Techniques	Rigid		Rigid-Flex		Flex	
	British system	Metric system	British system	Metric system	British system	Metric system
Min. Layers	1		2		1	
Max. Layers	48 (sample) 24 (Mass production)		16 (sample) 10 (Mass production)		14 (Sample) 10 (Mass production)	
Basic material Type	FR-4 (TG130, TG150, TG170), High CTI, Teflon, Rogers, FR-5, ISOLA, Taconic, Arlon, Nelco, CEM-1, CEM-3, Aluminum / stainless steel / Copper base.		FR-4 (TG130, TG150, TG170), PI		PI, PET	
Lead Free HASL	Y		Y		N	
HASL	Y		Y		N	
Electroless Nickel Gold (ENIG)	Y		Y		Y	
Selective hard gold	Y		Y		Y	
OSP (Entek CU106A)	Y		Y		N	
Immersion silver	Y		Y		Y	
Immersion tin	Y		Y		Y	
Peelable mask (blue mask)	Y		Y		Y	
Carbon ink	Y		Y		Y	
Jumping V scoring	Y		Y		N	
AOI	Y		Y		Y	
Ionography	Y		Y		Y	
Gerber editing capability	Y		Y		Y	
Flying probe test	Y		Y		Y	
Quality assurance certificates	UL 94V0, ISO 9001, TS 16949, ISO 14001		UL 94V0, ISO 9001, TS 16949, ISO 14001		UL 94V0, ISO 9001, TS 16949, ISO 14001	
Min. board size	0.4"x 0.4"	10mm*10mm	TBC		0.4"x 0.6"	10mm*15mm
Max. board size	26.8"*40"	680mm*1000mm	8.8"*13.2"	220mm*330mm	16"*40" (2L)	400mm*1000mm(2L)
Min. board thickness - double side	8mil	0.2mm	24mil	0.6mm	19.6mil	0.49mm
Min. board **thickness** - multilayer	16mil	0.4mm	24mil	0.6mm		
Max. board thickness - double side	280mil	7mm	128mil	3.2mm	6.8mil	0.17mm
Max. board **thickness** - multilayer	280mil	7mm	128mil	3.2mm		
T/C thickness (Min.)	3.2mil	0.08mm	4mil	0.1mm		
Finished board thickness tol. (≥ 0.8mm)	+/- 10%		+/- 10%		+/- 10%	
Finished board thickness tol. (< 0.8mm)	+/- 8%		+/- 10%		+/- 8%	
Warpage (Min.)	0.75% diagonal		0.75% diagonal			
Drilling:						
Drill hole diameter (Max.)	260mil	6.5mm	260mil	6.5mm	248mil	6.2mm
Drill hole diameter (Min.)	4mil	0.1mm	4mil	0.1mm	6mil	0.15mm
Base copper thickness of outer (Min.)	1/3oz	12μm	1/4oz	9μm	1/4oz	9μm
Base copper thickness of outer (Max.)	10oz	350μm	2oz	70μm	2oz	70μm
Base copper thickness of inner (Min.)	1/3oz	12μm	1/3oz	12μm	1/3oz	12μm
Base copper thickness inner (Max.)	6oz	210μm	3oz	105μm	1oz	35μm
Dielectric thickness of inner layer (Min.)	2.8mil	0.07mm	2.8mil	0.07mm	0.5mil	0.0127mm
Aspect ratio of plated hole (Max)	13:1		10:1			
Hole diameter tolerance (PTH)	+/- 2mil	+/- 0.05mm	+/- 2mil	+/- 0.05mm	+/- 2mil	+/- 0.05mm
Hole diameter tolerance (NPTH)	+/- 1mil	+/- 0.025mm	+/- 2mil	+/- 0.05mm	+/- 2mil	+/- 0.05mm
