

Rigid PCB Manufacture Capabilities

No.	Items		Capabilities(Delivery area <5m ²)	Capabilities(Delivery area ≥5m ²)
1	Material	Normal FR4	Shengyi S1141(Not recommend it to lead free assembly process)	Shengyi S1141(Not recommend it to No-Pb assembly process)
2		Normal Tg FR4(Halogen free)	Shengyi S1155	Shengyi S1155
3		High Tg FR4(Halogen free)	Shengyi S1165	Shengyi S1165
4		HDI PCB material	LDPP(IT-180A 1037&1086)、Normal PP 106&1080	LDPP(IT-180A 1037&1086)、Normal PP 106&1080
5		Hight CTI	Shengyi S1600	Shengyi S1600
6		High Tg FR4	FR408、FR408HR、IS410、FR406、GETEK、PCL-370HR;IT180A、IT-150DA;N4000-13、N4000-13EP、N4000-13SI、N4000-13EP SI;Megtron 4、Megtron 6(Panasonic);EM-827(Elite);GA-170(Grace Electron);NP-180(Nanya);TU-752、TU-662(Taiwan Union);MCL-BE-67G(H)、MCL-E-679(W)、MCL-E-679F(J)(Hitachi);VT-47(Ventec)	IT180A、GETEK、PCL-370HR、N4000-13、N4000-13EP、N4000-13SI、N4000-13EP SI
7		Ceramic Particle Filled Laminates	Rogers4350、Rogers4003、25FR、25N	Rogers4350、Rogers4003、25FR、25N
8		PTFE Laminates	Rogers series、Taconic series、Arlon series、Nelco series、Taizhou Wangling F4BK series、TP series;	Taconic (TLX、TLF、TLY、RF、TLC、TLG series);Arlon(Diclad、AD series)
9		PTFE PP	Taconic TP series、TPG series、TPN series、HT1.5(1.5mil)、Fastrise series	/
10		Hybrid laminating	Rogers/Taconic/Arlon/Nelco laminate with FR-4 material(including partial Ro4350B hybrid laminating with FR-4)	Rogers/Taconic/Arlon/Nelco laminate with FR-4 material(including partial Ro4350B hybrid laminating with FR-4)
11	PCB type	Rigid pcb	Backplane、HDI、High multi-layer blind&buried PCB、Embedded Capacitance、Embedded resistance board、Heavy copper power PCB、Backdrill、Semiconductor Test products.	Backplane、HDI、High multi-layer blind&buried PCB、Backdrill
12	Buildings	Blind&buried via type	mechanical blind&buried vias with less than 3 times laminating	mechanical blind&buried vias with less than 2 times laminating
13		HDI PCB	1+n+1,1+1+n+1+1,2+n+2,3+n+3(n buried vias≤0.3mm),Laser blind via can be filling plating	1+n+1,1+1+n+1+1,2+n+2,3+n+3(n buried vias≤0.3mm),Laser blind via can be filling plating
14	Finish treatment	Lead free	Flash gold(electroplated gold)、ENIG、Hard gold、Flash gold、HASL Lead free、OSP、ENEPIG、Soft gold、Immersion silver、Immersion Tin、ENIG+OSP,ENIG+Gold finger,Flash gold(electroplated gold)+Gold finger,Immersion silver+Gold finger,Immersion Tin+Gold finger	Flash gold(electroplated gold)、ENIG、Hard gold、Flash gold、HASL Lead free、OSP、ENEPIG、Soft gold、Immersion silver、Immersion Tin、ENIG+OSP,ENIG+Gold finger,Flash gold(electroplated gold)+Gold finger,Immersion silver+Gold finger,Immersion Tin+Gold finger
15		Leaded	Leaded HASL	Leaded HASL
16		aspect ratio	10:1(HASL Lead free、HASL Lead、ENIG、Immersion Tin、Immersion silver、ENEPIG);8:1(OSP)	10:1(HASL Lead free、HASL Lead、ENIG、Immersion Tin、Immersion silver、ENEPIG);8:1(OSP)
