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Image file:
2013_WE_CBT_Wirelaid
23/08/2013

New in the Würth Elektronik portfolio:

Wirelaid for modern high-power applications with partial power management

The main challenge in modern high power circuit boards: combining high current and lots of control electronics into an extremely limited space. A solution which is being implemented more and more throughout the industry is the partial thick copper technology Wirelaid. Alongside a reduction in cost, a reduced number of layers, improved heat dissipation and reduced system volume can be achieved using this new technology. Würth Elektronik designs to specific customer requirements for bespoke solutions.

"The partial thick copper technology has shown interesting results, when high current is required on some parts of the PCB and complex control electronics on the other parts," explains Stefan Rohde, who is responsible for Wirelaid and high power products at Würth Elektronik. "For the design of a printed circuit board, there are several important aspects to take into account. Among others, current and maximum temperatures play a key role."

First things first: Modern components require higher currents if they are to be incorporated into a circuit board. These currents generate

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higher temperature on the circuit board and in the surrounding environment – a critical aspect for heat sensitive components. In addition to this, devices are getting smaller, but are simultaneously taking on ever more comprehensive tasks. This means less space for more complex control electronics.

Modern circuit boards must therefore overcome all the different challenges: a compact PCB must safely carry high currents and as many fine pitch tracks as possible.

"When power and control electronics are combined on a board, large copper planes are no longer required as high current conductors. All that is required is that, where required, the boards are reinforced with copper wiring," explains Stefan Rohde further. "With this technology, the designer can increase the copper cross section at certain points while maintaining a low layer count for the board. This reduces the volume and can simultaneously meet the current and heat dissipation requirements. To simplify, this technology saves some money because copper is expensive and less is used."

Wirelaid production sounds quite simple: silver plated copper wires are fixed onto a copper foil using welding points and then pressed using standard production processes together with the printed circuit board substrate. Done.

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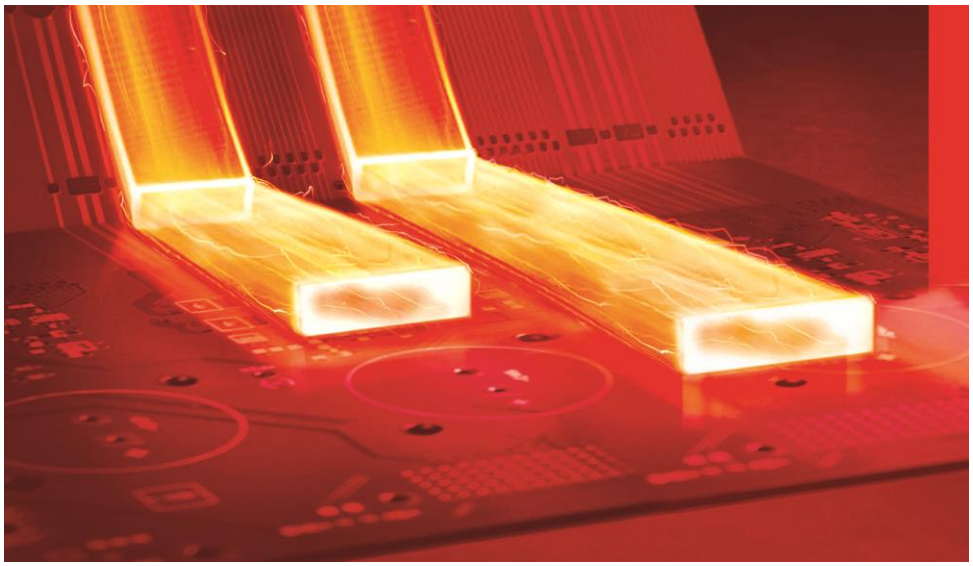
Würth Elektronik has created a Wirelaid design guide for customers which shows what spacing and dimensions should be used. The design guide also contains an overview of the current carrying capacity of the different wire sizes. "We are currently working with 1.4 mm and 0.8 mm thick copper wires that are embedded either on the outer or inner layers of the board," explains Stefan Rohde. The partial thick copper technology has been used for drive technology, engine electronics as well as AC and inverters. "As with all complex designs, we offer our customers personal support in the development of the PCB," says the product manager.

Image / Subline:



High Power and control electronics on an extremely limited space: with Wirelaid® it´s possible.

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About Wirelaid:

Jumatech developed Wirelaid technology. Würth Elektronik markets these products under license with intensive consultation in sales and product management. As a high-current solution, Wirelaid is a low cost alternative to thick copper technology or parallel connections through additional layers. In the Wirelaid process, wires are welded directly onto the copper foil and embedded in the board. Through this, standard tracks, which only tolerate low currents, are replaced with high-current tracks, which make it possible to use both complex control electronics and high current on the same layer. Wirelaid is suitable for rigid PCBs and 3D PCBs.

About Würth Elektronik CBT:

Würth Elektronik CBT is the leading PCB manufacturer in Europe with production sites in Niedernhall, Rot am See and Schopfheim and produces PCBs from standard printed circuit boards to modern complex technologies. The PCB specialist provides application-specific solutions across all technologies as well as new technology developments, for example in the area of embedding active and passive components. The comprehensive portfolio ranges from double-sided PCBs and multilayer PCBs in all popular technologies

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to sophisticated circuit boards such as HDI, Rigid-flex versions and heatsink technologies.

For more information, visit www.we-online.de

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