



DYCONEX

an MST company

Advanced LCP Substrates for HF & Microwave Applications

HIGHLIGHTS

- Liquid Crystal Polymer (LCP) substrates with excellent high frequency properties
- Fine line patterning (down to 25 μm)
- Precise cavity generation
- Air bridges
- Application of heat sinks and lids
- DYCONEX is EN 9100 certified



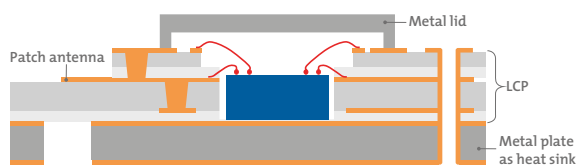
Micro Systems Technologies
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Advanced LCP Substrates for HF & Microwave Applications

Liquid Crystal Polymer (LCP) is a superior organic multilayer material for RF applications with stable electrical and mechanical characteristics across a range of frequencies up to 100 GHz. Due to its very low water absorption, LCP properties remain nearly constant regardless of the presence of moisture, allowing its use for near-hermetic packages.

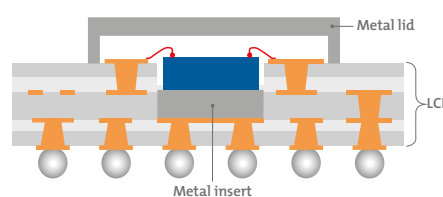
Applications

LCP SUBSTRATE WITH HEAT SINK



- High power density application
- Direct bonding to heat sink
- Operating temperature up to 180°C
- Gold wire bondable surface: ENEPIG
- RF tracks covered by metal lid

LCP BGA PACKAGE



- Laser blind vias 50 or 75 μm
- Lines / spaces: > 25 / 25 μm
- Lid sealing for near-hermetic package
- Heat dissipation via metal insert and thermal vias

Technology

LCP BASE MATERIAL

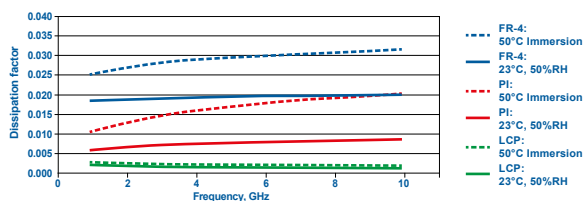
- Very flexible thermoplast
- Excellent high frequency properties: $\epsilon_r = 2.9$, $\tan \theta = 0.0025$
- High temperature stability: $T_g > 280^\circ\text{C}$, $T_d > 320^\circ\text{C}$
- Very low water absorption: < 0.04%
- Low weight: 1.4 g / cm^3

LCP SUBSTRATE FEATURES

- Directly bondable to a variety of materials to control CTE
- Wire bondable cavity ledges to access inner layers without lossy vias
- Air bridges
- Thermal vias for heat dissipation
- Application of heat sinks and metal lids

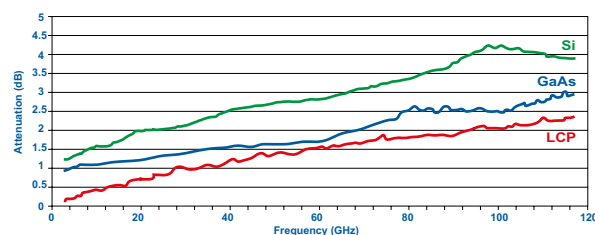
LCP HF PROPERTIES

Dissipation factor variation with moisture
LCP, Polyimide (PI) and FR4 laminates



LCP HF PROPERTIES

Signal Attenuation



an MST company

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Based in Switzerland, DYCONEX has been in the PCB business for more than 50 years and delivers leading-edge interconnect solutions in flex, rigid-flex and rigid technology. DYCONEX core competence lies in the production of highly complex HDI, high-frequency and high-reliability PCBs for medical, aerospace, defense, industrial and semiconductor applications. DYCONEX is EN 9100, ISO 9001 and 13485 certified and a company of the MST group.



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