



Micro Systems Technologies

Advanced Rigid Substrates for HF Applications, Ultra-thin Build-ups and Chip Packages

HIGHLIGHTS

- Epoxy based laminates with low dielectric properties
- High Tg, low CTE and high dielectric strength
- Ultra-thin any layer HDIs from 4 layers (~220 μm) to 8 layers (~350 μm) with highest reliability
- Impedance controlled ultra-fine line technology (down to 25 μm)
- High density pitch design (~175 μm)
- Smallest via (50 μm) in pad (100 μm)
- EN 9100:2009 certification



DYCONEX

an MST company

Advanced Rigid Substrates for HF Applications, Ultra-thin Build-ups and Chip Packages

DYCONEX features an advanced rigid multilayer material allowing ultra-thin build-ups for various high frequency applications particularly suitable for HF chip packaging. The material offers low dielectric properties (low Dk and low Df) combined with a low thermal expansion coefficient (CTE) and high dielectric strength.

Using anylayer technology the layers of the substrates are only connected by laser drilled, copper filled microvias allowing for high-density / high-reliability designs. Other HDI build-up solutions are available in addition.

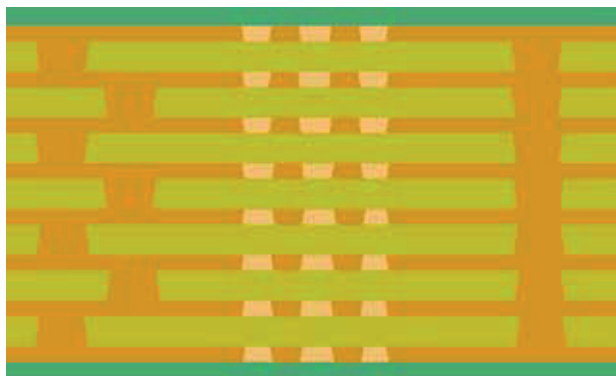
Material Characteristics

Characteristic	Unit		Conditions
CTE	9 – 11	ppm/°C	XY <T _g
	20 – 25	ppm/°C	Z <T _g
T _g	260-280	°C	DMA
Flexural modulus	25	GPa	25°C
Dielectrical constant	3.5	ε _r	1 GHz
	3.4	ε _r	10 GHz
Dissipation factor	0.003		1 GHz
	0.004		10 GHz
Dielectrical strength	160	kv/mm	ASTM D149 Method A

Design Features

Feature	Standard capability	Leading edge capability
Min laser blind via	75 µm	50 µm
Min pad size	150 µm	100 µm
Min pitch	250 µm	175 µm
Copper filled blind vias	all	all
Filling rate blind via	>90 %	>95 %
Final copper thickness	20 - 40 µm	10 - 20 µm
Min lines / spaces	50 - 70 µm	25 - 35 µm
Solder mask thickness	20 ± 10 µm	18 ± 4 µm
Solder mask registration accuracy	± 25 µm	± 15 µm
Min solder mask dam	90µm	75µm
Solder mask color	green / black	green / black
Silkscreen	white / black	white / black
Surfaces	ENIG	ENEPIG/OSP/ISIG/EPIG
Routing	2 mm	0.6 mm

Anylayer Build-Up



■ Solder mask ■ Metal foil : Copper ■ Prepreg: Polyimide glass

Thickness of Ultra-Thin Rigid Build-Ups

Number of layers	Standard capability	Leading edge capability
2	150 ± 20 µm	100 ± 20 µm
4	250 ± 25 µm	200 ± 20 µm
6	340 ± 30 µm	250 ± 25 µm
8	430 ± 40 µm	300 ± 30 µm
>8	on request	on request

Thickness measured over all layers incl. solder mask



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

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