

Technology capability for Rigid, rigid-flex and HDI board

Number	Item	Advanced capability- samples	Mass production	
1	Materials	Normal FR-4	S1141 (Not recommended for lead free soldering process)	
2		FR-4 (Middle TG)	SYST S1000H	
3		FR-4 HF (Middle TG)	SYST S1150G	
4		FR-4 HF (High TG)	SYST S1170G	
5		FR-4 (High CTI)	SYST S1600L/Autolad2G	
6		FR4 (High TG)	IT180A, S1000-2M, FR408, IS410, FR406, PCL-370HR, TU-752, TU-662 TUC and other equivalent materials.	
7		High Speed Laminates	Middle loss(M4, TU872SLK, IT958)、Low loss(M6, TU883, IT968)、Ultra low loss(M7, TU993, IT933), Isola ect	
8		Ceramic powder filled High Frequency Laminates	Rogers4350B, Rogers4003, TMM series, 25FR, 25N, S7136H	
9		PTFE	Rogers series, Taconic series, Arlon series, Nelco series,	
10		Hybride laminates	Rogers, Taconic, Arlon, Nelco and FR-4(Including partial mixing plate with R04350)	
11		Prepregs	Regular FR-4 types, Rogers4450F, Arlon 49N, Arlon38N(106), Arlon99ML(1080), ST115B(106) (SYST high thermal conductivity), FR-28, S6B(SYST), VT-47NF, Pure adhesive (SF305B 25)	
12		Ceramic base material	Al302, AlN	
13		Rigid-flex material	Thinflex, SYST, Panasonic, ITEQ	
14		HDI materials	RCC, normal FR-4 PP 106 and 1080	
15	Product types	Rigid PCB	Backplane, HDI, multi-groups of blind/buries vias, Heavy copper PCB, Back drill, metal base/core, Bus-bar PCB, Copper coin embedded, partial hybrid laminates and deepness controlled board.	
16	Stack up	PCB with blind/buried vias	Max 3 laminations(POFV technology not included)	
17		Min Dielectric Thickness between layers	Inner flex core	0.0125mm
			Inner rigid core	0.05mm
			PP	0.05mm
18		Rigid-flex stack up	Multi flex cores(flex in the middle of stack up), flex on outer layers, single flex core(Tail fly)	flex in the middle
19	HDI types	2+N+2	1+N+1	

