

# CAPABILITY MATRIX



Sl. No.	PCB FEATURES	CAPABILITIES	& REMARKS
1	<b>TECHNOLOGY &amp; MANUFACTURING STANDARDS</b>	Rigid as per <b>IPC 6012C Class 2</b> Specification	<b>IPC 6012C Class 2 and Class 3</b>
2	<b>LAYER COUNT</b>	Minimum and Maximum number of PCB layers	<b>From 1L up to 34L</b>
3	<b>SIZE</b>	Maximum PCB size ( length x width ) and Maximum PCB Panel size	<b>620*813mm(24"*32")</b>
4	<b>THICKNESS</b>	Minimum & Maximum PCB Thickness	<b>0.6mm upto 12mm</b>
5	<b>DIMENSION (Tolerance)</b>	1. PCB Size tolerance	<b>+/-0.1mm</b>
		2. PCB Thickness tolerance	<b>T&lt;1.0 mm: +/-0.10mm ; T≥1.00mm: +/-10%</b>
		3. Dimensional tolerance of + 0 mm is achievable ?	<b>Yes</b>
		4. Dimensional testing test-report can be supplied along with the PCB	<b>Yes</b>
6	<b>MATERIAL</b>	1. High speed PCB materials ( including normal and spread glass varieties) that we regularly use for PCB with signal speeds of 10 Gbps Serdes , 28Gpbs and beyond.	<b>1). Low loss material: FR408HR, I-SPEED N4000-13EPSI, Megtron 4, EM-888, IT150DA. 2) Very Low loss material: R5775(Megtron6) ,M7, RO4003, R4350B,EM888K</b>
		2. Use of more than one type of PCB material in a single PCB	<b>Yes, i.e RO4350B+FR4</b>
		3. RF PCBs SUPPORT	<b>Yes, i.e RO4350B</b>
		4. PCB material types (High Tg) that we regularly use	<b>IT180A, S1000-2,S1000-2M,EM827, TU768, 370HR, IS410, EM370, R-1577,S1165, EM828G, IT170GRA1</b>
7	<b>SURFACE FINISH</b>	1. Types of surface finish supported	<b>HAL, HAL-LF, OSP, ENIG,Immersion tin, Immersion Silver, ENEPIG, GOLD Finger</b>
		2. ENIG surface finish?	<b>Yes up to 4U"</b>
		3. Immersion Gold with Selective hard gold plating & the max. thickness supported for the hard gold plating?	<b>Yes, max 50U"</b>
		4. Dual Hard Gold Surface Finish (Full Body Hard gold followed by selective hard gold plating for certain areas on PCB)?	<b>Yes</b>
8	<b>ASPECT RATIO</b>	PCB Aspect ratio supported for through-hole	<b>15:01</b>
		Aspect ratio supported for micro Via ( for different via sizes including Via size 6/12 mils)	<b>1:1</b>
9	<b>CONTROLLED IMPEDANCE</b>		<b>Yes,</b>
		2.Impedance Tolerance limit for Single-ended and for differential traces.	<b>+/-10%</b>

