SZXCEPCB — Technical Capability & Laminate Catalog 2026 Edition

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1. Core Manufacturing Capabilities — Materials, Stack-up & Inner Layer

Category	Specification	Standard Capability	Advanced Capability	Notes
Supported Laminates	**Standard FR-4**	Shengyi (S1141, S1000H, S1000-2M, S1600/L), TUC (TU-752/768/862HF/865), Kingboard (KB6160/6165F/6167F), ITEQ IT-180A, Isola 370HR, Panasonic R-1566(W)/R-1755M, EMC EM-370(Z)		See Stock List
	High-Speed FR-4	TUC (TU-872 SLK, TU-863+, TU-883, TU-933+), ITEQ (IT-170GRA1/2, IT-968/G), Panasonic Megtron (M4 R-5725, M6G R-5775G, M7GN R-5785GN, R-5575), Shengyi S7439/S6, Isola MT40/MT77, EMC EM-890K		Low-loss digital/RF
	PTFE High-Frequency	Rogers (RT/duroid 5880/5870, AD255C, RO3003/G2, RT/duroid 6035HTC), Taconic / AGC (TLY-5/5Z, NF-30, RF-35, TSM-DS3/M), Wangling (F4B, F4BM, F4BMX, F4BME, F4BTM, F4BTMS, TFA-2), Shengyi LNB33/mmWave77, RA300, FSD220G, CNC350T		In-stock grades on P.3
	Hydrocarbon / Ceramic	Rogers (RO4350B, RO4003C, RO4725JXR, RO4830 LoPro, Kappa 438, 25FR, TMM-10), Shengyi S7136/S7136H, Wangling WL-CT300		Hybrid FR-4 ready
	Flexible / Polyimide	Shengyi SF202/2018DR, DuPont AP-8525R, Panasonic R-F777; PI (Shengyi SH260/M), Thermal (ST115G), Substrate (SI10USR)		Custom review
	Custom / Special	Rogers + FR-4 hybrid multilayer stack-ups, metal-backed RF boards, heavy copper RF modules		DFM review included
Dimensions & Layers	**Max Panel Size (PNL)**	FR-4/HS: 546 × 620 mm PTFE/Hydrocarbon: 457 × 609 mm	FR-4/HS: 610 × 914 mm PTFE/Hydrocarbon: 520 × 620 mm	Oversize (e.g. 600×600, 400×1150) by review
	Layer Count & Lamination	1 – 32 layers Blind/Buried: ≤3 cycles (FR-4), ≤2 (PTFE)	1 – 50 layers (Custom up to 72 layers) Min delivery size: unlimited (panelize <100×100 mm)	High-layer custom review
Thickness & Copper	**Finished Board Thickness**	1–2L: 0.2 – 5.4 mm Multilayer: 0.4 – 5.4 mm	1–2L: 0.2 – 12.0 mm Multilayer: 0.36 – 12.0 mm	>9.0 mm requires engineering review
	Thickness Tolerance	D < 1.0 mm: ±0.1 mm | D ≥ 1.0 mm: ±10% | Lamination thickness tol.: ≤10% (Adv: ≤8%)		Min 2L: 0.2mm; 4L: 0.36mm
	Min Core / Dielectric	Min Core: 0.064 mm Core-to-Cu: 0.065 mm (1080H)	Min Core: 0.05 mm Core-to-Cu: 0.05 mm (106H); Core-to-Core: 0.06 mm	
	Inner / Outer Copper	Inner: 1/3 oz – 12 oz | Outer: 1 oz – 13 oz	Inner: 1/4 oz – 15 oz | Outer: 0.5 oz – 30 oz	≥6 oz double-side etch
Impedance, Warpage & Inner Layer	**Bow & Twist (Warpage)**	THT ≤ 1.5% | SMT ≤ 0.75%	THT ≤ 1.0% | SMT ≤ 0.5%	
	Impedance Tolerance	<50 Ω: ±5 Ω | ≥50 Ω: ±10%	<50 Ω: ±3.5 Ω | ≥50 Ω: ±8%	Tighter RF review
	Trace Width/Space Tol.	Normal: <10 mil ±1 mil; ≥10 mil ±20%	Impedance lines: <10 mil ±1 mil; ≥10 mil ±10%	Limit ±20 µm thin-Cu
	Inner Min Trace / Space	1/3 oz: 3/3 mil | H oz: 3.5/4 mil 1 oz: 4/4.3 mil | 2 oz: 6/7 mil	1/3 oz: 2.7/2.7 mil | H oz: 3/3 mil 1 oz: 3.5/3.5 mil | 2 oz: 5/5.5 mil	3–6 oz up to 14/20 mil

