PowerPlus

High Current Contacts with maximum torque

WÜRTH ELEKTRONIK

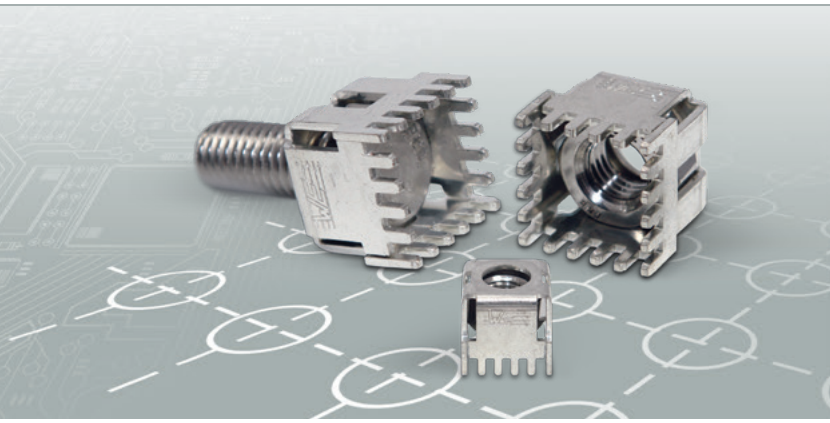
Original
POWERELEMENT

400 A

reliable established

low weight

maximum torque



PowerPlus High Current Contacts are made of a brass base body and a stainless steel screw / nut element. Therefore they offer maximum torque with a comparatively low weight. 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 amperes are possible. That is the reason why Power Supply Terminals 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

PowerPlus 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. This manufacturing step easily fits in to the process chain and is highly cost efficient. 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
- PowerPlus are constructed for pressing, soldering is not intended
- Only for use with adequate pressing tools
- In case of double-sided use, the smallest Powerelement 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	see table on the back
	chemical surface	see table on the back
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

COMPLIANT RoHS&REACH WÜRTH ELEKTRONIK

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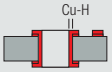
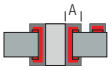
Circuit Board Design

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.

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 **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

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

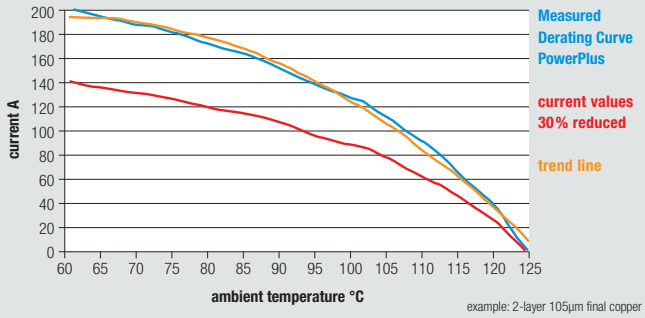
Thread	M 4	M 5	M 6	M8	M 10	M 12
(Nm)	1.8	3.9	5.9	16	31	42

Current Carrying Capacity

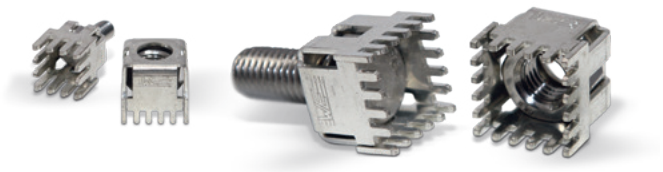
The current carrying capacity of a press-fit connection must always be considered in the context of the overall system. The press-fit zone has a very low electrical contact resistance of 100 – 200 µOhm. The limiting factor therefore usually lies in the circuit board layout or in the connection of a feed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

Reference values for a pre-dimensioning can be found in the table below.

Derating Curve



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**