# CAPABILITY MATRIX



10	TRACE WIDTH	1. Minimum trace width for inner layers	0.089mm (3.5mil)
		2. Minimum trace width for outer layers	0.089mm (3.5mil)
		3. Minimum and maximum copper foil thickness of inner layers	Min. 1/2OZ, max.6OZ
		4. Minimum and maximum copper foil thickness of outer layers	Min. 1/3OZ, max.12OZ
		5. Minimum trace to trace space supported on inner layers	0.089mm (3.5mil)
		6. Minimum trace to trace space supported on outer layers	0.089mm (3.5mil)
		7. Minimum trace to pad space supported on inner layers	0.1mm( 4mil)
		8. Minimum trace to pad gap supported on outer layers	0.1mm( 4mil)
		9. Minimum separation between power layers that can be achieved in fabrication	0.05mm
		10. Maximum copper conductor width variation	+/-20%
		11. Minimum trace to NPTH space	min.0.20mm
11	COPPER CONDUCTOR	1. HVLP copper?	yes
		2. Roughness value achievable for Laminates and copper foils?	n/a
12	VIA TECHNOLOGY & PLATING / FILLING	Via & Micro-Via Support	
		1. Stacked micro via construction?	yes
		2. No. of layers of stacking supported.	4+N+4
		3. Minimum drill-size supported for micro-via as well as other microvia details	Micro Via by laser drilling: min.0.10mm. Mechanical via: 0.25mm (Advance capability 0.20mm)
		4. Cu plating for Vias is supported?	Only support for 1OZ plating for vias. 2OZ plating not supported
		5. Minimum PTH diameter supported?	0.15mm
		6. Minimum antipad size supported over PTH?	0.25mm
		7. Minimum Drill-hole-wall to drill-hole-wall spacing supported	0.20mm
8. Minimum plating PTH knee thickness value achievable may be specified.	0.15mm		
12a	VIA TECHNOLOGY & PLATING / FILLING	Conductive / Non-conductive via filling for all types of vias (i.e. through hole via and micro via) as well as covering and plating of these via tops?	yes, supported all. Filled by resin or solder mask. Yes, filled and capped.
12b	VIA TECHNOLOGY & PLATING / FILLING	Conductive / Non-conductive via filling for Via-in-pad as well as covering and plating of these via tops?	yes, both. normally resin filling or copper paste filling. Yes, filled and capped.
	BACK DRILLING	1. Back drilled vias?	yes
		2. Back drill depth tolerance ?	+/-0.05mm
		3. Minimum back-drill size over primary drill?	NP>=0.45mm, PTH>=0.25mm
		4. Minimum Back-drill to trace / Cu spacing supported?	0.20 - 0.25mm
		5. Minimum stub length supported for back-drill?	+/-0.125mm
14	ANNULAR RING	Class2 annular ring as per IPC-6012C?	yes
15	SOLDER MASK	1. Minimum solder mask clearance supported.	0.10mm

# CAPABILITY MATRIX



	<b>SOLDER MASK</b>	2. Minimum solder mask web supported between SMT pads	<b>0.08mm</b>
16	<b>PRESS-FIT HOLES</b>	1. Drill dia tolerance supported:	<b>+/-0.05mm</b>
		2. Finished hole dia tolerance supported:	<b>+/-0.05mm</b>
		3. Cu Plating thickness supported :	<b>from 20um up to 30um</b>
		4. Surface finish types supported:	<b>OSP, ENIG, Immersion Silver</b>
17	<b>REGISTRATION</b>	1. Layer to layer registration	<b>+/-0.075mm</b>
		2. Solder mask registration tolerance	<b>+/-0.10mm</b>
		3. Legend Registration tolerance	<b>+/-0.10mm</b>
		4. Drill-hole-positioning tolerance	<b>+/-0.15mm</b>
		5. Drill-wander for the minimum mechanical drill hole size	<b>0.20mm</b>
		6. True Position tolerance supported for NPTH	<b>+/-0.10mm</b>
18	<b>WARPAGE &amp; TWIST</b>	Maximum PCB Bow and Twist parameter	<b>0.75%</b>
19	<b>ELECTRICAL TEST &amp; PERFORMANCE</b>	1. Provide details of all the Electrical Tests and Performance Tests performed on the PCB and specify the test parameters used.	<b>open, short testing</b>
		2. Do you use IPC356D Netlist ?	<b>yes</b>
		3. Do you provide impedance test coupons?	<b>yes</b>
20	<b>INSPECTION &amp; ACCEPTANCE TESTS</b>	1. Please confirm whether the fabricated PCB is inspected for compliance as per IPC-A-600 Class2 and conformance report is included along with the boards.	<b>Yes, IPC-A-600 Class2 an applied, CoC along with the shipment.</b>
		2. Please provide the sample report for the above	<b>yes</b>
		3. Please mention any other inspection/acceptance tests that are additionally carried out	<b>Microsection report, Soleribility report and so on</b>
21	<b>SOLDER SAMPLE</b>	Do you provide a free PCB as solder sample in addition to the PCB Qty ordered	<b>yes</b>
22	<b>PACKAGING FOR SHIPMENT</b>	Please specify the PCB packaging that is followed for shipment	<b>Vaccum static plastic bag or aluminum shielded bag</b>
23	<b>PROTOTYPE / MASS PRODUCTION</b>	1. Do you support for prototype, Small volume and mass-production ?	<b>yes</b>
		2. Lead time for proto support	<b>Quick turn:15WD for 2L/4L/6L, 16WD for 8L/10L, 17WD for 12L/14L/16L,18WD for 18L/20L/22L</b>
24	<b>STACK-UP</b>	1. Any standard stackups available for Power Supply boards , RF boards , Digital boards , Analog boards and mixed signal boards ?	<b>yes</b>
		2. Do you provide Technical support for building stackups & suggest stackup based on our design requirement?	<b>Yes</b>
25	<b>PREPREGS &amp; LAMINATES</b>	Please provide a List of Standard prepregs & laminates used	<b>pls see below table</b>
26	<b>FIBRE GLASS WEAVE SKEW EFFECT MITIGATION</b>	Techniques for fibre glass weave skew effect mitigation	<b>NO</b>