17		Max finished size	HASL Lead 22"*39"; HASL Lead free 22"*24"; Flash gold 24"*24"; Hard gold 24"*28"; ENIG 21"*27"; Flash gold(electroplated gold) 21"*48"; Immersion Tin 16"*21"; Immersion silver 16"*18"; OSP 24"*40";	HASL Lead 22"*39"; HASL Lead free 22"*24"; Flash gold 24"*24"; Hard gold 24"*28"; ENIG 21"*27"; Flash gold(electroplated gold) 21"*48"; Immersion Tin 16"*21"; Immersion silver 16"*18"; OSP 24"*40";
18		MIN finished size	HASL Lead 5"*6"; HASL Lead free 10"*10"; Flash gold 12"*16"; Hard gold 3"*3"; Flash gold(electroplated gold) 8"*10"; Immersion Tin 2"*4"; Immersion silver 2"*4"; OSP 2"*2";	HASL Lead 5"*6"; HASL Lead free 10"*10"; Flash gold 12"*16"; Hard gold 3"*3"; Flash gold(electroplated gold) 8"*10"; Immersion Tin 2"*4"; Immersion silver 2"*4"; OSP 2"*2";
19		PCB thickness	HASL Lead 0.6-4.0mm; HASL Lead free 0.6-4.0mm; Flash gold 1.0-3.2mm; Hard gold 0.1-5.0mm; ENIG 0.2-7.0mm; Flash gold(electroplated gold) 0.15-5.0mm; Immersion Tin 0.4-5.0mm; Immersion silver 0.4-5.0mm; OSP 0.2-6.0mm;	HASL Lead 0.6-4.0mm; HASL Lead free 0.6-4.0mm; Flash gold 1.0-3.2mm; Hard gold 0.1-5.0mm; ENIG 0.2-7.0mm; Flash gold(electroplated gold) 0.15-5.0mm; Immersion Tin 0.4-5.0mm; Immersion silver 0.4-5.0mm; OSP 0.2-6.0mm;
20		MAX high to gold finger	1.5inch	1.5inch
21		Min space between gold fingers	6mil	8mil
22		Min block space to gold fingers	7.5mil	7.5mil
23	Plating/coating thickness	Tin thickness	2-40μm (0.4μm on large tin area of Leaded HASL, 1.5μm on large tin area of HASL lead free)	2-40μm (0.4μm on large tin area of Leaded HASL, 1.5μm on large tin area of HASL lead free)
24		OSP	0.2-0.6μm	0.2-0.6μm
25		ENIG	Ni: 3-8μm; Au: 0.05-0.1μm	Ni: 3-8μm; Au: 0.05-0.1μm
26		Immersion Silver	0.2-0.4μm	0.2-0.4μm
27		Immersion Tin	≥1.0	≥1.0
28		Hard gold	0.1-4.0μm	0.1-2.0μm
29		Soft gold	0.1-4.0μm	0.1-4.0μm
30		ENEPIG	Ni: 3-8μm, Pd:0.05-0.15μm, Au: 0.05-0.1μm	Ni: 3-8μm, Pd:0.05-0.15μm, Au: 0.05-0.1μm
31		Flash gold(electroplated gold)	Ni: ≥3μm ; Au: 0.025-0.1μm ;base copper≤1 oz	Ni: ≥3μm ; Au: 0.025-0.1μm ;base copper≤1 oz
32		electroplated Gold finger	Ni: ≥3μm ; Au: 0.25-1.5μm(The Thinnest point)	Ni: ≥3μm ; Au: 0.25-1.5μm(The Thinnest point)
33		Carbon	10-50μm	10-50μm
34		Soldermask	0.4-0.7mil (on copper area), 0.2-0.31mil(on via pad), ≥0.2mil(on circuits around the corner, just for one-time print and copper thickness<48μm)	0.4-0.7mil (on copper area), 0.2-0.31mil(on via pad), ≥0.2mil(on circuits around the corner, just for one-time print and copper thickness<48μm)
35		Blue plastic	8--31.5mil	8--16mil

No.	Items	Capabilities(Delivery area <5m ²)	Capabilities(Delivery area ≥5m ²)
36	MAX thickness of mechanical hole 4mil/6mil/8mi	31.5mil/59mil/100mil	24mil/47mil/63mil
37	Min laser drilling size	4mil	4mil
38	Max laser drilling size	6mil	6mil
39	Finshed mechanical hole size	4-244mil(corresponding drilling tool size 6-248mil)	5-244mil(corresponding drilling tool size 8-248mil)
40		A、 Min finished hole size for PTFE material and hybrid PCB is 10mil(corresponding drilling tool size 14mil)	A、 Min finished hole size for PTFE material and hybrid PCB is 12mil(corresponding drilling tool size 16mil)