20	Surface finish types	Lead free	HASL LF(board thickness 0.4mm-4.5mm), plating gold(base copper≤1oz), ENIG, immersion Tin, immersion silver, OSP, hard gold(with/without nickel), soft gold(with/without nickel), ENIG+OSP, ENEPIG.	HASL LF(board thickness 0.4mm-3.5mm), plating gold(base copper≤1oz), ENIG, immersion Tin, immersion silver, OSP, hard gold(with/without nickel), soft gold(with/without nickel), ENIG+OSP, ENEPIG.
		Leaded	HASL (Board thickness 0.4mm-4.5mm)	
		Rigid-flex board options	ENIG(+G/F), OSP, immersion silver, immersion Tin, ENEPIG, plating gold, HASL	
21	Surface finish	HASL	2-40um	2-40um
22		ENIG	Nickel thickness: 2.5-8um, Gold thickness: 0.05-0.2um	Nickel thickness: 2.5-8um, Gold thickness: 0.05-0.2um
23		Immersion self gold	Nickel thickness: 1.27um Gold thickness:0.05-0.2um	Nickel thickness: 1.27um, Gold thickness:0.05-0.2um
24		Immersion Tin	0.76-1um	0.76-1um
25		Immersion Silver	0.2-0.4um	0.2-0.4um
26		OSP	0.1-0.3um	0.1-0.3um
27		Hard gold plating	0.05-2.0um	0.05-2.0um
28		Soft gold plating(Ni free)	0.05-2.0um	0.05-2.0um
29		ENEPIG	Ni: 3-8um, Pd: 0.05-0.10um, Au: 0.05-0.10um	Ni: 3-8um, Pd: 0.05-0.10um, Au: 0.05-0.10um
30		Carbon ink	10-35um	10-35um
31		Green solder mask	10-18um(copper surface), 5-8um (tent vias), line corner≥10um(one time printing, copper thickness≤48um)	10-18um(copper surface), 5-8um (tent vias), line corner≥10um(one time printing, copper thickness≤48um)
32		Peelable mask	peters-SD2955 0.20-0.80mm	peters-SD2955 0.20-0.80mm
33	Mechanical drill bit diameter (finish size)	0.08-6.5mm (drill bit 0.125-6.5mm) 0.10-6.5mm (drill bit 0.15-6.5mm)	0.10-6.5mm (drill bit 0.125-6.5mm) 0.10-6.5mm (drill bit 0.15-6.5mm)	
34		Mechanical blind/buried via hole size≤0.60mm	Mechanical blind/buried via hole size≤0.60mm	
35		Min hole size for Heavy copper (≥30Z) is 0.3mm (drill bit≤0.35mm)	Min hole size for Heavy copper (≥30Z) is 0.4mm (drill bit ≤0.40mm)	
36		Min hole size for aluminium board is 0.8mm (drill bit ≤0.90mm)	Min hole size for aluminium board is 0.8mm (drill bit ≤0.90mm)	
37		Min Connecting hole size is 0.4mm (drill diameter is 0.5mm)	Min Connecting hole size is 0.4mm (drill diameter is 0.5mm)	
38		Min hole size of edge plated half hole is 0.40mm (the drill diameter is 0.50mm)	Min hole size of edge plated half hole is 0.40mm (the drill diameter is 0.50mm)	
39		Mechanical drill hole size and board thickness (Aspect ratio)	0.15mm≤drill bit≤6.0mm, Hole size 0.15mm, the max board thickness is 1.4mm, Hole size 0.2mm, the max board thickness is 2.0mm, 0.25mm≤hole size Φ≤0.35mm, the max board thickness is 3.2mm, 0.4mm≤hole size Φ≤0.55mm, the max board thickness is 4.8mm, Hole size>0.55mm, the max board thickness is 6.4mm.	0.15mm≤drill bit≤6.0mm, Hole size 0.15mm, the max board thickness is 1.4mm, Hole size 0.2mm, the max board thickness is 2.0mm, 0.25mm≤hole size Φ≤0.35mm, the max board thickness is 3.2mm, 0.4mm≤hole size Φ≤0.55mm, the max board thickness is 4.8mm, Hole size>0.55mm, the max board thickness is 6.4mm.
40		Max Aspect ratio: 25:1 (>0.2mm drill diameter)	Max Aspect ratio: 10:1 (>0.2mm drill diameter) For 0.2mm drill diameter, the max aspect ratio is 10:1.	