Category	Specification	Standard Capability	Advanced Capability	Notes
Inner Clearances	**Annular Ring & Hole-to-Trace**	Annular ring (H oz): ≥5.5 mil (4L), ≥6.5 mil (6L), ≥7.5 mil (8L+) Hole-to-trace: ≥5 mil (4L), ≥6 mil (6–8L), ≥7 mil (10L+)	Hole-to-trace (Adv): ≥5 mil (4–6L), ≥5.5 mil (8L), ≥6 mil (10L+) Anti-pad: ≥7 mil (4L), ≥8 mil (6L), ≥10 mil (8L/PTFE/Slot)	Blind/PTFE 1x lam ≥7 mil, 2x lam ≥8 mil

2. Drilling, Outer Layer, Solder Mask, Via Plugging, Surface Finish & HDI

Category	Specification	Standard Capability	Advanced Capability	Notes
Drilling & Special Holes	**Min Mechanical Drill**	≤1.6 mm: 0.15 mm | 1.6–2.0 mm: 0.20 mm | >2.0 mm: 0.20 mm	≤2.0 mm: 0.15 mm | >2.0 mm: 0.20 mm Drill range: 0.15 – 6.50 mm (>6.50 mm routed)	Registration ≤4 mil
	Aspect Ratio	Blind via ≤ 0.8:1 | Through-hole ≤ 12:1	Blind via ≤ 1:1 | Through-hole ≤ 15:1	Max plating AR 17:1 (≥0.2mm)
	Hole Size & Position Tol.	PTH ±3 mil | NPTH ±2 mil | Press-fit ±2 mil Hole-to-hole ±0.05 mm | To outline ±0.10 mm	PTH ±2 mil | NPTH ±2 mil | Press-fit ±2 mil Hole-to-hole ±0.03 mm | To outline ±0.10 mm	Same net ≥6 mil; diff net ≥10 mil
	Countersink / Counterbore	Angles: 45°, 60°, 82°, 90° (std), 100° | Depth-controlled drill 0.5–1.8 mm (±0.1/±0.05 mm); routed >1.8 mm		Depth tol ±0.15 / ±0.10 mm
	Backdrilling (Stub Removal)	Inner trace clearance ≥7 mil; outer ≥6 mil	Inner ≥6 mil; outer ≥5 mil; Stub ≤10 mil; Depth ±0.1 mm	High-speed/RF
	Castellated Holes (PTH Half-Hole)	Hole diameter: 0.4 – 6.35 mm (drilled), ≥6.4 mm (routed) | Edge clearance ≥0.2 mm		RF modules
Outer Layer & Plating	**Outer Min Trace / Space**	Pattern plate: 1/3 oz 3.5/3.5 mil | H oz 4/4 | 1 oz 5/5 Acid etch: 1 oz 4.5/4.5 | 2 oz 7/7.2 mil	Pattern plate: 1/3 oz 3/3 mil | H oz 3.5/3.6 | 1 oz 4/4.4 Acid etch: 1 oz 4/4 | 2 oz 6.5/6.3 mil	Up to 6 oz heavy Cu
	Min Outer Annular Ring	Pattern plate (THT/Via): H oz 5/4 mil, 1 oz 6/5, 2 oz 7/6	Acid etch (THT/Via): 1 oz 7/5 mil, 2 oz 8/7, 3 oz 9/8	
Solder Mask & Silkscreen	**Solder Mask**	Green, matte green, red, yellow, blue, purple, white, black Mask bridge: Green ≥3 mil; Matte/Blue ≥4 mil; Others ≥5 mil	Thickness: ≥10 µm on trace, ≥8 µm corner, 20–40 µm base Solder mask dam & via plugging 0.15–0.6 mm	Immersion Tin bridge min 4 mil
