

CuFlon Processing with the ProtoLaser R

Ultrashort-pulse prototyping laser for challenging high-frequency applications

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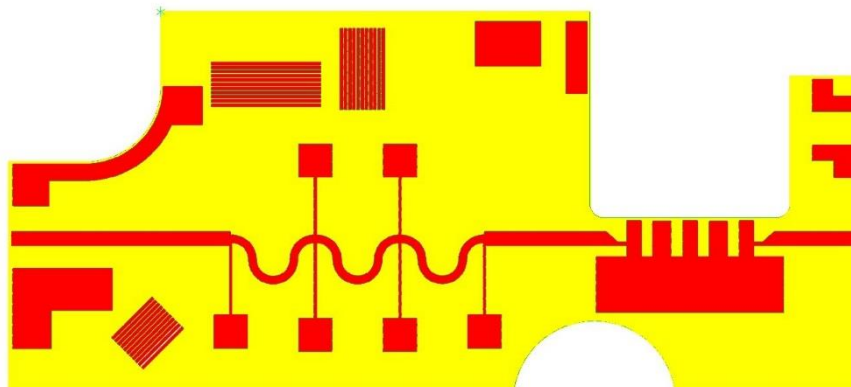
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For RF applications, the shorter the wavelength, the greater the effect of geometric deviations on the board. The LPKF ProtoLaser R uses an ultrashort-pulse laser for particularly precise and gentle processing.

“CuFlon” is the name of the high-performance base material offered by US company Polyflon for use in challenging RF applications. The dielectric material is a pure PTFE; the coating is produced in a separate process with precise coating thickness control. This combination yields high homogeneity, breakdown strength, and resistance to environmental factors.

Up until now, these substrates have been structured exclusively using etching processes. The high precision achievable by laser structuring without chemical etching processes has been demonstrated in an extensive series of tests performed by application engineers at LPKF Laser & Electronics AG.

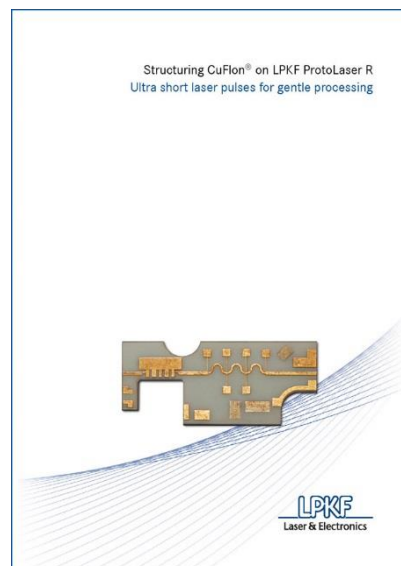
The LPKF ProtoLaser R laboratory laser system was used in the tests. This laser system has an ultrashort-pulse laser, an output power of 4 W, and a pulse width of one picosecond for processing via cold ablation. The extremely short laser pulse evaporates a small amount of material so quickly that no heat is transferred to the surrounding material. Thus, thin or temperature-sensitive layers can be processed with high precision without any damage to the surrounding material. The laser spot size is a mere 15 µm and powerful system software is included.



A tricky layout on an area of 15.2 x 6.2 mm: narrow traces at a 45° angle, curves, and extremely small gaps.

The sample produced by LPKF has dimensions of just 15.2 x 6.2 mm, but it contains a number of critical passages. It is 0.6 mm thick and coated with 18 µm of copper.

The LPKF tech paper entitled “Structuring CuFlon on LPKF ProtoLaser R” considers the structuring results for selected elements. The tech paper can be downloaded for free at lpkf.de/knowledge-center.



About LPKF

LPKF Laser & Electronics AG manufactures machines and laser systems used in electronics fabrication, medical technology, the automotive sector, and the production of solar cells. Around 20 percent of the workforce is engaged in research and development.