Hole position & toleranc (compared to CAD data)	+/- 1.52mil	+/- 0.038mm	+/- 2mil	+/- 0.05mm	+/- 2mil	+/- 0.05mm
Copper thickness for PTH wall	1mil	25μm	1mil	25μm	1mil	25μm
Outer layer design line width / space (Min.)	H/H oz, 4mil /3.5 mil, 1/1 oz ,4mil /3.5 mil, 2/2 oz, 5mil /6 mil, 3/3 oz ,6mil /7 mil, 4/4 oz ,7mil /8 mil	H/H oz, 0.1mm/0.0875mm, 1/1 oz ,0.1mm/0.0875mm, 2/2 oz, 0.125mm/0.152mm, 3/3 oz ,0.152mm/0.178mm, 4/4 oz ,0.178mm/0.204mm	4mil/ 4mil	0.1mm/0.1mm	3mil/3 mil	0.075mm/0.075mm
Automated plating line	Y		Y		Y	
Tolerance after etching	+/- 10%		+/- 20%		≥0.08mm+/- 20% , <0.08mm +/-0.02mm	
Impedance tolerance of inner / outer layer Value < 50 ohm	+/- 5 ohm		+/- 5 ohm		+/- 10%	
Impedance tolerance of inner / outer layer Value ≥ 50 ohm	+/- 10%		+/- 10%		+/- 10%	
Image to image tol (Min.)	+/- 5 mil	+/- 0.127mm	+/- 5 mil	+/- 0.127mm	+/- 8 mil	+/- 0.2mm
Image to hole tol (Min.)	+/- 4 mil	+/- 0.102mm	+/- 4 mil	+/-0.1mm	+/- 4 mil	+/-0.1mm
Image to board edge tolerance (Min.)	+/- 6 mil	+/- 0.152mm	+/- 6 mil	+/- 0.15mm	+/- 4 mil	+/- 0.1mm
Hole to hole position tol (Min.) D<1.0mm	+/- 5mil	+/- 0.127mm	+/- 5mil	+/- 0.127mm	+/- 5mil	+/- 0.127mm
Hole to hole position tol (Min.) D > 1.0mm	+/- 3mil	+/- 0.076mm	+/- 3mil	+/- 0.076mm	+/- 3mil	+/- 0.076mm
Hole to board edge tol (Min.) D <1.0mm	+/- 8mil	+/- 0.204mm	+/- 8mil	+/- 0.204mm	+/- 6mil	+/- 0.152mm
Hole to board edge tol (Min.) D > 1.0mm	+/- 6mil	+/- 0.152mm	+/- 6mil	+/- 0.152mm	+/- 6mil	+/- 0.152mm
Solder mask registration	+/- 4mil	+/- 0.102mm	+/- 4mil	+/- 0.102mm	+/- 4mil	+/- 0.102mm
Solder mask thickness (Min.)	0.4mil	10μm	0.4mil	10μm	0.4mil	10μm
Solder mask bridge (Min.)	3 mil	0.076mm	3 mil	0.075mm	3 mil	0.075mm
Letter width (Min.) of solder mask opening	≥ 6 mil	≥ 0.152mm	≥ 6 mil	≥ 0.152mm	≥ 6 mil	≥ 0.152mm
S/M opening space between gold finger & solder pad (Min.)	20 mil	0.508mm	>0.075mm+/-0.05mm		>0.075mm+/-0.05mm	
Nickel thickness for gold finger	50μ"-300μ"	1.25μm-7.5μm	50μ"-200μ"	1.25μm-5μm	50μ"-200μ"	1.25μm-5μm
Gold thickness of gold finger (Max.)	52μ"	1.3μm	50μ"	1.25μm	50μ"	1.25μm
Gold thickness of gold finger (Min.)	1μ"	0.025μm	1μ"	0.025μm	1μ"	0.025μm
Gold finger height (panel edge to top of gold finger) (Max.)	17.3"	439mm	17.3"	439mm		
Tolerance of chamfer depth	<30°,+/- 7mil ; ≥ 30°, +/- 5mil	<30°,+/- 0.18mm ; ≥ 30°, +/- 0.127mm	≥ 30°,+/- 5mil	≥ 30°, +/- 0.127mm	N/A	
