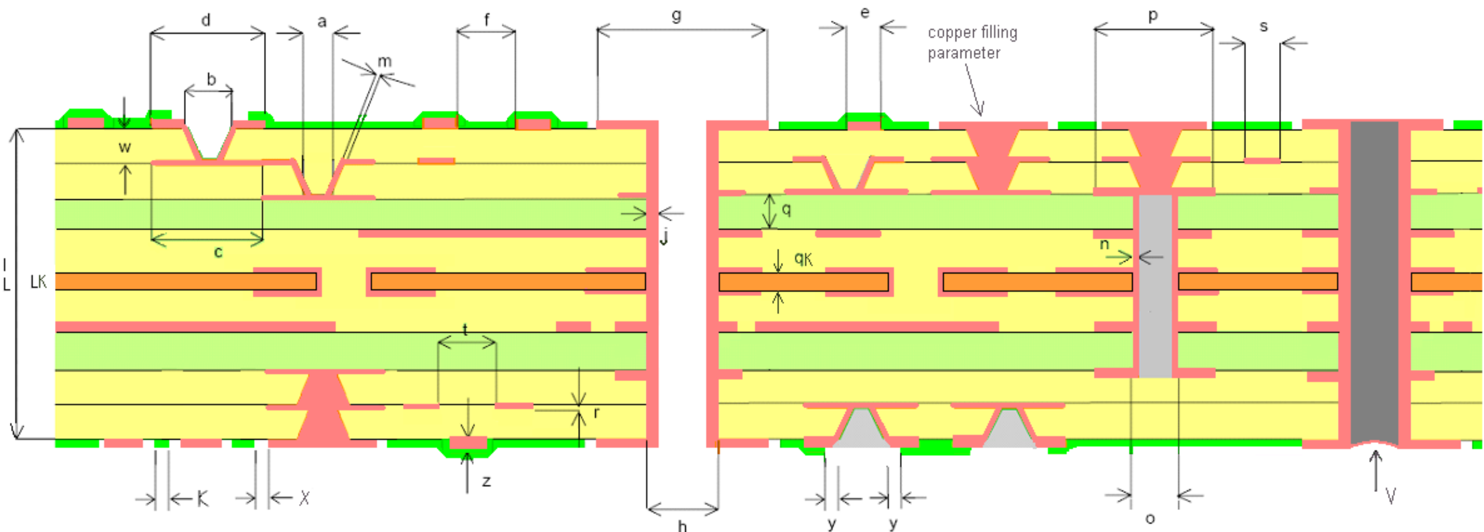
TECHCI
Rhône Alpes

OUR TECHNICAL "ABILITIES"

TECHCI R-A– Technical Capability Chart		Classification								
Item	**Description (all relative measure are expressed in µm)**	**Standard**				**Advanced**			**Engineering R&D**	
		5	6	7	8	9	10	11		
Track & Gap	min Track to Track (TT)/Track to Pad (TP)/Pad to Pad (PP)/Thermal Line Width (TW)	150	125	100	85	80	75	70	60	50
	min Track Width (MTW) / min Thermal Gap (GAP)				85	80	75	70	60	50
Ring Rigid pcb	min Outer Layer Annular Ring (OAR) on Production Hole Diameter (PHD)	150	125	100	100	100	100	100	87	75
	min Inner Layer Annular Ring (IAR) / Thermal Annular Ring on PHD	175	150	150	125	125	100	87	75	75
Hole Diameter	min Production Hole Diameter (PHD) for thickness 1.6 mm (Others: see table)	400	350	300	200	200	200	150	125	100
	max aspect ratio PTH: see also table (Thickness / PHD)	6	7	8	9	10	11	12	14	16
µvia – Burried via	min blind µvia drill diameter - material with glass				100	90	80	70	50	50
	max blind µvia aspect ratio - material with glass				0.8	0.9	0.7	0.8	1.0	1.0
	min blind µvia drill diameter - material without glass				100	100	87	75	67	50
	max blind µvia aspect ratio - material without glass				0.85	0.95	0.75	0.85	1.0	1.0
	µvia top pad annular ring				75	70	65	50	50	50
	µvia landing pad annular ring				75	70	65	50	50	50
	µvia holewall distance to cu				160	150	140	120	110	100
	max number of burried vias			1	2	3	4	6	8	10
Drill /Cu Distance	PTH to cu on inner layers (means IAR + Value)	+75	+75	+75	+75	+75	+75	+68	+60	+50
	NPTH to cu on inner layers /NPTH Routing always>250 µm (means IAR+Value)	+50	+50	+50	+50	+50	+50	+50	+50	+50
	NPTH to cu on outer layers (NPTH Routing always >200 µm)	250	200	200	200	200	150	125	100	75
Cu Thickness	Outer layer: maximum total cu thickness that can be etched (no minimum)	30	30	25	25	20	20	15	15	12
	Inner layer: maximum total cu thickness that can be etched (no minimum)	60	45	35	25	20	20	15	15	12
Solder Mask	solder mask annular ring (MAR) & conductor overlap (MOC): typical	80	70	60	50	40	40	35	35	30
	solder mask min segment (MSM) (If TECHCI creates SM, MSM >= 100)	125	110	100	100	90	90	80	70	60
Build up	max pcb thickness (mm)				3.2	4.00	4.00	4.00	4.00	4.00
	min pcb thickness tollerance (%)	10	10	10	10	10	8	7,5	5	5
	max nr. Layers (for the Flex layer add 1unit in complexity)	12	16	18	20	22	24	26	32	40

