MicroConnex

Flex Circuit Fab Capabilities and Design Guidelines

Capability	Standard	Advanced	Developmental
Layer Count (circuit layers)	1 to 6 layers	7 to 10 layers	more than 10 layers
Available Trace and Space	Thickness & Process Dependent - See Below		
Laser Drill MicroVias to Pad	125 µm Pad with 25 µm > Via	75 µm Pad with 25 µm Via	50 µm Pad with 25 µm Via
Plated MicroVias Size Laser Drill (*Aspect Ratio*)	6 to 1	8 to 1	10 to 1
Plated Blind MicroVias Size - Laser Drill	>50 µm blind	38 µm blind	25 µm blind
Positional Accuracy of MicroVias (*Material Dependent*)	25 µm	12 µm	< 12 µm
Solder Mask Positional Tolerance	50 µm	25 µm	25 µm
Solder Mask Webbing	125 µm	100 µm	75 µm
PI Coverlay Positional Tolerance	75 µm	50 µm	< 25 µm
PI Coverlay Webbing	125 µm	100 µm	75 µm
PI Cover Lay Adhesive Bleed	100 µm	75 µm	< 50 µm
Bump Diameter	Bump Diameter 175 µm Base Pad 300 µm Post Height 15-45 µm	Bump Diameter 125 µm Base Pad 200 µm Post Height 15-45 µm	Bump Diameter 75 µm Base Pad 150 µm Post Height 15-45 µm
Layer to Layer Registration	50 µm	25 µm	< 25 µm
Imaged Feature to Laser Feature Registration	50 µm	25 µm	< 25 µm
Controlled Impedance	10%	10%	< 10%

Guidelines Only - "Mix and Match" Designs that Span Categories are Typical for Our Customers

MicroConnex Offers **Proto- to Production** Fabrication for Each Capability Category

		Copper Trace Thickness					
		1/8 oz (5 um)	**1/4 oz (9 um)**	**1/2 oz (18 um)**	**1 oz (36 um)**	**1 1/2 oz (54 um)**	**2 oz (72 um)**
Space & Trace	**Subtractive Process**	25 um	30 um	38 um	75 um	75 um	100 um
	Semi-Additive Process	Contact Us for Design Options					

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Additional Flex Capabilities

Capability	Available Options	Details
Surface Finish	ENIG	Ni: 20-240 u" Au: 2-8 u"
	Ni/Au (Electroplated Soft & Hard Au Available)	Ni: 0.5-5.0 um Au: 0.5-3.5 um (Thicker Stacks Available)
	ENEPIG	Ni: 100-150 u" Pd: 4-8 u" Au: 1-2 u"
	Immersion Sn	40 u"
	Immersion Ag	4-16 u"
	OSP	Bare Cu Surface Protect (Anti-Oxidation)
Quality and Metrology	AOI	**Camtek Phoenix Flex AOI** for ID of Open and Short Circuits **View Pinnacle 250** for Overall Dimensional Verification
	Cross Section & Optical Microscopy	Via Plating Verification
	XRF	**Fisher XDV u-Poly Capillary** with Silicon Drift Detector. Spot Size of 20-30 um. Better than 0.01 um Film Thickness Resolution. Light Element Capability; Phos Composition Verification in EN
	Flying Probe E-Test	**ATG A7** for Continuity 1 W to 10 kW and Isolation up to 25 MW (FM) 10 GW (ohmic) with MicroShort Detection and Soft Touch Probes
	Dimensional Verification	**Olympus STM7** Optical Microscope with x-y Stage and z-axis Measurement Capability. Up to 500x Magnification.
	TDR Impedance Test	Polar Si8000 field solver
Laser Processing -ESI 355 nm UV	Singulation	Precision laser cutting down to +/- 10u, accuracy
	Skiving/Ablation	Controlled Depth Skiving and Lead/Feature Ablation
	Blind/Thru Via Drill	Capability to 25 um Via Diameter
Thin Film Metal Deposition	Target Set #1: Al, Au, Cu, CuNi, Ir Target Set #2: Cr, Ni, NiCr, Ti, TiW Reactive Sputtering: IrOx and Variants	**Magnetron Sputter Deposition:** 5 - 3000 nm thickness Three targets per load maximum 12"x18" substrate capability online Q4