	Legend & QR Codes	Black, white (Std) | Yellow, purple, etc. (Adv) 1 oz min width/height: ≥4.5 / ≥27 mil	Silkscreen QR: 8×8 mm (Adv 6×6 mm) Laser-marked QR: 5×5 mm (Adv 2×2 mm)	Ink thickness ≥12 µm
Via Plugging & Special Masks	**Carbon Ink & Peelable Mask**	Overlap ≥6 mil | Carbon-to-carbon ≥16 mil | To pad ≥10 mil	Overlap ≥4 mil | Carbon-to-carbon ≥14 mil | Peelable ≥12 mil	
	Resin / Copper Plug & VIPPO	Resin plug: 0.15–1.0 mm (0.2–8.0 mm thick, max 660×800 mm) | Copper paste plug: 0.25–0.5 mm (0.2–8.0 mm thick) Via-in-Pad (POFV): 0.15–0.65 mm, FR-4 ≥0.3 mm / PTFE ≥0.5 mm; dimple ≤76 µm (Adv) / ≤127 µm (Std)		IPC-6012C cap plating
Profiling & Beveling	**Outline, Slots & V-Cut**	Outline ±0.1 mm | PTH slot ≥0.6 mm (±0.1 mm) V-Cut: 30° (20°/45°/60°), 0.4–3.0 mm, tol ±0.1 mm	Outline ±0.05 mm | Drilled slot 0.4–0.6 mm (±0.05 mm) V-Cut: 0.4–3.2 mm, tol ±0.05 mm; Jump V-Cut ≥8 mm	Parallel V-Cut ≥2 mm
	Controlled Depth & Gold Finger	Depth tol ±0.15 mm | Size tol ±0.13 mm	Depth tol ±0.10 mm | Size tol ±0.10 mm Gold finger bevel: 15°–45° (30° std ±5°), remaining edge 0.3±0.1 mm	
Surface Finishes	**ENIG / ENEPIG**	ENIG: Ni 120–300 µ″, Au 1–5 µ″; thickness 0.2–4.5 mm; max 600 × 1200 mm ENEPIG: Ni 120–300 µ″, Pd 1–2 µ″ (up to 20 µ″), Au 1–5 µ″; thickness 0.3–4.0 mm; max 600 × 900 mm		Preferred for RF/HF
	Electrolytic Soft/Hard Gold	Ni 80–300 µ″, Au 1–80 µ″; thickness 0.6–4.0 mm; max 600 × 600 mm (one side can exceed 600 mm)		Wire-bond & edge fingers

Category	Specification	Standard Capability	Advanced Capability	Notes
	HASL (Leaded & Lead-Free)	Tin 1–40 µm; thickness 0.3–5.4 mm; max 1300×400 mm (1L) / 650×560 mm (2L/ML)		Min pad 0.25/0.28 mm
	OSP / Imm. Silver / Imm. Tin	OSP: 0.20–0.60 µm (0.4–5.0 mm) | Imm. Silver: 0.15–0.40 µm (0.4–4.0 mm) | Imm. Tin: 1.0–1.3 µm (0.3–4.0 mm)		Short side <610 mm
HDI Capabilities	**Laser Microvias & Steps**	1–3 step HDI | Laser via 4–6 mil | AR 0.5:1–0.8:1 Dielectric 2.5–4 mil | Bottom pad D+8 mil | Pad ring 4–5 mil	1–6 step HDI | Laser via 3–6 mil | 1-step AR ≤0.9:1 Dielectric 2.5–5 mil | Bottom pad D+6 mil | Pad ring 4 mil	Max PNL 470×620 mm (≥0.6mm)

3. In-Stock High-Frequency Laminate Matrix (Quick-Turn Ready)

Standard thicknesses kept in stock at our Shenzhen facility for rapid prototyping and volume fabrication. Custom dielectric thicknesses and Rogers/Taconic/F4B + FR-4 hybrid stack-ups are available upon request.

