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New Laser-Structurable Polyamide

LPKF-LDS

June 2007, Wilsonville, OR – With LPKF's enhancement on Laser Direct Structuring (**LPKF-LDS**), Kromberg & Schubert, an automotive supplier in Germany, has developed the first 3D-MID electronic components using BASF's new laser-structurable polyamide, the new Ultramid® T 4381 LDS. The conductors are integrated directly into the surface of three-dimensional interconnected devices.

LPKF Laser Direct Structuring (**LPKF-LDS**) for molded interconnect devices (MID) is an alternative method for hot-embossing and 2-shot molding when laying out circuits on molded plastic. The laser directly transfers the art-work from the computer to the injection-molded component requires no specific tooling or masks. The small focus of the laser and the direct application of the artwork from the data allows much higher circuit density and finer structures, providing an elevated yield in components with fine interconnect structures and is more cost-effective. In contrast to other methods for producing electronic components, this boosts design freedom, shortens process sequences, reduces the number of different materials needed, and eases the task of changing circuit layouts.

The new BASF plastic features a 295°C (563°F) melting point and a flexural temperature of 500°F (260°C) making it especially suitable for laser direct structuring, also incorporating a laser-sensitive additive that contains metal. The laser treatment virtually engraves the conductor tracks into the three-dimensional surface of the component, after which it is immediately metallized, yielding an optimal adhesion. Such MIDs allow the integration of electronic circuits straight onto plastic surfaces offering several advantages, including: greater design freedom, shorter process time, a smaller number of different materials needed, and flexibility in changing the circuit layouts. The processes immediately metallizes the conductor track and lets designers integrate electronic circuits on to the component part surface, due to the optimal compromise between high melt temperature, good processability, and low water absorption.

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