

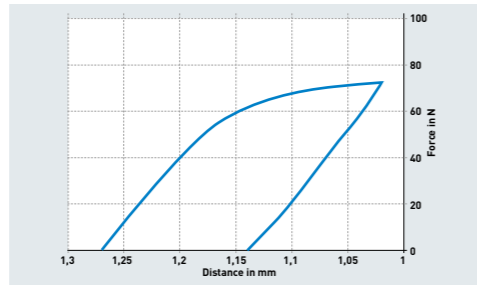
TECHNOLOGY AND CHARACTERISTICS

The characteristics

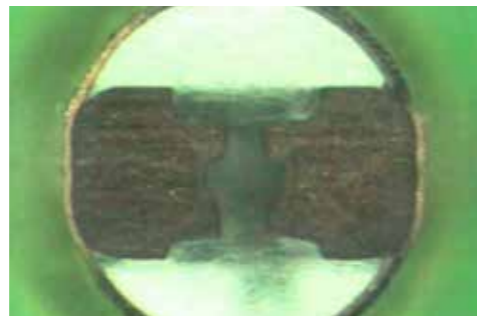
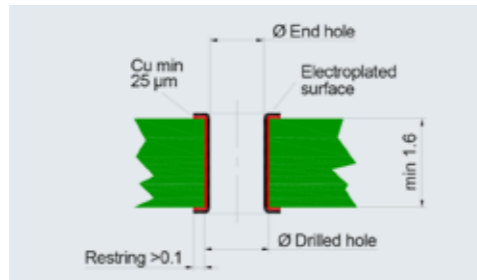
- gas-tight, solder-free and vibration-resistant connection
- low insertion forces preserve the wall of the hole in the PCB
- no formation of shavings, therefore also suitable for areas with high requirements with regard to technical cleanliness
- high mechanical stability through robust and secure retention and easy handling for the insertion process
- correct functionality over the full tolerance range of the PCB hole, achieved by the spring-loaded needle eye to always ensure a 100% contact within the tolerance range
- low mechanical stress of the PCB caused by the press-fit process
- no jet effect (i.e. no layers of the PCB are pulled down during the press-fit process)
- suitable for use with temperatures from -40 °C to 150 °C and therefore suitable for use with automotive applications
- low contact resistance, high retention force
- high elasticity of the contact (spring-back)
- easy to overmould
- excellent economy
- environmentally friendly
- RoHS compliant

A reliable connection

In order to adapt to the end hole diameter in the PCB, during the press-fit process the ELoPin® is only plastically deformed once. Due to the special characteristics of the ELoPin® press-fit technology, after this plastic deformation a high elastic component remains. This high elasticity is decisive in the long-term for maintaining the contact pressure also under load and to create a reliable electrical connection.



The quality of a press-fit connection is partly determined by the elasticity (R = spring-back) of the press-fit zone.



Microsection of an ELoPin® press-fit contact in the PCB hole. The visible stress of the through-hole plating reduces the risk of failure of the PCB.

Surface of the PCB end hole: HAL

EloPin®	06-10	08-145	08-16
Ø Drill	1.15 ± 0.025	1.6 ± 0.025	1.75 ± 0.025
Ø Drilled hole, in practice	~1.13	~1.58	~1.73
Cu coating	25-50 µm	25-50 µm	25-50 µm
Surface	HAL	HAL	HAL
Ø End hole	1.0 +0.09/-0.06	1.45 +0.09/-0.06	1.6 +0.09/-0.06
End hole nominal size*	1	1.45	1.6

PCB end hole surface: chemical Sn

EloPin®	04-06	06-10	08-145	08-16
Ø Drill	0.7 ± 0.02	1.15 ± 0.025	1.6 ± 0.025	1.75 ± 0.025
Ø Drilled hole, in practice	~0.68	~1.13	~1.58	~1.73
Cu coating	25-50 µm	25-50 µm	25-50 µm	25-50 µm
Surface	chem Sn	chem Sn	chem Sn	chem Sn
Ø End hole	0.60 ± 0.05 +0.04/-0.03	1.04 ± 0.05 +0.04/-0.03	1.49 ± 0.05 +0.04/-0.03	1.64 ± 0.05 +0.04/-0.03

*further nominal diameters on request

One of our strongest arguments:
a tour of our plant

Do you wish to become our customer or do you have a technical production challenge for us? Then we invite you to visit us to experience our working procedures and core values. We are looking forward to the opportunity of convincing you.

Email: info@kummer-gmbh.de

EloPin®

Elastic High-Performance Press-Fit:
Top class press-fit technology

EloPin®_en/03/22/xxx

Kummer
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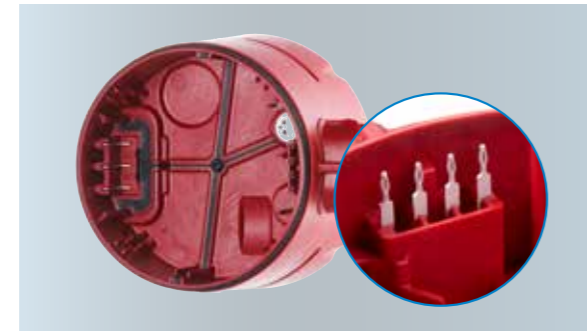
Kummer
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EloPin® FROM KUMMER

The EloPin® is the most reliable connector technology for PCBs. The EloPin® is in fact a modified needle eye press-fit zone which functions as a mechanical connector. The EloPin® is available as a solder-free press-fit connector in a number of variants. With over 10 years of production expertise, Kummer is one of the most experienced manufacturers of these connector pins.