41	Hole	Hole position tolerance (Comparing to CAD data)	$\pm 2\text{mil}$	$\pm 3\text{mil}$	
42		PTH Tolerance	$\pm 3\text{mil}$	$\pm 3\text{mil}$	
43		Press fit Tolerance	$\pm 2\text{mil}$	$\pm 2\text{mil}$	
44		NPTH Tolerance	$\pm 2\text{mil}$ (limit+0/-2mil or +2/-0mil)	$\pm 2\text{mil}$	
45		Resin plugging via hole size(finish)	0.1-0.9mm (drill diameter 0.15-1.0mm) (When drill diameter>0.5mm, the board thickness need to be $\geq 0.5\text{mm}$)	0.1-0.9mm (drill diameter 0.15-1.0mm) (When drill diameter>0.5mm, the board thickness need to be $\geq 0.7\text{mm}$)	
46		Max aspect ratio for board with Resin plugging holes (board thickness/drill hole size)	25:1	10: 1	
47		Min line width/space for board with resin plugging via holes.	3/4mil(line space), 3/3.5mil(line to pad, pad to pad space)	3/4mil(line space), 3/3.5mil(line to pad, pad to pad space)	
48		Min laser drill diameter	0.10mm (Max aspect ratio $\leq 1:1$)	0.10mm (Max aspect ratio $\leq 1:1$)	
49		Aspect ratio for depth controlled holes(max depth/hole size)	1:1	1.15:1	
50		Min depth of controlled depth milling or back drill	0.2mm	0.2mm	
51		Back drill diameter	0.3-6.5mm	0.4-6.5mm	
52		Dielectric thickness between back drill layers.	$\geq 0.20\text{mm}$	$\geq 0.20\text{mm}$	
53		Depth tolerance of back drill	$\pm 0.1\text{mm}$	$\pm 0.1\text{mm}$	
54		Angle and diameter of countersink hole and counterbore.	Special drill bit: 82°, 90°, 120°, 135° (drill bit range 0.3-10mm for countersink hole)	Special router bit: 82°, 90°, 120°, 135° (drill bit range 0.3-10mm for countersink hole)	
55			Normal drill bit: angle 130° (drill bit $\leq 3.175\text{mm}$), angle 165° (drill bit 3.175-6.5mm)	Normal drill bit: angle 130° (drill bit $\leq 3.175\text{mm}$), angle 165° (drill bit 3.175-6.5mm)	
56		Angel tolerance of countersink or counterbore holes	$\pm 10^\circ$	$\pm 10^\circ$	
57		Outer drill diameter of countersink/counterbore	$\pm 0.15\text{mm}$	$\pm 0.15\text{mm}$	
58		Depth tolerance of counterisnk or counterbore holes	$\pm 0.15\text{mm}$	$\pm 0.15\text{mm}$	
59		Deformed slot tolerance(routing)	$\pm 0.10\text{mm}$	$\pm 0.13\text{mm}$	
60		Depth tolerance of depth controlled slot(NPTH)	$\pm 0.15\text{mm}$	$\pm 0.15\text{mm}$	
61	Hole	Min tolerance for drilled slot	NPTH slot: long slot tolerance $\pm 0.1\text{mm}$ (slot length/slot width ≥ 2), short slot tolerance $\pm 0.15\text{mm}$ (slot length/slot width < 2)	NPTH slot: long slot tolerance $\pm 0.1\text{mm}$ (slot length/slot width ≥ 2), short slot tolerance $\pm 0.15\text{mm}$ (slot length/slot width < 2)	
62		Min tolerance for milled slot	PTH slot: long plated slot tolerance $\pm 0.1\text{mm}$ (slot length/slot width ≥ 2) short plated slot tolerance $\pm 0.15\text{mm}$ (slot length/slot width < 2)	PTH slot: long plated slot tolerance $\pm 0.1\text{mm}$ (slot length/slot width ≥ 2) short plated slot tolerance $\pm 0.15\text{mm}$ (slot length/slot width < 2)	
63		Aspect ratio	NPTH slot tolerance $\pm 0.10\text{mm}$, PTH slot tolerance $\pm 0.13\text{mm}$	NPTH slot tolerance $\pm 0.10\text{mm}$, PTH slot tolerance $\pm 0.13\text{mm}$	
64	Pad/Land	Mechanical blind/buried via	Aspect ratio $< 30:1$	Mechanical through hole	Aspect ratio $< 12:1$
65		Laser blind via	Aspect ratio $< 0.8:1$	Laser blind hole	Aspect ratio $< 1:1$
66	Pad/Land	Min aperture (laser)/Pads	4/10mil; 5/11mil	4/12mil; 5/13mil	
67		Min Aperture (Mechanical)/Pads	4/10mil ; 5/11mil ; 6/12mil	6/14mil ; 8/16mil	
68	Min BGA pad size	8mil	10mil (It can be 8mil for ENIG finish)		
69	Pad tolerance	$\pm 1.5\text{mil}$ (Pad size $\leq 10\text{mil}$) ; $\pm 10\%$ (Pad size $> 10\text{mil}$)	$\pm 1.5\text{mil}$ (Pad size $\leq 10\text{mil}$) ; $\pm 10\%$ (Pad size $> 10\text{mil}$)		
70	Rigid board	0.50Z	$\geq 2.5/2.5\text{mil}$	0.50Z	$\geq 3/3\text{mil}$
71		1oz	$\geq 3.5/3.5\text{mil}$	1oz	$\geq 4/4.5\text{mil}$
72		20Z	$\geq 5/6\text{mil}$	20Z	$\geq 4.5/7\text{mil}$
73		30Z;	$\geq 6/8\text{mil}$	30Z;	$\geq 7/9\text{mil}$

