



Micro Systems Technologies  
engineering for life

## Advanced LCP Substrates for HF & Microwave Applications

### HIGHLIGHTS

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



**DYCONEX**

an MST company

# Advanced LCP Substrates for HF & Microwave Applications

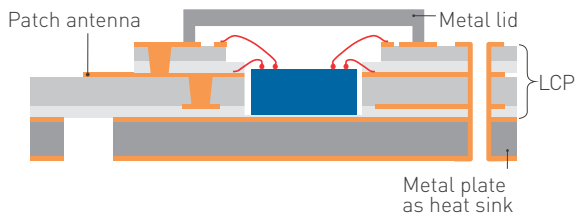


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APPLICATIONS

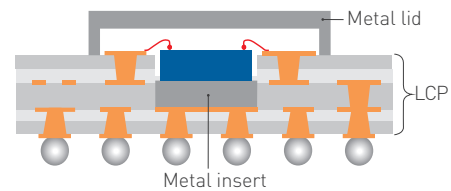
## LCP Substrate with Heat Sink

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

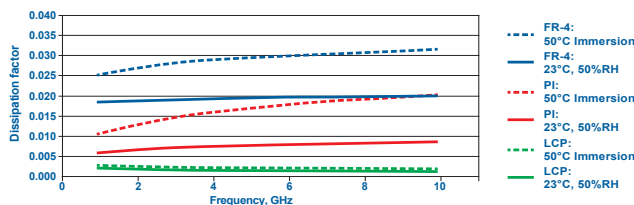


## LCP Base Material

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:  $1.4 \text{ g / cm}^3$

## LCP HF Properties

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

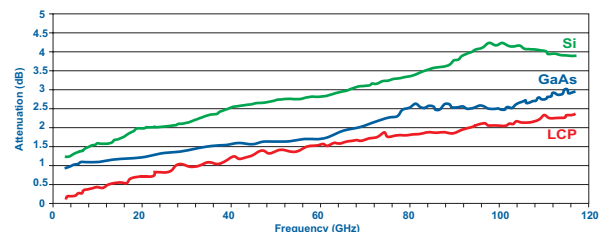


## LCP Substrate Features

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

Signal Attenuation



TECHNOLOGIES

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 circuit boards for medical, defense, aerospace, industrial and semiconductor applications. DYCONEX is an MST company.



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