The pin and its markets

Pins are generally used wherever PCBs are inserted with components. Due to its characteristics (pressing in without cutting the metal, different materials, etc.), the technology is widely used in the automotive industry, telecommunications, mechanical engineering, medical engineering, electric vehicles, and cleanroom applications.



EloPin® 04-06 to 1.2-20
Wind turbines

Telecommunications

Mechanical engineering



Medical engineering

Commercial vehicles

Electric mobility



THE ADVANTAGES OF THE KUMMER ELOPIN®

Improved pin characteristics through enhanced manufacturing process*

The experience is the difference, which is also true for the EloPin®.

As the pins are produced by a number of manufacturers, the characteristics of the pins can vary. Over the years Kummer has continually improved and perfected the manufacturing process.

The Kummer pin is characterised by:

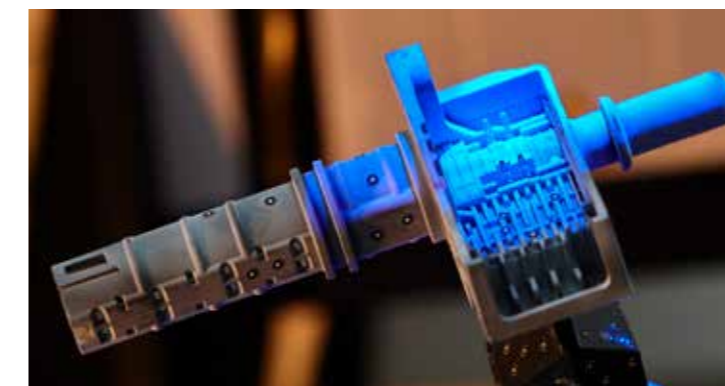
- compliance with very tight tolerances, process reliability also with large-scale series production
- the high production precision of the complex 04 pins which are manufactured in the progressive stamping-moulding process.

Quick sampling for prototypes and pilot series

Our in-house toolmaking department enables a very quick reaction in the implementation of prototypes. As a result, we can supply the R&D departments of our customers with customised pins which have already been produced under series conditions and are therefore close to the final component to be produced in series. This is an important aspect for meaningful results of tests regarding functionality and characteristics.

100% quality control

The production of the EloPin® in large and small scale series is 100% monitored by vision control. This ensures the consistent reliability of the required functionality. In general, the EloPin® is qualified in an extended assessment program according to DIN EN 60352-5 which includes important points such as the temperature range, number of temperature cycles, etc..



Different materials and surfaces for the best characteristics

The material determines the application area and characteristics of the EloPin®. With over 40 years of experience in precision stamping, Kummer has a high degree of production expertise. In order to make the EloPin® as universally usable as possible, Kummer

produces the EloPin® in a number of materials with different surfaces which are specially adapted to the respective application area.

Application areas	Automotive – cabins	Automotive – engine compartments	Power electronics	Telecommunications & industry
Material name	CuSn6	CuNiSi	High performance Cu alloy	CuSn6 / CuNiSi
Electrical conductivity MS/m	9	25	46	9 / 25
Thermal conductivity W/(m·K)	75	190	320	75 / 190
Surface	Sn100 over Ni	Sn100 over Ni	Sn100 over Ni	Sn100 over Ni
Max. ambient temperature	95 °C	150 °C	150 °C	95 °C / 150 °C
EloPin® 06-10	+	+		+
EloPin® 08-145		+	+	
EloPin® 08-16	+	+		+

Note: further materials, sizes, surfaces and application areas on request.

Complete pin: with connector

The progressive stamping-moulding process specially developed by Kummer enables the overmoulding of the pin according to a specific connection geometry in a single production process. This results in high quality (compliance with tight manufacturing tolerances) and improved functional reliability (homogeneous and closed connection in a single process step without interruption).



EloPin®	04 – 06	06 – 10	08 – 145	08 – 16	12 – 20
Insertion force, max	100 N	100 N	160 N	160 N	200 N
Insertion force, typical	20 – 60 N (x1)	65 N	115 N	85 N	160 N
Push-out force, min	20 N	30 N	40 N	50 N	50 N
Push-out force, typical	35 – 70 N (x1)	60 N	135 N	105 N	110 N
Contact resistance, max	1 mOhm	1 mOhm	1 mOhm	1 mOhm	1 mOhm
Contact resistance, typical	0.05 mOhm	0.01 mOhm	0.01 mOhm	0.01 mOhm	0.01 mOhm
Current carrying capacity (x2)	not tested	approx. 8 A	approx. 25 A	approx. 25 A	approx. 45 A

Manufactured variants

Kummer can produce all five sizes of the EloPin®. Depending on the application area, the pin can be delivered on a stamped strip, as a pre-moulded part (for the progressive stamping-moulding process) or as a complete component.

*The EloPin® was developed and patented by TBS Sorig. A number of companies produce the pin under licence, whereby only the function and shape is protected. The production process, on the other hand, is not prescribed.