73	Line width /space	Inner layer	40Z	≥7/10 mil	40Z	≥8/11 mil	
74			50Z	≥8/12 mil	50Z	≥9/13 mil	
75			60Z	≥9/14 mil	60Z	≥10/15 mil	
76		Rigid-flex	max 20Z	Same as above	max 10Z	Same as above	
77		Outer layer (finish copper thickness)	Rigid board	0.50Z	≥3/3mil	0.50Z	≥3.5/4mil
78				1oz	≥3/3.5 mil or partial 3/3mil	1oz	≥4/5mil
79				20Z	≥5/6mil	20Z	≥5/7mil
80				30Z	≥6/8 mil	30Z	≥6/9mil
81				40Z	≥7/10 mil	40Z	≥7/11mil
82				50Z	≥8/12 mil	50Z	≥9/13mil
83			60Z	≥9/14 mil	60Z	≥10/15mil	
84		Rigid-flex	0.5-20Z	Same as above	0.5-10Z	Same as above	
85		Line width tolerance		≤10mil: ±10%		≤10mil: ±1.5mil	
86				>10mil: ±0.8mil		>10mil: ±2mil, partial ±1mil	
87	Space	Min distance from drill hole to conductor(board with mechanical blind/buried vias)	7mil(One lamination);8.5mil(Two laminations);10mil(Three laminations)		8mil (One lamination) ;9mil (Two/three laminations)		
88		Min distance from drill hole to conductor(board without blind/buried vias or HDI)	6.5mil (≤8 layers) , 7.5mil (10-14 layers) , 8mil (>14layers)		7mil (≤8 layers) 9mil (>8 layers)		
			Rigid-flex	7mil	Rigid-flex	8mil	
89	Space	Min distance from laser hole to conductive pattern(one step HDI)	7mil		8mil		
90		Min space between outerlayer circuit to border without copper exposure.	8mil		10mil		
91		Min space between V-cut center line and conductive pattern(T means board thickness)	T≤1.0mm: 0.3mm (V-CUT angle 20°), 0.33mm (V-CUT angle 30°), 0.37mm (V-CUT angle 45°).		T≤1.0mm: 0.3mm (V-CUT angle 20°), 0.33mm (V-CUT angle 30°), 0.37mm (V-CUT angle 45°).		
			1.0<T≤1.6mm: 0.36mm (20°) , 0.4mm (30°) , 0.5mm (30°)		1.0<T≤1.6mm: 0.36mm (20°) , 0.4mm (30°) , 0.5mm (30°)		
			1.6<T≤2.4mm: 0.42mm (20°) , 0.51mm (30°) , 0.64mm (30°)		1.6<T≤2.4mm: 0.42mm (20°) , 0.51mm (30°) , 0.64mm (30°)		
			2.4<T≤3.0mm: 0.47mm (20°) , 0.59mm (30°) , 0.77mm (30°)		2.4<T≤3.0mm: 0.47mm (20°) , 0.59mm (30°) , 0.77mm (30°)		
92		Min clearance land on inner layers	7mil		9mil		
93		Min space between innerlayer copper pattern and the border to avoid copper exposure at PCB edge	10mil		10mil		
94		Min hole edge-to-hole edge space in same network	8mil(through hole, laser vias), 10mil(mechanical blind/buried vias)		10mil(through hole, laser vias), 12mil(mechanical blind/buried vias)		
95		Min pad-to-pad space for ENIG finish	3mil (base copper 12um, 18um)		4mil (base copper 12um, 18um)		
96	Min space between contact fingers	5mil		6mil			
97	Min pad to pad space for HASL (no solder mask coating)	8mil(clearance between copper pad and copper plane on innerlayers is 10mil)		9mil(clearance between copper pad and copper plane on innerlayers is 10mil)			
98	Min space between peelable mask and copper pad	14mil		16mil			
99	Min space between silkscreen and copper pad	6mil		6mil			