# CAPABILITY MATRIX



27	<b>BURIED CAPACITOR /RESISTOR</b>	Support for buried capacitors and resistors in inner layers??.	<b>NO</b>
28	<b>EMBEDDING SMALL IC</b>	Support for embedding small IC	<b>NO</b>
29	<b>COPPER PLATING</b>	Support for selective copper plating on top and bottom layers ( 2 Oz min to 4Oz Max)	<b>NO</b>
30	<b>SUPPORT FOR EDGE FINGER MILLING</b>	Do you support Edge Finger Milling	<b>yes</b>
31	<b>EDGE BEVELING</b>	Do you support PCB edge connector beveling? If so, please specify the parameters	<b>yes</b>
32	<b>PRODUCT QUALITY CERTIFICATION</b>	UL/ any other	<b>yes</b>
33	<b>QUALITY MANAGEMENT SYSTEM (QMS) CERTIFICATION</b>	QMS approvals. (ISO 9000)	<b>yes</b>
34	<b>ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) CERTIFICATION</b>	EMS approvals (ISO 14000 )	<b>yes</b>
35	<b>FLEX AND FLEX-RIGID PCB CAPABILITY</b>	Capability details for Flexible,Rigid - Flexible PCB	<b>yes, pls find below</b>

Rigid flex board	Hole size (mm)	0.2
	Dielectrical thickness (mm)	0.025
	Working Panel size (mm)	350 x 500
	Line wide/space (mm)	0.075/ 0.075
	Stiffener	Yes
	Flex board layers (L)	8 (4plys of flex board)
	Rigid board layers (L)	≥14
	Surface treatment	All
Flex board in mid or outer layer	Both	

STYLE	THICKNESS	STYLE	THICKNESS	STYLE	THICKNESS
1080	50 ± 5 μ	2112	92 ± 5 μ	2165	127 ± 10 μ
1080	55 ± 5 μ	2113	90 ± 5 μ	2165	150 ± 10 μ
1080	61 ± 5 μ	2113	101 ± 10 μ	2166	150 ± 10 μ
1080	63 ± 5 μ	2116	110 ± 10 μ	7628	168 ± 10 μ
1080	67 ± 5 μ	2116	115 ± 10 μ	7628	178 ± 10 μ
1080	71 ± 5 μ	2125	96 ± 10 μ	7628	189 ± 10 μ
1080	80 ± 5 μ	2125	98 ± 10 μ	7628	200 ± 10 μ
2112	88 ± 5 μ	2125	105 ± 10 μ		
2112	90 ± 5 μ	2125	113 ± 10 μ		