41		B、 Max finished hole size for blind & buried via is 12mil(corresponding drilling tool size 16mil)	B、 Max finished hole size for blind & buried via is 12mil(corresponding drilling tool size 16mil)
42		C、 Max finished hole size for via-in-pad plugged with solder mask is 18mil(corresponding drilling tool size 21.65mil)	C、 Max finished hole size for via-in-pad plugged with solder mask is 12mil(corresponding drilling tool size 16mil)
43		D、 Min connecting hole size is 14mil(corresponding drilling tool size is 18mil)	D、 Min connecting hole size is 14mil(corresponding drilling tool size is 18mil)
44		E、 Min half-hole(pth)size is 12mil(corresponding drilling tool size is 16mil)	E、 Min half-hole(pth)size is 12mil(corresponding drilling tool size is 16mil)
45	MAX aspect ratio for Hole plate	20:1 (hole diameter>8mil)	10:1
46	Max aspect ratio for laser via filling plating	1:1(Dpeth included copper thickness)	0.9:1(Dpeth included copper thickness)
47	Max aspect ratio for mechanical depth-control drilling board(Blind hole drilling depth/blind hole size)	1.3:1(drilling tool size≤8mil),1.15:1(drilling tool size≥10mil)	0.8:1(drilling tool size≥10mil)
48	Min. depth of Mechanical depth-control(backdrill)	8mil	8mil
49	Min gap between hole wall and conductor (None blind and buried via PCB)	5.5mil(≤8L),6.5mil(10-14L),7mil(>14L)	7mil(≤8L),9mil(10-14L),10mil(>14L)
50	Min gap between hole wall conductor (Blind and buried via PCB)	7mil(1 time laminating), 8mil(2 times laminating), 9mil(3 times laminating)	8mil(1 times laminating),10mil(2 times laminating), 12mil(3 times laminating)
51	Min gab between hole wall conductor (Laser blind hole buried via PCB)	7mil (1+N+1) ; 8mil (1+1+N+1+1 or 2+N+2)	7mil (1+N+1) ; 8mil (1+1+N+1+1 or 2+N+2)
52	Min space between laser holes and conductor	5mil	6mil
53	Min space bwteen hole walls in different net	10mil	10mil
54	Min space bwteen hole walls in same net	6mil(thru-hole& laser hole PCB),10mil(Mechanical blind&buried PCB)	6mil(thru-hole& laser hole PCB),10mil(Mechanical blind&buried PCB)
55	Min space bwteen NPTH hole walls	8mil	8mil
56	Hole location tolerance	±2mil	±2mil
57	NPTH tolerance	±2mil	±2mil
58	Pressfit holes tolerance	±2mil	±2mil
59	Countersink depth tolerance	±6mil	±6mil
60	Countersink hole size tolerance	±6mil	±6mil
61	Min Pad size for laser drillings	10mil(for 4mil laser via),11mil(for 5mil laser via	10mil(for 4mil laser via),11mil(for 5mil laser via
62	Min Pad size for mechanical drillings	16mil(8mil drillings	16mil(8mil drillings
63	Min BGA pad size	HASL:10mil, LF HASL:12mil, other surface technics are 7mi	HASL:10mil, LF HASL:12mil, other surface technics are 10mil(7mil is ok for flash gold
64	Pad size tolerance(BGA)	±1.2mil(pad size≤12mil);±10%(pad size≥12mil)	±1.5mil(pad size≤10mil);±15%(pad size>10mil)
65	Internal Layer	1/2OZ: 3/3mil	1/2OZ: 3/3mil
66		1OZ: 3/4mil	1OZ: 3/4mil
67		2OZ: 4/5mil	2OZ: 4/5.5mil
68		3OZ: 5/8mil	3OZ: 5/8mil