100		Min clearance between carbon ink covered areas	13mil	15mil
101		Metal-based PCB-Layer count	1-8 layers (aluminium based PCB and copper based PCB)	1-8 layers (aluminium based PCB and copper based PCB)
102		Metal based PCB-Finish board size	MAX:610*610mm, MIN: 5*5mm(aluminium based PCB and copper based PCB)	MAX:610*610mm, MIN: 5*5mm (aluminium based PCB and copper based PCB)
103	Metal based PCB	Metal based PCB-Finish board thickness	0.5-5.0mm	0.5-5.0mm
104		Metal based PCB-copper thickness	0.5-2.0oz	0.5-2.0oz
105		Metal thickness	0.5-5.0mm	0.5-5.0mm
106		Metal material type	Aluminium type: 1100/1050/2124/5052/6061, Cu type: pure copper,	Al type:1100/1050/2124/5052/6061, Cu type: pure copper, and pure
107		Metal based PCB-Min hole size and tolerance	NPTH:0.5±0.05mm;PTH:1.0±0.10mm(Al base PCB and Cu base PCB)	NPTH:0.5±0.05mm;PTH:1.0±0.10mm(Al base PCB and Cu base PCB)
108		Metal based PCB-Dimension tolerance (including blind slots/depth controlled milling)	±0.05mm	±0.05mm
109	Metal based PCB	Metal based PCB- surface finish	HASL(LF), OSP, ENEPIG, hard gold/soft gold plating and tin plating.	HASL(LF), OSP, ENEPIG, hard gold/soft gold plating and tin plating.
110		Metal based PCB-metal part finish	Cu base:/hard gold plating./Al base: Anodizing/hard anodizing/chemical passivation. Machining: sand blasting and metal drawing/brushing.	Cu base: hard gold plating. Al base: Anodizing,hard anodizing, chemical passivation. Machining: sand blasting and metal drawing/brushing.
111		Metal based PCB-metal laminate	Bergquist (MP06503,HT04503), TACONIC(TLY-5, TLY-5F)	Bergquist (MP06503,HT04503), TACONIC(TLY-5, TLY-5F)
112		Metal based PCB-thermal conductivity	: 0.3-12w w/m.k (Al base PCB and Cu base PCB)	0.3-6w w/m.k (Al base PCB and Cu base PCB)
113		Metal based PCB-thermal adhesive thickness(dielctric)	75-150um	75-150um
114		Min dielectric thickness of inner layers	0.05	0.1
115	Layers	Rigid board	1-100L	Rigid board 1-40L
		Rigid-flex	Flex area (with air gap) Max 8 layers Rigid section(include flex layers) Max 20 layers	Flex area (with air gap) Max 4 layers Rigid section(include flex layers) Max 8 layers
116	Board thickness range	Rigid board	0.15-10.0mm	0.4-6.0mm
		Rigid-flex	Flex area(exclude stiffener) Min 0.15mm Flex area(exclude stiffener) 0.5-6.0mm	Rigid area(include flex) Min 0.15mm Rigid area(include flex)) 0.6-2.0mm
117		Min finish board size	5*5mm	10*10mm
118	Others	Max finish board size	22.5"*48" (either one side need >22.5")	≤2 layers: 23"*35" ≥3 layers: 22.5"*30"
119		Layer to layer registration	≤5mil	≤6mil
120	Board thickness tolerance		When board thickness≤1.0mm, the tolerane is ±0.1mm	When board thickness≤1.0mm, the tolerane is ±0.1mm
			When board thickness>1.0mm, the tolerance is ±8%	When board thickness>1.0mm, the tolerance is ±10%
		Special thickness tolerance: T≤2.0mm, Tol=±0.1mm; 2.1≤T≤3.0mm, Tol=±0.15mm; 3.1≤T≤7.0mmTol=±0.25mm(no specifed dielectric thickness)	Special thickness tolerance: ≤2.0mm, Tol=±0.13mm; 2.1≤T≤3.0mmTol=±0.15mm; 3.1≤T≤6.0mm, Tol=±0.3mm(no specifed dielectric thickness)	

