

Press Release



Planar Coils from Würth Elektronik Voted for Product of the Year

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Readers of the professional journal "Elektronik" voted "circuit board-based embedded planar coils in folded flexible technology" as product of the year in the Passive Components category. A total of 111 innovative and trendsetting products, divided into ten categories, competed for the well-respected readers' prize. The novel "Foldflex[®]" process developed enables Würth Elektronik to manufacture planar coils with a high current loading capacity as an individual inductive component and also embedded in the circuit boards.

Using recently developed simulation, design and manufacturing methods, coils of every size and with almost any desired number of layers can be generated by folding flexible foil structures. This creates precision inductive components with a high current loading capacity, low ohmic resistance and very low and narrow specify capacitive loads. The latter can even be integrated directly into conventional circuit boards, turning the circuit board into a 3D-component.

High resolution technology on flexible foil substrates is a powerful basic technology for miniaturized coils. Standardized circuit board manufacturing methods generate two-sided tracks on the foil substrate with the highest degree of precision. Different varieties of Foldflex layers are available. The "multilayer system" created in this manner later allows

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much denser windings. The combination of well defined layout parameters and flat production technology creates a 3D component with highest precision in repeatability. The competitive wire based component can never meet these specifications. Suitable joining technologies such as pressing and bonding create a compact coil component with contacts.

This way you can combine multiple coils to form a magnetic circuit and produce a complex, yet precisely designed transformer element. In various test scenarios, these coils were subject to a current density of up to 30 A/mm² with a conductor fill factor of up to 0.9. Generally that's five times more than a conventional wire-wound coil component.

From the user's point of view, the goal of a new development can't be simply to replace existing winding coils. As with other integration solutions, special emphasis is placed on the system aspect. With their strong coupling to the circuit board, embedded Foldflex coils have the advantage of offering new approaches to solving problems, product properties and product qualities.

The continuous circuit board solution of the Embedded Foldflex Coils also has a high degree of integration density that opens up new approaches to solutions for the signal integrity of high-frequency applications. There is no interference in the signal paths due to design-based compromises of the winding coils, for example placement of the coils on the circuit board surface or contact resistances resulting from solder

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joints. So signal paths can be adapted flexibly to requirements of the particular situation. Simplifying the post-processing of signals can either reduce costs or it can increase the functional value without impacting costs.

Typical applications are in sensors, actuating elements and energy transmission and in thematic areas based on them. Examples are already in-use applications of distance sensors, LVDSs (linear voltage differential sensors), linear motors, planar motors, power supply technology, high-frequency technology, lighting systems technology, acoustics and energy production.

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<i>Picture</i>	<i>Caption</i>
A photograph showing a green printed circuit board (PCB) with a complex, multi-layered structure. A specific section of the board is highlighted with a red rectangular box, and a magnified view of this section is shown below it. The magnified view reveals a dense, layered structure of copper traces and a central circular feature, which is the embedded coil mentioned in the caption.	<p><i>Embedded coil in Foldflex® technology, side view</i></p>

About Würth Elektronik Circuit Board Technology (CBT)

Würth Elektronik CBT is a leading manufacturer of circuit boards in Europe. It has production plants in Niedernhall, Rot am See and Schopfheim and manufactures circuit board systems ranging from the standard circuit board to trend-setting special solutions. The company is a circuit board specialist that supplies application-specific solutions

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across all technologies and is advancing new technological developments, for example, in the embedding of active and passive components. Its extensive PCB portfolio ranges from double-sided circuit boards and multilayers in all the prevalent technologies to challenging circuit boards as HDI or rigid-flex designs or in heatsink technology.

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About the Würth Elektronik Group of Companies

Würth Elektronik CBT, along with Würth Elektronik ICS (electromechanical and electronic system solutions), Würth Elektronik eiSos (passive and electromechanical components) and Würth Solar (distribution of solar electricity systems), is a division of the Würth Elektronik Group of Companies, an international and independent subsidiary of the Würth Group. In addition to its own R&D projects, Würth Elektronik is also active in numerous outside research groups such as GloveNet and IPS. Würth Elektronik currently has approximately 6,200 employees and earned sales of € 699 million in 2011.