



PCB- Capabilities (Std.) - Firan Technology Group (FTG)

	STANDARD TECHNOLOGY		ADVANCED TECHNOLOGY		LIMITED TECHNOLOGY		COMMENTS
TECHNOLOGIES DEFINED	This runs thru the shop on a regular basis and requires no special handling or involvement from key personnel. High Yields.		This runs thru the shop occasionally and runs with minimal special handling or involvement from key personnel. Reduced Yields.		This rarely runs thru the shop and only with special handling or involvement from key personnel. Significant impact on Yields.		Comments
	Toronto	Chatsworth	Toronto	Chatsworth	Toronto	Chatsworth	
	PWB Technologies		Standard		Advanced		
Rigid / HDI	Yes		Yes		Yes		Stacked / Staggered microvias
Thermal Management	Yes		Yes		Yes		Prebond / Postbond Heat Sinks, Metal Core , Metal Back, Metal Insertion, Thermally Conductive Materials, Specialty Plating
Flex & Rigid Flex	Yes		Yes		Yes		Including Book binders
High Frequency	Yes		Yes		Yes		
Embedded Passives	Yes		Yes		Yes		
Hybrid Constructions	Yes		Yes		Yes		
Features	Standard		Advanced		Limited		Comments
	Metric μ (Imperial)		Metric μ (Imperial)		Metric μ (Imperial)		
Minimum Plated Layer Line Width / Spacing	100/125 (0.004/0.005)		75/100 (0.003/0.004)	90 /100 (0.0035/0.004)	75 / 75 (0.003/ 0.003)		Assumes 1/2 oz. copper & +/-20% tolerance, single plating cycle
Minimum Inner Line Width / Spacing	75 / 75 (0.003 / 0.003)		65 / 75 (0.0025/0.003)		50 / 75 (0.002 /0.003)		Assumes 1/2 oz. copper & +/-20% tolerance
Internal Etch tol. (+/-)	15 (0.0006)		10 (0.0004)		5 (0.0002)		Assumes 1/2 oz. copper
External Etch Tol.(+/-)	25 (.001)		12.5 (0.0005)		10 (0.0004)		Assumes 1/2 oz. copper
Layer to Layer Registration (2 layer core)	+/- 25 (0.001)		+/- 17 (0.0007)		+/- 12.5 (0.0005)		100% LDI Exposure
Minimum Dielectric Thickness (inches)	50 (0.002)		25 (0.001)		13 (0.0005)		
Maximum PWB Thickness mm (inches)	5.0 (0.200)		7.0 (0.275)		7.0 (0.275)	12.7 (0.500)	
Maximum Board Thickness Tolerance	+/- 10%		+/- 8%		+/- 5%		Tighter tolerance on >2.54mm (0.100") thick boards, For Boards < 1.27mm (0.050") the tol is +/- 125mm (0.005")
Maximum Numbers of Layer	34		38		44		Number of layers are controled by overall thickness of board
Profile Tolerance	+/- 125 (0.005)		+/- 75 (0.003)		+/- 50 (0.002)		
Machining or Milling Tolerance	+/- 75 (0.003)		+/- 50 (0.002)		+/- 25 (0.001)		
Pad and Hole							
Component Finished PTH Size Tolerance	+/- 75 (0.003)		+/- 50 (0.002)		+/- 36 (0.0015)		+/- is for non tin or non solder finishes only
PTH Locational Tolerance	175 (0.007)		125 (0.005)		125 (0.005)	75 (0.003)	DTP
Internal Land Size (Diameter over Drill)	300 (0.012)		250 (0.01)		250 (0.01)	200 (0.008)	Assumes 25 (0.001) annular ring
Internal Anti-pad (Diameter over Drill)	450 (0.018)	400 (0.016)	400 (0.016)	355 (0.014)	355 (0.014)	300 (0.012)	
External Land Size (Diameter over Finished Hole)	250 (0.01)		200 (0.008)		150 (0.006)		Assumes 50 (0.002") annular ring



