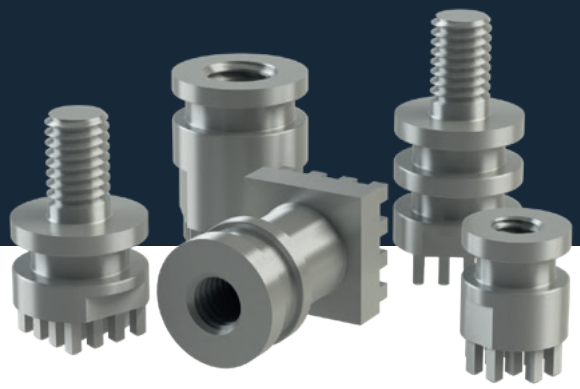
POWERONE IP

Powerelements

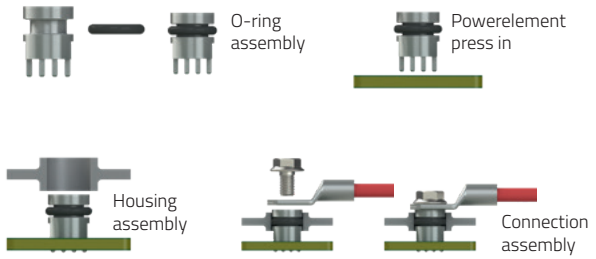


PowerOne IP Powerelements are high current contacts for use with sealing rings. They are based on the well known PowerOne product family in a solid design for feeding and distributing high currents on PCBs from Würth Elektronik ICS.

PowerOne IP Powerelements are used where sealed high current housing feed-through is required. They can be flexibly configured and are successfully used in many different versions. Powerelements with seal holders are ideal for housing feed-throughs to be mated with terminals for cable connections to the PCB.

Applications
- High current connection to PCB via sealed housing feed-through
- Wire-to-board connection outside the housing

Processing
The PowerOne IP Powerelements are first fitted with the appropriate sealing rings. They are then pressed into the PCB. Once the housing has been fitted, the connection can be made using, for example, cable lugs.



Processing information
- For assembling prototypes, no special equipment is required for pressing-in, as 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.
- PCB through-hole plating has to be performed according to the specifications of Würth Elektronik ICS.
- The PowerOne IP high current contacts are designed for pressing-in, and a soldering process is not intended.
- Use only with suitable press-in tools and fixing materials (see processing instructions).
- The PowerOne IP high current contacts are supplied without an o-ring.
- The o-ring must be matched to the application. We will be pleased to advise and make a recommendation.

Technical data	
Current carrying capacity	up to 500 A possible depending on dimensions
Material	CuZn39Pb3 / Lead-free brass (max. 0.1% Pb)
Surfaces	tin-plated (standard) further surfaces on demand
IP protection	▪ Depending on system design ▪ Number of seals 1 or 2

Dimensions (standard)	
Diameter	from 10 mm
Height above PCB	from 6 mm
The geometry of the PowerOne IP Powerelement is generally based on the housing and current carrying requirements.	

PCB	
Base material	FR4 (EP-GC-)
PCB thickness	from 1.5 mm

Processing parameter	
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

With comprehensive engineering expertise and as a pioneer for Powerelements, we will meet your requirements and find the best technical and economical solution - whether from our standard range or as a customised variant.

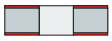
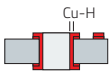
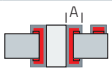
All products of the standard portfolio can also be individualised as custom-specific variants.

REACH COMPLIANT

RoHS COMPLIANT

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 to be finished according to the Würth Elektronik ICS Press-fit specifications. Particular attention should be paid to the drill diameter and the copper thickness.

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

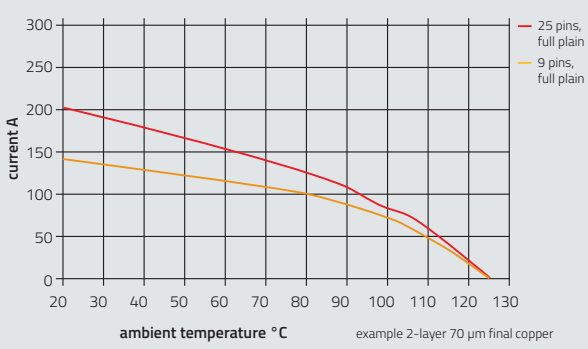
Torques
Torque values for the various thread dimensions can be found in the table opposite. Different material combinations or different thread lengths of the connectors are not listed here. Depending on the thread length, the bushes can be tightened with higher torques.

Torques for brass

Thread	M4	M5	M6	M8	M10	M12
Nm - Bolt	1.2	2.2	3.9	9.0	17.0	35.0

Current carrying capacity
The current carrying capacity of a press-fit connection always has to 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, and also in the connection of a feed line.

Derating curve PowerOne IP



Example selection of PowerOne IP Powerelements

	M5		**M6**		**M8**	
Construction form	bush	bolt	bush	bolt	bush	bolt
Part number	K903944	K903947	K903945	K903948	K903946	K903949
Pin number	12	12	16	16	21	21
Thread length [mm]	6.0	8.0	7.0	10.0	9.0	11.0

The standard Powerelements listed in the table are designed for a 2 mm sealing ring.

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

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