69		4OZ: 6/11mil	4OZ: 6/11mil
70		5OZ: 7/13.5mil	5OZ: 7/14mil
71		6OZ: 8/15mil	6OZ: 8/16mil
72		7OZ: 9/18mil	7OZ: 9/19mil
73		8OZ: 10/21mil	8OZ: 10/22mil
74		9OZ: 11/24mil	9OZ: 11/25mil
75		10OZ: 12/27mil	10OZ: 12/28mil

No.	Items		Capabilities(Delivery area <5m ²)	Capabilities(Delivery area ≥5m ²)
76	Width/Space	External Layer	1/3OZ: 3/3mil	1/3OZ: 3.5/4mil
77			1/2OZ: 3.5/3.5mil	1/2OZ: 3.9/4.5mil
78			1OZ: 4.5/5mil	1OZ: 4.8/5.5mil
79			1.43OZ (positive) :4.5/6	1.43OZ (positive) :4.5/7
80			1.43OZ (negative) :5/7	1.43OZ (negative) :5/8
81			2OZ: 6/7mil	2OZ: 6/8mil
82			3OZ: 6/10mil	3OZ: 6/12mil
83			4OZ: 7.5/13mil	4OZ: 7.5/15mil
84			5OZ: 9/16mil	5OZ: 9/18mil
85			6OZ: 10/19mil	6OZ: 10/21mil
86			7OZ: 11/22mil	7OZ: 11/25mil
87			8OZ: 12/26mil	8OZ: 12/29mil
88			9OZ: 13/30mil	9OZ: 13/33mil
89			10OZ: 14/35mil	10OZ: 14/38mil
90	Width tolerance		≤10mil: +/-1.0mil	≤10mil: +/-20%
91			>10mil: +/-1.5mil	>10mil: +/-20%
92	Soldermask	MAX drilling tool size for via filled with Soldermask (single side)	35.4mil	35.4mil
93		Soldermask color	Green matte/glossy, Yellow, Black, Blue, Red, White, Purple	Green matte/glossy, Yellow, Black, Blue, Red, White, Purple
94		Silkscreen color	White, Yellow, Black	White, Yellow, Black
95		MAX hole size for via filled with Blue glue aluminium	197mil	197mil
96		Finish hole size for via filled with resir	4-25.4mil	4-25.4mil
97		Max aspect ratio for via filled with resin board	12:1	8:1
98		Min width of soldermask bridge	Base copper≤0.5 oz、Immersion Tin: 7.5mil(Black), 5.5mil(Other color) , 8mil(on copper area)	Base copper≤0.5 oz、Immersion Tin: 7.5mil(Black), 5.5mil(Other color) , 8mil(on copper area)
99			Base copper≤0.5 oz、Finish treatment not Immersion Tin: 5.5 mil(Black,extremity 5mil), 4mil(Other color,extremity 3.5mil) , 8mil(on copper area)	Base copper≤0.5 oz、Finish treatment not Immersion Tin: 5.5 mil(Black,extremity 5mil), 4mil(Other color,extremity 3.5mil) , 8mil(on copper area)
100			Base coppe 1 oz: 4mil(Green), 5mil(Other color) , 5.5mil(Black,extremity 5mil),8mil(on copper area)	Base coppe 1 oz: 4mil(Green), 5mil(Other color) , 5.5mil(Black,extremity 5mil),8mil(on copper area)
101			Base copper 1.43 oz: 4mil(Green), 5.5mil(Other color) , 6mil(Black), 8mil(on copper area)	Base copper 1.43 oz: 4mil(Green), 5.5mil(Other color) , 6mil(Black), 8mil(on copper area)
102			Base copper 2 oz-4 oz: 6mil, 8mil(on copper area)	Base copper 2 oz-4 oz: 6mil, 8mil(on copper area)
103	Routing	Min space of the V-CUT does not reveal the copper (Central Line of v-cut to internal/external circuits,H means board thickness)	H≤40mil: 12mil(20°mean V-CUT angle),13mil(30°),14.6mil(45°	H≤40mil: 12mil(20°mean V-CUT angle),13mil(30°),14.6mil(45°
104			40<H≤63mil: 14.2mil(20°),16mil(30°),20mil(45°	40<H≤63mil: 14.2mil(20°),16mil(30°),20mil(45°
105			63<H≤94.5mil: 16.5mil(20°), 20mil(30°),25.2mil(45°	63<H≤94.5mil: 16.5mil(20°), 20mil(30°),25.2mil(45°