121	Impedance tolerance	Single-ended: $\pm 5\Omega$ ($\leq 50\Omega$), $\pm 10\%$ ($> 50\Omega$) (Advanced tolerance, $\pm 5\%$ ($\geq 50\Omega$)); Differential pairs impedance: $\pm 5\Omega$ ($\leq 50\Omega$), $\pm 10\%$ ($> 50\Omega$) (Advanced tolerance, inner layer $\pm 5\%$ ($\geq 70\Omega$), outer layer $\pm 8\%$ ($\geq 70\Omega$))	$\pm 5\Omega$ ($< 50\Omega$), $\pm 10\%$ ($\geq 50\Omega$)
122	Outline tolerance	$\pm 0.05\text{mm}$	$\pm 0.1\text{mm}$
123	Position deviation	$\pm 0.05\text{mm}$	$\pm 0.1\text{mm}$
124	Warpage (advanced)	3%	7%
125	Max copper thickness	Inner layer: 12oz; Outer layer: 28oz	Inner layer: 6oz; Outer layer: 6oz
126	Min dielectric thickness	2mil (only for HOZ base copper)	3mil (only for HOZ base copper)
127	Min silkscreen line width and height	Line width 5mil, height: 28mil (12um, 18um, 35um base copper); Line width 6mil, height 36mil (70um base copper)	Line width 5mil, height 28mil (12um, 18um, 35um base copper); Line width 6mil, height 36mil (70um base copper)
128	Min radius	0.4mm	0.6mm
129	V-CUT angle tolerance	$\pm 5^\circ$	$\pm 5^\circ$
130	v-cut symmetry tolerance	$\pm 4\text{mil}$	$\pm 4\text{mil}$
131	V-CUT web thickness tolerance	$\pm 4\text{mil}$	$\pm 4\text{mil}$
132	Board thickness range for V-cut	V-cut from both sides: 0.4mm(exclude outer layer copper thickness) \leq Board thickness \leq 4.0mm(finish board thickness), V-cut from single side: 0.4mm \leq Board $<$ 4.0mm When board thickness $<$ 0.4mm or $>$ 3.2mm, we can not process V-cut.	V-cut from both sides: 0.4mm(exclude outer layer copper thickness) \leq Board thickness \leq 4.0mm(finish board thickness), V-cut from single side: 0.4mm \leq Board $<$ 4.0mm When board thickness $<$ 0.4mm or $>$ 3.2mm, we can not process V-cut.
133	Outline process	CNC routing, V-cut, connection bridges with mouse bit holes.	CNC routing, V-cut, connection bridges with mouse bit holes.
134	Min space between IC pads to keep solder mask bridge.	When base copper thickness \leq 1oz, min space needs 7mil for green solder mask color and 9mil for other colors.	When base copper thickness \leq 1oz, min space needs 7mil for green solder mask color and 9mil for other colors.
		When base copper between 2-4oz, min space needs 10mil	When base copper between 2-4oz, min space needs 10mil
135	Min space between solder mask covered lines and nearest solder mask openings.	2.5mil (special 1.5mil, part only)	2.5mil (special 1.5mil, part only)
136	Solder mask colors	Green, yellow, black, blue, red, white, purple, matte green, brown, orange, matte black, matte blue and transparent color.	Green, yellow, black, blue, red, white, purple, matte green, matte black and matte blue.
137	Silkscreen colors	White, yellow and black	White, yellow and black
138	Chamfer angle tolerance for contact fingers.	$\pm 5^\circ$	$\pm 5^\circ$
139	Chamfer web thickness tolerance	$\pm 5\text{mil}$	$\pm 5\text{mil}$
140	Min resistance of testing	10 Ω	10 Ω
141	Max insulation resistance of testing	100M Ω	100M Ω
142	Max testing voltage	5000V DC / 3000 AC	5000V DC / 3000 AC
143	Max testing current	200mA	200mA
144	Silkscreen printing types-only for white silkscreen)	Serial numbers, barcode and QR code	Serial numbers, barcode and QR code
145	Min flexible board length	2mm	2mm
	Min distance from Via to rigid-flex transition area	$\geq 0.8\text{mm}$	$\geq 1\text{mm}$

Others

Others

Technology capability of ceramic based PCB

Number	Item	Advanced samples	Mass production
1	Material type	ceramic	Al2O3 ceramic/AlN ceramic
2		Thermal Conductivity (W/M*K)	20-30W/M*K/170-250W/M*K
3	Product type	Manufacturing process	DPC/DBC
4	Surface finish	Leaded	HSAL
5		Lead free	OSP/HASL Lead free /Electroless nickel plating/Electroless silver plating/ENIG/ENEPIG/电Silver plating/Gold plating
6	Surface finish plating thickness	HASL	2-40um
7		ENIG	Nickel: 2.5-8um; Gold: 0.05-0.2um
10		Immersion Silver	0.1-0.6um
11		OSP	0.1-0.3um
12		Hard gold plating	0.05-2.0um
14		ENEPIG	Nickel: 2-5um, palladium: 0.01-0.05um, gold: 0.05-0.10um
15		Electroless nickel plating	2 μ m - 7 μ m (8%±2%P)
16		Hole	Mechanical drill diameter (finish size)
17		Solid via filling capability	0.5mm board thickness and hole size is 0.2mm
18	Aspect ratio	Board thickness/hole size	5: 1
19	Mechanical dimension	Board size	<180mmX130mm
20		Board thickness tolerance	±0.05mm
		Dimension tolerance	±0.1mm
21		Board thickness	0.25-2mm
23		18(um)	≥50(um)
24		30(um)	≥60(um)
		60(um)	≥75(um)
25		80(um)	≥100(um)