

Sunshine Rigid-Flex Capability Matrix, Nov 2024

Type	Item	Mass Production Capability	Sample Process Capability	Future
Key Attributes	Layer Count	≤18L (FPC layer≤8L)	≤24L (FPC layer≤16L)	≤30L (FPC layer≤16L)
	Shipping Panel Size	MAX:350*450mm; MIN:30*30mm	MAX:450*500mm; MIN:20*20mm	MAX:450*550mm; MIN:15*15mm
	Finished Thickness	Rigid area: 0.5mm~3.2mm Flex area: 0.15~0.30mm	Rigid area: 0.4mm~4.0mm Flex area: 0.10~0.35mm	Rigid area: 0.3mm~4.0mm Flex area: 0.10~0.4mm
	Polyimide Core (PI) thickness	1-5mil	1-5mil	1-6mil
	Minimum Flex Area Length	5mm	2.5mm	2mm
Rigid-flex transition zone	Hole to rigid-flex transition zone	≥1mm	≥0.6mm	≥0.5mm
	Copper to rigid-flex transition zone	≥0.5mm	≥0.2mm	≥0.2mm
	Resin flow region	≤1.5mm	≤0.5mm	≤0.5mm
Mechanical Hole	Distance from Hole to trace	≥8mil	≥6.5mil	≥6mil
	Minimum hole size	0.20mm	0.15mm	0.15mm
	Hole position tolerance	±3mil	±2mil	±2mil
	Min ring of holes	6mil	5mil	4mil
	Aspect ratio	≤8 : 1	≤12 : 1	≤15 : 1
Laser Hole	Micro via size	4~6mil	4~6mil	4~6mil
	HDI steps	2+N+2	3+N+3	4+N+4
	Min drilling size	5mil	4mil	4mil
	Min ring of holes	3.5mil	3mil	3mil
	Aspect ratio	0.8:1	1:1	1:1
Hole/Surface Copper	Hole copper thickness	≤1mil	≤1.5mil	≤1.5mil
	Surface copper thickness	≤1.5oz	≤2oz	≤3oz
Min Line Width/Space	Inner layer	3mil/3mil (H/HOZ) 4mil/4mil (1OZ)	2.5mil/2.5mil (H/HOZ) 1OZ:3mil/3mil (1OZ)	2.5mil/2.5mil (H/HOZ) 1OZ:3mil/3mil (1OZ)
	Outer layer	4mil/4mil (T/TOZ) 4.5mil/4.5mil (H/HOZ)	3.5mil/3.5mil (T/TOZ) 4mil/4mil (H/HOZ)	3.5mil/3.5mil (T/TOZ) 4mil/4mil (H/HOZ)
	Tolerance	±20%	±15%	±10%
Coverlay	Alignment tolerance	±6mil (should be ±3)	±4mil (should be ±3)	±4mil (should be ±2)
	Min coverlay dam	≥6mil	≥4mil	≥3.5mil
	Coverlay window	6mil	4mil	≥3.5mil
Solder mask	Flexible solder mask	green、orange	green、orange、black	green、muted green、orange、black
	Alignment tolerance	±1.2mil	±0.8mil	±0.6mil
	Min Soldermask dam	Green: ≥4mil, Other colors: ≥5mil	Green: ≥3mil, Other colors: ≥4mil	Green: ≥3mil, Other colors: ≥4mil
Surface treatment	Type	ENIG、OSP	ENIG + Gold Plating、Immersion Tin	immersion silver
Outline	CNC process	±4mil	±3mil	±3mil
	UV process (Laser)	±4mil	±2mil	±2mil
Stiffener	Stiffener type	FR4、PI、SUS304、EMI	Al、3Mtape、Copper foil tape	Al、3Mtape、Copper foil tape

Sunshine Flex Circuits (FPC) Capability, Nov 2024

Type	Item	Mass Production Capability	Sample Process Capability	Future
Key Attributes	Total layer number	≤4L	≤6L	≤8L
	Shipping size	MAX:200*400mm ; MIN :30*30mm	MAX:200*450mm ; MIN :20*20mm	MAX:300*450mm ; MIN :15*15mm
	Finished thickness	Flex area: 0.15~0.4mm	Flex area: 0.10~0.5mm	Flex area: 0.10~0.6mm
	PI thickness	1-5mil	1-5mil	1-6mil
Mechanical Hole	Distance from Hole to trace	≥7mil	≥6.5mil	≥6mil
	Minimum hole size	0.20mm	0.15mm	0.15mm
	Hole position tolerance	±3mil	±2mil	±2mil
	Min ring of holes	6mil	5mil	4mil
Hole/Surface Copper	Hole copper thickness	≤0.5mil	≤1mil	≤1mil
	Surface copper thickness	≤1oz	≤2oz	≤2oz
Min Line Width/Space	Inner layer	3mil/3mil (H/HOZ) 4mil/4mil (1OZ)	2.5mil/2.5mil (H/HOZ) 1OZ:3mil/3mil (1OZ)	2.5mil/2.5mil (H/HOZ) 1OZ:3mil/3mil (1OZ)
	Outer layer	4mil/4mil (T/TOZ) 4.5mil/4.5mil (H/HOZ)	3.5mil/3.5mil (T/TOZ) 4mil/4mil (H/HOZ)	3mil/3mil (T/TOZ) 3.5mil/3.5mil (H/HOZ)
	Tolerance	±20%	±15%	±10%
Coverlay	Alignment tolerance	±6mil	±4mil	±4mil
	Min coverlay dam	≥6mil	≥4mil	≥3.5mil
	Coverlay window	6mil	4mil	≥3.5mil
Solder mask	Flexible solder mask	green、orange	green、orange、black	green、muted green、orange、black
	Alignment tolerance	±1.2mil	±1mil	±0.8mil
	Min Soldermask dam	Green: ≥4mil, Other colors: ≥5mil	Green: ≥3mil, Other colors: ≥4mil	Green: ≥3mil, Other colors: ≥4mil
Surface treatment	Type	ENIG	ENIG+Gold Plating	OSP、Immersion Tin、Immersion silver
Outline	UV process	±4mil	±2mil	±2mil
Stiffener	Stiffener type	FR4、PI、SUS304、EMI、3M tape	Al、Copper foil tape	Al、Copper foil tape