106			94.5<H≤118.1mil: 18.5mil(20°),23.2mil(30°),30.3(45°	94.5<H≤118.1mil: 18.5mil(20°),23.2mil(30°),30.3(45°
107		V-CUT symmetrical tolerance	±4mil	±4mil
108		MAX V-CUT lines	100	100
109		V-CUT angle tolerance	±5°	±5°
110		V-CUT angle	20、30、45°	20、30、45°
111		Gold finger bevelling	20、30、45、60°	20、30、45、60°
112		Gold finger bevelling tolerance	±5°	±5°
113		Min space of gold finger chamfering noninterference tab	236mil	275.6mil
114		Min gap between the side of gold finger and the shape edge line	8mil	10mil
115		Depth tolerance of depth-control groove milling	±4mil	±4mil
116		routing tolerance (edge to edge)	±4mil	±4mil
117		Min tolerance for routing slot (PTH)	width/length tolerance ±5mil	width/length tolerance ±5mil
118		Min tolerance for routing slot (NPTH)	width/length tolerance ±4mil	width/length tolerance ±4mil
119		Min tolerance for drilling slot (PTH)	width tolerance ±3mil; Length/width≥2, length tolerance ±3mil; Length/width<2, length tolerance ±4mil	width tolerance ±3mil; Length/width≥2, length tolerance ±3mil; Length/width<2, length tolerance ±4mil
120		Min tolerance for drilling slot (NPTH)	width tolerance ±2mil; Length/width≥2, length tolerance is±2mil; Length/width<2,width and length tolerance ±3mil	width tolerance ±2mil; Length/width≥2, length tolerance is±2mil; Length/width<2,width and length tolerance ±3mil

No.		Items	Capabilities(Delivery area <5m ²)	Capabilities(Delivery area ≥5m ²)
121	Local mixed pressure	Min gap between mechanical hole wall and conductor (Local mixed pressure area)	12mil(local 10mil)	12mil(local 10mil)
122		Min gap between mechanical hole wall and the junction of local mixed pressure	10mil	10mil
123	Metal-substrate PCB	Layer counts	1-8L(Al-substrate、Cu-substrate);2-24L(Heatsink、Sweat bonding、Buried metal);1-2L(Ceramic-substrate)	1-8L(Al-substrate、Cu-substrate);2-24L(Heatsink、Sweat bonding、Buried metal);1-2L(Ceramic-substrate)
124		PCB size (Finished)	Max: 24"*24", Min: 0.2"*0.2" (Al-substrate、Cu-substrate、Heatsink、Sweat bonding、Buried metal)	Max: 24"*24", Min: 0.2"*0.2" (Al-substrate、Cu-substrate、Heatsink、Sweat bonding、Buried metal)
125		MAX PCB size(Ceramic-substrate PCB)	4" * 4"	4" * 4"
126		PCB thickness(Finished)	0.02"-0.2"	0.02"-0.2"
127		Copper thickness(Finished)	0.5-10 oz	0.5-10 oz
128		Metal thickness	0.02"-0.2"	0.02"-0.2"
129		Metal material type	AL:1100/1050/2124/5052/6061;Cu:c11000; Iron	AL:1100/1050/2124/5052/6061;Cu:c11000; Iron
130		Min finished hole size&tolerance	NPTH: 20±2mil; PTH: 40±4mil(for Al-substrate、Cu-substrate)、8±4mil(for Heatsink、Sweat bonding、Buried metal)	NPTH: 20±2mil; PTH: 40±4mil(for Al-substrate、Cu-substrate)、8±4mil(for Heatsink、Sweat bonding、Buried metal)
131		Dimension tolerance	±1.2mil	±2mil
132		PCB partial surface treatment	Leaded HASL/Lead free HASL; OSP; ENIG; ENEPIG ; Plating(Ni)Soft/Hard gold;Plating Sn	Leaded HASL/Lead free HASL; OSP; ENIG; ENEPIG ; Plating(Ni)Soft/Hard gold;Plating Sn
