original
POWER ELEMENT
Intelligent Systems

400 A
reliable established
low weight
maximum torque



PowerPlus high current terminal blocks and spacers are made of a brass base body and a stainless steel screw/nut element offering very low weight and a maximum torque. The special design of the base body allows a double-sided assembling on the same position. Depending on the pin arrangement and the layout, currents of up to 400 ampere are possible. That is the reason why Power Elements perfectly qualify as connecting elements for fuses and cables to the circuit board or as mounting elements whenever a high torque is required. Various lengths of threaded pins are available.

Application Possibilities

- Board-to-board
- Wire-to-board screw connection of ring terminals
- Retainers / fastenings, fuses
- For mounting with high torques

Processing

Würth Elektronik PowerPlus Power Elements are pressed in into the circuit board. Soldering is not necessary. Therefore, the PCBs are not exposed to temperature stress. This processing step easily blends in to the processing chain and is highly cost efficient. With the aid of the corresponding Press Fit tools, several Power Elements can be pressed in simultaneously.

- 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
- Only for use with adequate pressing tools
- In case of double-sided use, the smallest Power Element must be pressed in first

Technical Data

Current carrying capacity per pin at 20 °C	see table on the back
Current carrying capacity per pin at 85 °C	see table on the back
Material	base body: CuZn37 screw / nut: stainless steel V2A
Surfaces	base body: tin-plated (standard) screw / nut: w / o

Dimensions

Length x width	from 9,22 x 9,22 to 22,44 x 22,44 mm
Height	from 21,5 to 45,8 mm
Height above PCB	from 16,5 to 40,8 mm
Pin length	5 mm
Pin diagonal	from 1,60 to 2,45 mm

Circuit Board

Base material	FR4 (EP-GC-)	
PCB thickness	from 1,5 mm	
Drilling diameter	see table on the back	
Final diameter	HAL surface chemical surface	see table on the back see table on the back
Copper in hole thickness	min. 25 µm, max. 80 µm	

Processing Parameters

Press-in force	min. 40 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



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Circuit Board Design

For the massive Press Fit Technology the PCBs are to be finished according to the Würth Elektronik ICS Press Fit specifications (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.

Würth Elektronik ICS – Press Fit Specification 5.1			
Drill Ø			see table below
Cu		Cu - in Hole Annular Ring	min. 25 µm, max. 80 µm min. 125 µm
End Ø		depends on surface HAL chem. surfaces	see table below

Torques

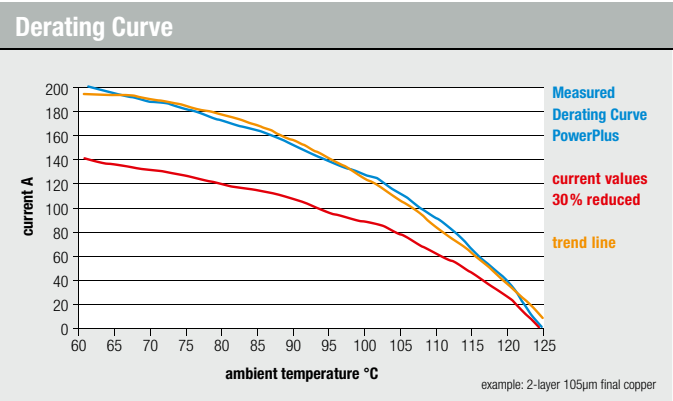
The torques indicated in the table are based on DIN 267 part 25. Different material combinations or different thread lengths of the connectors are not regarded here.

Torques for Stainless Steel						
Thread	M 4	M 5	M 6	M 8	M 10	M 12
(Nm)	1.8	3.9	5.9	16	31	42

Current Carrying Capacity

The current carrying capacity of a Press Fit connection needs to be seen 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 in the table below.



Overview of Standard Products



		M4	M5	M6	M8	M10	M12
Bolt	Part-No.	93512	93514	93516	93518	93520	93522
Bush	Part-No.	93511	93513	93515	93517	93519	93521
Current carrying capacity at 20 °C		~ 180 A	~ 192 A	~ 272 A	~ 360 A	~ 380 A	~ 400 A
Current carrying capacity at 85 °C		~ 120 A	~ 132 A	~ 192 A	~ 260 A	~ 280 A	~ 300 A
Drill Ø (in mm)		1.60 +/- 0.025	1.90 +/- 0.025	1.90 +/- 0.025	2.00 +/- 0.025	2.30 +/- 0.025	2.45 +/- 0.025
End Ø (in mm)	HAL	1.45 +/- 0.05	1.75 +/- 0.05	1.75 +/- 0.05	1.85 +/- 0.05	2.15 +/- 0.05	2.30 +/- 0.05
End Ø (in mm)	chemical	1.475 +/- 0.05	1.775 +/- 0.05	1.775 +/- 0.05	1.875 +/- 0.05	2.175 +/- 0.05	2.325 +/- 0.05
Pins circumferential	number / grid	12 / 2.60	12 / 3.00	16 / 2.80	20 / 2.84	20 / 3.70	20 / 4.10

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
 or call our Hotline: +49 7940 9810-4444