Ring ML Flex & Flex-Rigid Flex layers (for rest = 0) should be 50 µm bigger then on rigid layers;

Snapshot of some design parameters



Symbol	Parameter	Value
A/B	Min Vias laser	100 µm
C/D	Min. Annular ring on laser via	>+75 µm
E/F	Min. line/space on base Cu 9 µm–Outer layer	85 µm
G/P	Min. Annular Ring on Burried hole and PTH	>+125 µm
H/O min	Min. Mech. Plated Through Hole → I value	0.15 mm
H max	Max. Plated Through Hole	Unlimited
O max	Max. Plated Burried hole	1.2 mm
I min	Min. core thickness on DS - flex	25 µm
I max	Max. pcb thickness on ML	4 mm
L	Max. No. of Layers	40 layers
Lk	Max. No. of Flex Layers	18 layers
M	Min. Cu th.ss in laser/blind vias	>12 µm

Symbol	Parameter	Value
J/N	Min. Cu Th.ss in Burried and Through vias	>25 µm
Q	Min. thickness rigid base material	50 µm
Qk	Min. thickness flexible base material	25 µm
S/T	Min. line/space on base Cu 17 µm–Inner layer	75 µm
R	Final Copper Th.ss Inner layer	IPC accordance
Z	Final Copper Th.ss Outer layer	IPC accordance
V	Dimple in resin filled plated Through hole	< 20µm
W	Min. prepreg core thickness	50 µm
Y	Min. Solder mask Opening on vias	50 µm
K	Minimum Solder mask dam	100 µm
X	Min. solder mask clearance	50 µm
Cu Filling	Design parameter for best copper filling	W=55/B=100µm

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Some technical details

- Plated Through Hole: minimum finished diameter 150 µm - Aspect Ratio for PTH: ≤ 12
- Blind Microvia: minimum diameter 100 µm (laser drilled) – Maximum Aspect Ratio for blind vias: ≤ 1
- µVias treatment: Capped through vias copper 13 µm and Copper filling blind vias;
- Plated half-trough hole + plated edges : minimum diameter 1,0 mm by drilling and routing
- Plated half-trough hole + plated edges : minimum diameter 0,6 mm by routing only (tool diameter 0,6 mm)
- Fine line: minimum track/spacing is 75 µm, ± 20 % tolerance
- Layer count: standard up to 24, special requirement up to 40 evaluated with Tech. Dept.
- Flexible Layer count: up to 6 inner layer in a Rigid-Flex build up
- Sequential lamination up to 3+N+3 (SBU)
- Cu thickness: Thin copper 5 µm, 9 µm; 12 µm, from 17 µm, 35 µm, 70 µm, 105 µm and heaviest up to 400 µm
- Minimum Inner layer thickness: 50 µm, with 17.5 µm copper
- Minimum Prepreg thickness: 65 µm (1 x 1080)
- Minimum Kapton thickness : 50 µm, 25 µm special requirement
- Maximum PCB thickness : 4 mm
- Maximum PCB dimensions:
  - *Multiline : 464x560 mm*
- Solder Mask: Taiyo PSR 4000SG 100HF (Green) or special and coloured;
- Solder Mask capability: Solder Dam 100 µm standard; Clearance down to 50 µm
- Vias Treatment: tenting and plugging process like per IPC classification
- Resin holes plugging : *TAIYO THP-100DX1, specific prepreg EMC 827.*
- Printing application: legend, Peelable mask
- Finishing: Hasl with/without Lead; ENIG (Al bondable); ENEPIG (Au bondable); Immersion Tin,Galvanic hard and soft gold
- Heat Dissipator: Aluminium, copper

Base materials for PCBs

Standard FR4, high Tg Laminates also Halogen Free and specific for High Speed Digital:

- Mid Tg epoxy standard : Isola IS400 -Tg 150 ˚C
- High Tg 180 °C epoxy (without filler): ISOLA IS410
- High Tg 180 °C epoxy (with filler): ITEQ 180I, EMC 827 I, NELTEC 4000.29, Isola PCL370HR.
- High Tg 170 °C epoxy – Halogen Free: Iteq IT170G
- High speed digital applications 10 GHz : NELTEC N4000-13EPSI; N4800-20SI.

High-performances materials for avionic/military application:

- Polyimide Resin System : Ventec VT901 ; NELTEC N 7000VO ; Arlon 33N, 35N, 85N.
- Polyimide Thermount®: ARLON® 85NT.
- Copper/Invar/Copper : typical 150 µm thick - 17/120/17 µm

Substrates covering Kapton® for flexible circuits:

- Flexible Laminates-Kapton® based : DuPont PYRALUX LF ; PYRALUX FR ; PYRALUX AP
- Flexible Laminates-Polyimide based : ITEQ Adhesive less.
- EMI Shielding Film TATSUTA® : SF-PC 3300

High Frequency materials Teflon® based and non-Teflon based:

- Rogers®: Duroid Copper/Brass supported; RO3003; TMM10
- Arlon®: DiClad 527.
- Rogers®: RO4350 ; RO4003.
- Arlon®: 25N ; 25FR.

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