133		Metal partial surface treatment	Cu:Plating Ni&Au ; Al:Anodic oxidation、Hard anodic oxidation coating、Chemical passivation; Physical treatment:Sandblasting、Wire drawing	Cu:Plating Ni&Au ; Al:Anodic oxidation、Hard anodic oxidation coating、Chemical passivation; Physical treatment:Sandblasting、Wire drawing
134		Material	Metal PCB:Totking(T-110、T-111)、Ventec(VT-4A1、VT-4A2、VT-4A3)、Laird(1KA04、1KA06);Bergquist(MP06503、HT04503)、TACONIC(TLY-5、TLY-5F)	Metal PCB:Totking(T-110、T-111)、Ventec(VT-4A1、VT-4A2、VT-4A3)、Laird(1KA04、1KA06);Bergquist(MP06503、HT04503)、TACONIC(TLY-5、TLY-5F)
135		Thermal glue thickness (dielectric layer)	3-6mil	3-6mil
136		Buried copper block size	0.118" * 0.118" -- 2.756" * 3.15"	0.118"*0.118" -- 2.756"*3.15"
137		Buried copper block drop tolerance	±1.6mil	±1.6mil
138		Min gap between Buried copper block and hole wall	12mil	12mil
139		Thermal conductivity	0.3-3w/m.k(Heatsink、Al-substrate、Cu-substrate);8.33w/m.k(Sweat bonding);0.35-3w/m.k(Buried metal);24-180 w/m.k(Ceramic-substrate)	0.3-3w/m.k(Heatsink、Al-substrate、Cu-substrate);8.33w/m.k(Sweat bonding);0.35-3w/m.k(Buried metal);24-180 w/m.k(Ceramic-substrate)
140	Others	Max finished copper thickness to internal&external layer	Internal layer:10 oz; External layer:11 oz	Internal layer:4oz; External layer:5 oz
141		finished copper thickness to external layer	base copper 1/3 oz、0.5 oz: ≥35.8μm (reference value: 35.8-42.5μm) ; ≥40.4μm (reference value: 40.4-48.5μm)	base copper 1/3 oz、0.5 oz: ≥35.8μm (reference value: 35.8-42.5μm) ; ≥40.4μm (reference value: 40.4-48.5μm)
142			base copper 1 oz、1.43 oz、2 oz: ≥55.9μm; ≥70μm; ≥86.7μm	base copper 1 oz、1.43 oz、2 oz: ≥55.9μm; ≥70μm; ≥86.7μm
143			base copper 3oz、4 oz: ≥117.6μm; ≥148.5μm	base copper 3oz、4 oz: ≥117.6μm; ≥148.5μm
144		Layer count	1-40L	1-20L
145		PCB thickness	8 - 275.6mil(No Soldermask);15.7-275.6mil(Have Soldermask)	11.8-196.85mil(No Soldermask);15.7-196.85mil(Have Soldermask)
146		PCB thickness tolerance (Normal)	Thickness>40mil: ±10% ; Thickness≤40mil: ±4mil	Thickness>40mil: ±10% ; Thickness≤40mil: ±4mil
147		PCB thickness tolerance (Special)	Thickness≤80mil: ±4mil ; 80mil<Thickness≤120mil: ±6mil	Thickness≤80mil: ±10% ; 80mil<Thickness≤120mil: ±6mil
148		Min finished PCB size	0.4" * 0.4"	2.0" * 4.0"
149		Max finished PCB size	23×35 inch(2L) ; 22.5*33.5 inch(4L); 22.5*30inch (≥6L)	20×30 inch(2L) ; 22.5*30 inch(4L); 16.5*22.5inch (≥6L)
150		ionic soil	≤1ug/cm2	≤1ug/cm2
151		Min bow&twist	0.1%(This ability request same laminated plate type, symmetry laminated construction, the difference of symmetry layer Copper area within 10%, uniformity wiring , excluding the large area of copper and base material ,haven't plate and single panel, and the long side size≤ 21 inch)	0.75%
152		Impedance tolerance	±5ohm(<50ohm), ±10%(≥50ohm)	±5ohm(<50ohm),±10%(≥50ohm)
153		Laser blind via size with filling plating	4-5mil(priority 4mil)	4-5mil(priority 4mil)
154		Max aspect ratio for laser via filling plating	1:1(Depth included copper thickness)	1:1(Depth included copper thickness)