Pad and Hole (Contd.)	Standard	Advanced	Limited	Comments
Min. Distance between board edge to conductor	300 (0.012)	250 (0.01)	200 (0.008)	For Scored boards it is 375(0.015) /300(0.012)
Min. distance between board edge to Hole	300 (0.012)	250 (0.01)	200 (0.008)	
Min distance between NPTH hole to edge	300 (0.012)	250 (0.01)	200 (0.008)	
Min. Dist- Hole to conductor	200 (0.008)	175 (0.007)	150 (0.006)	
Drilling				
Smallest Mechanical Drill Size	200 (0.008)	*200 (0.008) 150 (0.006)	150 (0.006)	*200 (0.006) for core thickness of ≥960 (0.038")
Maximum Aspect Ratio (w/ min. drill)	12:1	14:1	15:1 16:1	Assuming 8 mil drill
Laser Via Drill size	125 (0.005)	75 (0.003)	50 (0.002)	Based onAspect ratio 0.8:1
Laser Via - Max. Aspect ratio	0.8:1	1:1	1.2:1	
NPTH Size Tolerance +/- µm (inches)	+/- 50 (0.002)	+/- 37 (0.0015)	+/- 25 (0.001)	
Control Depth Drilling	+/- 125 (0.005)	+/- 100 (0.004)	+/- 75 (0.003)	
Blind/Buried Vias (All Types)	Yes	Yes	Yes	
Via Fill (Conductive) (Via in Pad)	Yes	Yes	Yes	Material Used: Tatsuta AE3030 > 125 (0.005) hole size, DuPont CB100 > 254 (0.010") hole size
Via Fill (Non-Conductive)	Yes	Yes	Yes	Material Used: SanEI PHP 900, Peters PP2795, Taiyo DX100 > 125 (0.005) hole size
Solder Mask				
Minimum LPI Soldermask Dam	85 (0.0035)	75 (0.003)	62 (0.0025)	
Soldermask Registration (+/-) or Clearance per side	67 (0.0025)	37 (0.0015)	37 (0.0015)	
Dry Film Soldermask	Yes	Yes	Yes	Vacrel 8140, Conformask
LPI Cover Layer	Yes	Yes	Yes	Taiyo
LPI Soldermask	Yes	Yes	Yes	Taiyo
Soldermask Via Tent	Yes	Yes	Yes	Vacrel 8140, Conformask
Soldermask Via Fill w/LPI	Yes	Yes	Yes	
Soldermask using Laser Direct Imaging	Yes	Yes	Yes	
Available Colors	All	All	All	
Production Capabilities				
Standard Panel Size - mm (inches)	530 x 610 (21x24) 457x610 (18 x24)	530 x 610 (21x24) 457x610 (18 x24)	610x760 (24x30) 457x610 (20 x26)	
Max. Usable Area	495 x 570 (19.5 x 22.5) 419 x 570 (16.5 x 22.5)	495 x 570 (19.5 x 22.5) 419 x 570 (16.5 x 22.5)	724 x 570 (28.5 x 22.5) 419 x 570 (19.5 x 25.5)	
Minimum Copper Weight - Inner Layers (oz.)	0.25	0.25	0.25	
Minimum Copper Weight - Outer Layers (oz.)	0.25	0.25	0.25	
Maximum Copper Weight - Inner Layers (oz.)	4 6	8 10	10 12	
Maximum Copper Weight - Outer Layers (oz.)	4	8	10	



Special Processes	Standard	Advanced	Limited	Comments
Machining	Yes	Yes	Yes	
Fusion Bonding	Yes	Yes	Yes	
Copper Sputtering	Yes	Yes	Yes	
Zincate Plating	Yes	Yes	Yes	
Material - Solder Masks, Legend Ink and Finishes				
Finishes	ENIG, ENEPIG, Electro Plated Nickel Gold, Plated Nickel, Electroplated Gold over Copper, Electroplated Palladium, Immersion Silver, Immersion Tin, Nickel, OSP			
Mask	Taiyo			All Other Masks supported
Legend Ink	Taiyo			All other inks supported
Special Materials				
Thermal Laminates	Epoxy - from 0.5 to 3 w/mk, (Arlon, Ventec, Rogers, Laird)			
Metal Back	Aluminum, Copper, Brass (Post and Pre-bonded)			
Materials				
Standard Laminates and CAF resistance	Panasonic, Isola, Nelco, Iteq,			
Advanced Materials - Polyimides	Arlon, Nelco, Isola, Panasonic, Hitachi			
Advanced Materials - RF	Rogers, Taconics, Arlon, Panasonic			
RF- Bonding and materials	Fusion Bonding, Bonding materials - 9250, 6750, FEP, PFA, 3M			
Flex Materials	Dupont, Panasonic			