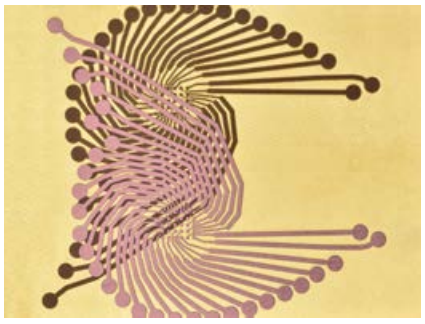
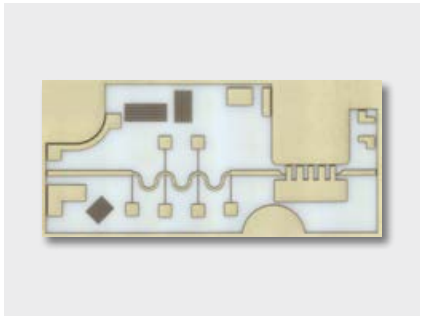
Specialist for Material-friendly Processing

LPKF ProtoLaser R4

- Precision picosecond laser for innovative research
- Gentle processing of thermally sensitive materials
- Intuitive CAM software
- Ready-to-use laser class 1 lab system



Removal of copper from double-sided PET film



Al_2O_3 with copper, structured and cut

LPKF

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An important parameter for laser micro-processing is the pulse duration. The LPKF ProtoLaser R4 with picosecond-short laser pulses allows the high-precision structuring of sensitive substrates, as well as the cutting of hardened or fired substrates.

Laser Ablation with Virtually No Heat Input

The shorter the processing pulse, the lower the heat input into the adjacent material. With the picosecond laser, there is practically no heat transfer, the material vaporises directly.

Micro Material Processing at its Best

This thermal effect is important for the cutting and surface processing of temperature-sensitive materials. The laser offers very high pulse energy for cutting, for example, ceramic materials such as Al_2O_3 or GaN without discoloring them in the processing procedure. Due to the low heat input, no micro-cracks occur in the material.

The ProtoLaser R4 is also the perfect system for surface processing – such as ablating transparent thin films or removing metal layers from plastic foils (i. e. DuPont ME614 on PC). It achieves the targeted very stable laser input at low laser power. This allows standard FR4 and laminated RF materials to be processed just as well.

The high-precision hardware and integrated camera are supported by the easy-to-use LPKF CircuitPro software. This enables the user to implement projects involving demanding materials in their own laboratory within a very short time.

LPKF ProtoLaser R4	
Max. layout area (X/Y/Z)	305 mm x 229 mm x 7 mm (12” x 9” x 0.28”)
Max. material size (X/Y/Z)	315 mm x 239 mm x 10 mm (12.4” x 9.4” x 0.39”)
Laser wavelength	515 nm
Max. laser power	8 W
Laser pulse frequency	50 – 500 kHz
Diameter of focused laser beam	15 ± 2 µm (0.59 ± 0.08 mil)
Structuring speed	3.5 cm^2/min (0.5 in^2/min)[a] on laminated substrates 18 µm (0.5 oz) Cu
Laser pulse length	< 2 ps
Minimum line/space	35 µm / 20 µm (1.38 mil / 0.79 mil)[a] on FR4 18 µm (0.5 oz) Cu
Positioning accuracy in the scan field	± 8 µm (± 0.3 mil)
Repeatability in the scan field	± 0.23 µm (± 0.009 mil)
Dimensions (W x H x D)	910 mm x 1650 mm x 795 mm (35.8” x 64.9” x 31.3”)[b]
Weight	390 kg (860 lbs)
Power supply	110 – 230 V, 50 – 60 Hz, 2 kW
Compressed air supply	Min. 6 bar; 128 l/min (min 87 psi; 128 l/min)
Cooling	Air-cooled (internal cooling cycle)
Ambient temperature; humidity	22 °C ± 2 °C (71.6 °F ± 4 °F); < 60 %
Software	LPKF CircuitPro Advanced
Options and accessories	Dust extraction unit, compressor, starter set

[a] Depending on material and laser beam parameters

[b] Height with open hood: 1765 mm (69.5”)

Presented by:

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