Manufacturer	Material Grade	Available Thicknesses (mm)	Dk (Er)	Df (Loss)
Rogers	**RO3003**	0.127 / 0.254 / 0.508 / 0.762 / 1.524	3.00	0.0010
	RO3006	0.127 / 0.254 / 0.635 / 1.27	6.15	0.0020
	RO3010	0.127 / 0.254 / 0.635 / 1.27	10.20	0.0022
	RO4350B	0.127 / 0.168 / 0.254 / 0.338 / 0.422 / 0.508 / 0.762 / 1.016 / 1.524	3.48	0.0037
	RO4003C	0.203 / 0.305 / 0.406 / 0.508 / 0.813 / 1.524	3.38	0.0027
	RT/duroid 5870	0.127 / 0.254 / 0.508 / 0.787 / 1.575	2.33	0.0012
	RT/duroid 5880	0.127 / 0.254 / 0.338 / 0.508 / 0.787 / 1.0 / 1.575	2.20	0.0009
	RT/duroid 6002	0.254 / 0.508 / 0.762 / 1.524	2.94	0.0012
	RT/duroid 6035HTC	0.254 / 0.508 / 0.762 / 1.524	3.50	0.0013
	RT/duroid 6006	0.635 / 1.27	6.15	0.0027
	RT/duroid 6010	0.635 / 1.27	10.20	0.0023
Taconic	**TLY-5**	0.127 / 0.254 / 0.338 / 0.508 / 0.787 / 1.0 / 1.575	2.20	0.0009
	TLA-6	0.762 / 1.45	2.62	0.0012
	TLC-32	0.508 / 0.787 / 1.14 / 1.575	3.20	0.0030
	RF-35	0.127 / 0.254 / 0.508 / 0.762 / 1.524	3.50	0.0018
	RF-35TC	0.127 / 0.254 / 0.508 / 0.762 / 1.524	3.50	0.0011
	RF-10	0.254 / 0.508 / 0.635 / 1.524	10.20	0.0025
	TSM-DS3	0.127 / 0.254 / 0.508 / 0.762 / 1.524	3.00	0.0011
	TLX-0 / 9 / 8 / 7 / 6	0.127 / 0.254 / 0.508 / 0.787 / 1.575	2.45 – 2.65	0.0012 – 0.0015
Wangling (F4B / PTFE)	**F4BM217**	0.127 / 0.254 / 0.508 / 0.762 / 1.016 / 1.524 / 2.0 / 3.0 / 4.0 (Other thicknesses can be customized upon request)	2.17	0.0010
	F4BM220		2.20	0.0010
	F4BM255		2.55	0.0013
	F4BM265		2.65	0.0013
	F4BM300		3.00	0.0018
	F4BTM350		3.50	0.0025
	F4BTMS430		4.30	0.0019
	F4BTMS450		4.50	0.0019
	F4BTMS615		6.15	0.0023
	F4BTMS1000		10.20	0.0023
Arlon	**AD250**	0.508 / 0.762 / 1.524	2.50	0.0013
	AD255	0.508 / 0.762 / 1.524	2.55	0.0013
	AD300	0.762 / 1.524	2.94	0.0021
	AD350	0.762 / 1.524	3.50	0.0033
	AD1000	0.254 / 0.381 / 0.508 / 0.635 / 0.762 / 1.27 / 1.524	10.20	0.0023