



Technical Implementation

Products	
1- and 2-sided printed circuit Boards	
Multilayer (up to 24 layer)	
Flexible printed circuits	
Rigid-flex printed circuits	
HDI/SBU technology	
Aluminium Core PCB's (IMS)	

Base Material		Standard	Special**
Circuit Board Format (max.) [mm]		459 x 264	508 x 361
Base material		FR4	on request
Base material thicknesses for single and double sided circuit boards [mm]		0,5 / 0,8 / 1,0 / 1,2 / 1,55 / 2,0 / 2,4	on request
		conform to IPC-4101 class B/L; 1,55mm class M ($\pm 0,075$ mm)	
Multilayer thicknesses [mm]		0,5 - 3,2	on request
Tolerance		Nominal dimension $\pm 10\%$	
Inner layer thicknesses [μm]		50 / 100 / 150 / 200 / 250 / 300 / 360 / 410 / 510 / 610 / 710	on request
Prepreg	thickness [μm] type	50 63 115 180 106 1080 2116 7628	on request

Copper-Thickness		Standard	Special**
Inner layer		18 μm , 35 μm	70 μm , 105 μm , on request
Inner layer (tolerance depends on layout)		35 μm	18 - 105 μm
Layer in the holes		$\geq 20 \mu\text{m}$	on request

Finish		Standard	Special**
Solder resist	Varnish	green	blue, red, black, yellow, white, transparent; flexible varnish (green)
	Film		Coverlay Vacrel (75 μm)
Silk Screen		white	yellow, green, blue, red, black
Finishing		electroless Ni/Au (bondable and solderable); electroless tin; HAL lead-free; OSP;	HAL SnPb; electroplated gold; electroplated contact gold

Special Technologies
Hole Plugging
Micro-Via-Filling

Layout guidelines		Standard	Special**
Smallest track width		150 μm	75 μm
Minimum track spacing		150 μm	75 μm
Pad size to hole diameter (pad annulus left after drilling), note: drilled hole diameter > finished diameter	Outer layer:	$\geq 100\mu\text{m}$	$\geq 50\mu\text{m}$
	Internal layer:	$\geq 125\mu\text{m}$	$\geq 100\mu\text{m}$
	Clearance on internal layer:	$\geq 300\mu\text{m}$	$\geq 200\mu\text{m}$
Solder resist: Minimum residual tab width		100 μm	75 μm
Silk-screen minimum line width		100 μm	75 μm



Hole/Mill	Standard	Special**
Smallest finished hole diameter (TPH)	0,10 mm	0,05 mm
TPH aspect ratio (ratio of through-plated hole diameter to board thickness)	$\geq 1 : 8$	$\geq 1 : 10$
Blind via aspect ratio (ratio of blind via diameter to hole depth)	$\geq 1 : 1$	on request
Tolerance range of finished hole diameter (HAL)	0,15mm (-0,05mm/+0,10mm)	0,10mm
Tolerance of outer dimensions (milled)	DIN 7168-m, DIN ISO 2768-m	DIN 7168-f, DIN ISO 2768-f
Smallest milled radius	1,00mm	0,40mm
Offset of milling to hole pattern	$\leq 0,20$ mm	$\leq 0,10$ mm

Offset	Standard	Special**
Milling to hole pattern	$\leq 200\mu\text{m}$	$\leq 100\mu\text{m}$
Milling to track pattern	$\leq 200\mu\text{m}$	$\leq 200\mu\text{m}$
Scoring to hole pattern	$\leq 150\mu\text{m}$	$\leq 100\mu\text{m}$
Holes	$\leq 50\mu\text{m}$	$\leq 50\mu\text{m}$
Holes (second clamping)	$\leq 200\mu\text{m}$	$\leq 100\mu\text{m}$
Hole pattern to track pattern	$\leq 100\mu\text{m}$	$\leq 50\mu\text{m}$
Track pattern to solder resist	$\leq 75\mu\text{m}$	$\leq 50\mu\text{m}$
Tolerance of residual tab by scoring	$\leq 100\mu\text{m}$	$\leq 75\mu\text{m}$

Standards	Standard	Special**
Test standard	IPC-A-600 Klasse II	As specified by customer
Controlled impedance	$\pm 10\%$	$\pm 5\%$
UL listed (file number E228204)	UL94V-0; UL796	Material listing on request

**according to prior agreement with CONTAG

The details given here relate to a standard job. For special circuit designs or requirements, other values may be needed as a basis. Please discuss your special requirements with our team, before placing an order (+49 30 351 788 – 0 or team@contag.de).

The manufacture of printed circuits is subject to continuous improvement, which then leads to additional technical options. This data sheet is thus regularly updated. If necessary, please request the latest edition.