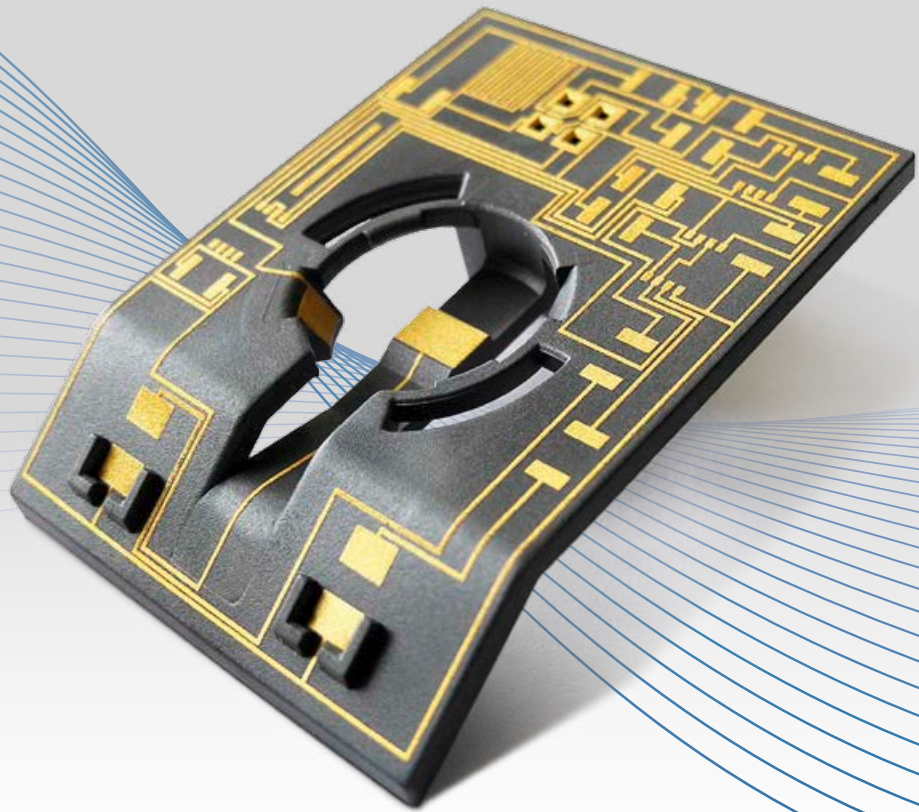


Prototyping 3D Circuitry  
Spray Coating of 3D Interconnect Devices with  
LPKF ProtoPaint LDS





## Coating 3D Parts with LPKF ProtoPaint LDS

The laser direct structuring (LDS) process is known as a key method in the production of smartphone and tablet antennas, and is also becoming a significant player in LED lighting and the automotive arena. With LPKF ProtoPaint LDS, prototyping 3D interconnect devices is simpler than ever.

With laser direct structuring, a laser beam applies circuit track structures onto a three-dimensional plastic component. Copper is then deposited on these tracks in an electroless process.

In series production, LDS uses single-shot injection molded components that have been doped with a special additive. LPKF ProtoPaint LDS eliminates the need for these special LDS-grade plastics, coating virtually any part with a surface that's fit for laser activation.



Along with the ProtoPaint spray can, the set also includes test components and instructions on a DVD

- LDS coatings from a spray can
- Easy to use
- High coating power

### Prototyping with LPKF laser direct structuring (LDS)



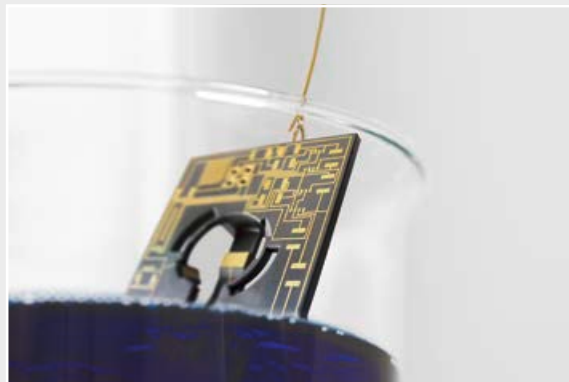
1. Creating the three-dimensional part



2. Painting the part



3. Structuring the circuit tracks with the LPKF ProtoLaser 3D



4. Selective metallization with LPKF ProtoPlate LDS

### LDS Coatings

The foundation for any LDS prototype is the three-dimensional plastic part itself. LPKF ProtoPaint LDS adds a laser-ready surface to parts of virtually any size or shape.

To activate the paint, remove the lower cap and turn the key ring a few times. Shake the can for a few minutes and the paint is ready to use. Once the paint is ready, it remains usable for about four hours.

To apply the paint, clean all parts thoroughly and then apply an even cross-coat from a distance of 6 – 8 inches. It is recommended to coat in stages in order to prevent the paint from running.

Dry the part for at least 180 minutes at a maximum of 160 °F in a circulating air oven. A uniform coating and thorough curing are vital for good metallization.

### LDS Prototypes in One Day

LPKF ProtoPaint LDS allows users to quickly and inexpensively create 3D-molded interconnect device prototypes. Coated parts can be structured with a LDS laser, just like conventional LDS parts. Electronic components can be applied by conductive polymers, conductive adhesives or low temperature soldering.

## Worldwide Support for Laser Direct Structuring

Wherever they are in the world, users of LPKF systems can be supported from our application centers in Germany, the USA, Japan and China. At these centers, users have access to LPKF's extensive experience in laser material processing and the laser direct structuring process. User training for technical employees and special consulting services complete the offer from the world market leader in laser systems for structuring three-dimensional molded interconnect devices. LPKF will gladly provide application reports and further information on request.

Technical Data: LPKF ProtoPaint LDS	
<b>Color of the paint</b>	Black
<b>Shelf life or storage</b>	Unopened, up to one year
<b>Storage conditions</b>	At 5 °C to 25 °C (41 °F to 77 °F), in dry storage
<b>Processing temperature</b>	20 °C to 24 °C (68 °F to 75 °F), room temperature
<b>Time for becoming touch-dry</b>	Approx. 30 minutes
<b>Drying time</b>	3 hours at 70 °C (160 °F)
<b>Spraying distance</b>	15 to 20 cm (6" to 8")
<b>Relative air humidity when drying</b>	≥ 15 % at 50 °C (122 °F)
<b>Wet layer thickness</b>	Approx. 60 µm (2.4 mil) in 2 to 3 layers
<b>Dry layer thickness</b>	Approx. 20 – 25 µm (0.8 – 1 mil) in 2 to 3 layers
<b>Recommended laser parameters</b>	
<b>Laser output</b>	1 – 2 W (typically)
<b>Frequency</b>	10 – 100 kHz (typically)
<b>Scanner speed</b>	0,2 – 1 m/s (7.9 – 39.4"/s), typically
<b>Hatch</b>	40 – 50 µm (1.6 mil – 2 mil), typically
<b>Ventilation time</b>	15 minutes

For further details, see chemical safety data sheets and user manual.

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