Range of chamfer angle & chamfer angle tolerance	20° - 45°,+/-5°		20° - 45°,+/-5°			
Space between gold finger and TAB (Min.)	0.275"	6.985mm	0.275"	6.985mm	0.275"	6.985mm
Nickel thickness for ENIG (Measured at the minimum point) max	200μ"	5μm	100μ" – 200μ"	2.5μm-5μm	120μ"-200μ"	3μm-5μm
Gold thickness for ENIG (Measured at the minimum point) max	3μ"	0.075μm	3μ"	0.075μm	3μ"	0.075μm
Immersion silver thickness	4μ" -12μ"	0.1μm-0.3μm	N		N	
Solder mask plugging hole diameter(Max)	32mil	0.8mm	26mil	0.65mm	26mil	0.65mm
Immersion Tin Thickness	0.94mil-1.26mil	24μm – 32μm	N		N	
Component mark width (Min)	5.2mil	0.13mm	4mil	0.1mm	4mil	0.1mm
Solder thickness on XFP(HAL) (Min)	0.04mil-0.1mil	1μm -2.5μm	0.04mil-0.16mil	1μm– 4μm		
Solder thickness on PADS except XFP(HAL) (Min)	0.04mil-0.12mil	1μm - 3μm	0.04mil-0.16mil	1μm– 4μm		
Carbon ink resistance	≤ 20 Ohm/mm2 at 25um thickness		≤ 20 Ohm/mm2 at 25um thickness		≤ 20 Ohm/mm2 at 25um thickness	
Space for carbon conductor (Min)	10mil	0.25mm	10mil	0.25mm		
Punching dimension tolerance (Edge to Edge) (Min) (FR-4)	+/- 4mil	+/- 0.1mm	+/- 4mil	+/- 0.1mm	+/- 4mil	+/- 0.1mm
Punching dimension tolerance (hole to Edge) (Min) (FR-4)	+/- 4mil	+/- 0.1mm	+/- 6mil	+/- 0.15mm	N/A	
Routing dimension tolerance (Edge to edge) (min)	+/- 4mil	+/- 0.1mm	+/- 4mil	+/- 0.1mm	+/- 4mil	+/- 0.1mm
Routing dimension tolerance (hole to edge) (min)	+/- 4mil	+/- 0.1mm	+/- 6mil	+/- 0.15mm	N/A	
Radius by routing (Internal angle) (Min)	≥ 16mil	≥0.4mm	≥ 16mil	≥0.4mm	≥ 16mil	≥0.4mm
Countersink hole depth Tolerance	+/- 8mil	+/- 0.2mm	+/- 8mil	+/- 0.2mm	N/A	
Slot width(min)	18mil	0.45mm	18mil	0.45mm	N/A	
Slot tolerance (PTH) (L≥ 2W+0.15mm)	+/- 4mil	+/- 0.1mm	+/- 4mil	+/- 0.1mm		
Slot tolerance (PTH) (L < 2W+0.15mm)	+/-5mil	+/-0.125mm	+/-5mil	+/-0.125mm		
Non-plated slot tolerance	+/- 2mil	+/- 0.05mm	+/- 2mil	+/- 0.05mm		
V-cut remaining thickness tolerance(Min)	+/- 4mil	+/- 0.1mm	N/A		N/A	
V-cut angle tolerance(30°~60°) (Min)	+/-5°					
V-cut Misregistration (Min)	+/- 5mil	+/- 0.125mm				
Board thickness that can be V-cut (Min)	24mil	0.6mm	24mil	0.6mm		
V-cut to hole tolerance (Min)	+/- 6mil	+/- 0.15mm	+/- 6mil	+/- 0.15mm		
V-cut to v-cut position tolerance (Min)	+/- 5mil	+/- 0.125mm	+/- 5mil	+/- 0.125mm		
Size from the V-cut line to board edge (Max)	14.96"	380mm	14.96"	380mm		
Peelable Mask Thickness	8mil-20mil	0.2mm – 0.5mm	8mil-20mil	0.2mm – 0.5mm		
Buried Vias	Y		Y			
Blind Vias	Y		Y			