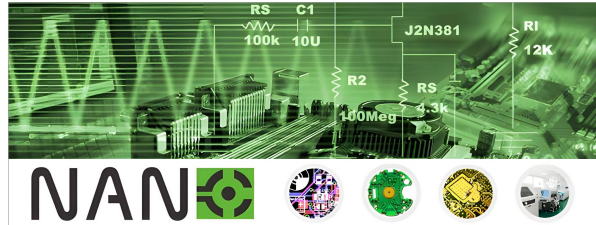


**ELECTRONICS
DESIGN AND MANUFACTURING
SERIES**

**HIGH DENSITY
INTERCONNECT
PRINTED CIRCUITS**

Nanotech Elektronik is an EMS company with a wide range of services

- PCB Services
- SMT and THT assembly
- Electronic components
- BOM Services
- Prototypes
- Turnkey manufacturing



Our technological capabilities in the scope of assembly

| Production and assembly of printed circuit boards | |
|---|--|
| Minimum order quantity | from 1 piece upwards |
| Maximum PCB size (X x Y) | automatic SMT assembly - 610 mm x 510 mm; THT assembly - no restrictions |
| Minimum PCB Size (X x Y) | automatic SMT assembly - 50 mm x 50 mm; THT assembly - no restrictions |
| SMD components assembly | |
| Component size range | from 0,4 mm x 0,2 mm (01005) to 45 mm x 100 mm |
| Component height (max) | 15 mm |
| Types of components | Chips: 01005, 0201, 0402, 0603, 0805, 1206, 1210, 1812, 2010, 2225, 2512 |
| | IC: PLCC18-PLCC84, LCC20-LCC84, SO, HSOP, SOJ18-SOJ44, MSOP8-MSOP10, SSOP8-SSOP64, HSOP20-HSOP44, TSSOP8-TSSOP80, TSOP28-TSOP56, TQFP32-TQFP176, LQFP32-LQFP256, QFP44-QFP304, CSP40-CSP56 (0,5), BGA46-BGA100 (0,75-0,8), LBGA48-LBGA280 (0,75-0,8), BGA81-BGA324 (1,0) up to LBGA1936 (1,0), BGA208 (1,27) up to LBGA1225 (1,27), BGA169 (1,5) up to LBGA400, CBGA121 - CBGA1089 |
| Assembly accuracy (X, Y) | 50µm for chips 01005, 0201, 0402 |
| | 75µm for chips > 0402, SOIC |
| | 30µm for QFPs |

Product quality is assured by a multi-level control system at every stage of the production cycle. The manufactured product will fully comply with the provided technical requirements and standards of the international association of electronics manufacturers (Institute of Printed Circuits - IPC).

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Contacts

Feel free to contact us if you have further questions. You will always obtain comprehensive information both in the scope of designing and producing printed circuit boards, as well as practical information specifying the product manufacture and delivery time. We are always happy to share our knowledge and experience, in addition to taking care of the highest quality the projects implemented by us, which can be confirmed by the line-up of our clients in the EU and worldwide.

We are always willing to prepare a detailed cost estimate for the production of printed circuit boards, purchase of electronic components, assembly works consisting in mounting components on PCBs and other additional works. Owing to this, you will be able to find out about the production cost of both the first prototype batch and the cost of serial production after sending us the technical documentation of the project.

You can also contact us by phone: **+48 338 338 338**
or write to our email address: **office@nanotech-elektronik.com**
(we communicate in English, German and Polish).

Sincerely,
The Team of Nanotech Elektronik.

1. When HDI technology is used

A large number of signal connections with simultaneous requirement to reduce the size of the electronic device forces designers to introduce an increasing number of layers into the layout of printed circuit. An increase in the number of layers leads to an increase in the thickness of the PCB and imposes more stringent requirements on the design of vias as interlayer connections.

This significantly complicates the layout design process and often leads to subsequent technological complexity, and as a result, has a bad effect on the cost of the printed circuit board.

Despite the increase in the number of layers, designers often face the problem of routing signal connections from BGA, especially in the case of a large number of contact pads with a small pitch.

HDI (High Density Interconnect) technology allows you to reduce the number of signal layers on the printed circuit board using micro via and via-in-pads. Thus, the use of initially more expensive HDI technology can lead to a reduction in the price of the printed circuit board by using fewer layers than if the same printed circuit board was implemented using traditional technology.

Within the HDI technology, the complexity of the printed circuit board can be significantly reduced by using blind micro-vias that are placed directly in the soldering pads of BGA and connect the outer layers.

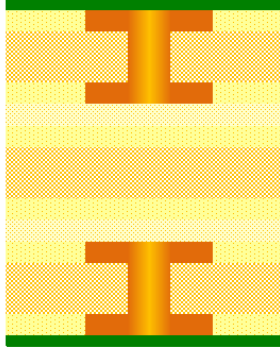
2. Brief overview of HDI PCB

HDI PCB are printed circuit boards that have an increased trace density per unit surface area compared to conventional multilayer boards.

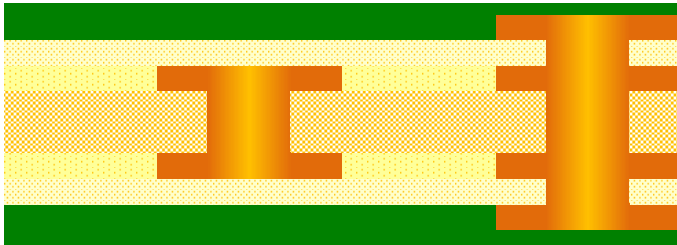
HDI printed circuit boards have the following typical parameters:

- Thinner spaces and conductors, ≤ 75 microns
- Laser micro-vias, diameter ≤ 100 microns
- Annular rings of micro-vias of small size, ≤ 260 microns
- High density of soldering pads, more than 20 per cm^2
- Special copper foil for outer layers (RCC foil - Resin Coated Copper)
- Based on sequential lamination

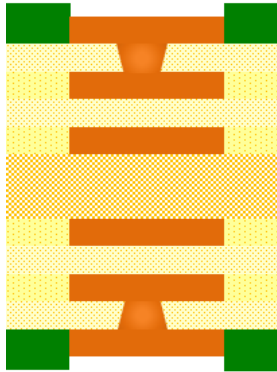
Blind holes (Blind Via) – holes connecting the outer layer with one or more inner layers. First, end-to-end drilling is performed separately in each of the cores, then a circuit pattern with metallization is formed and pressed as part of a multilayer board:



Hidden or buried holes (Buried Vias) – holes that do not go out, but connect the inner layers together. They are drilled through cores using a standard drilling technology, and then pressed into a multilayer board:

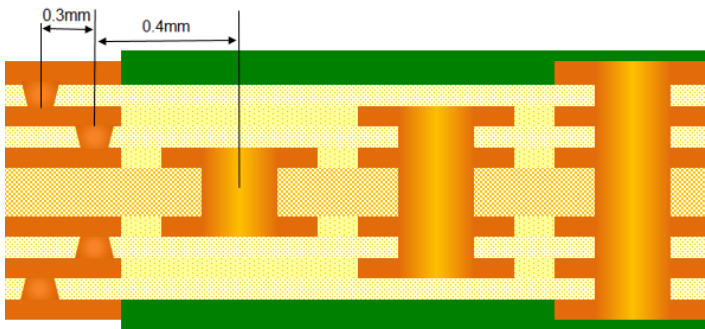


Laser via (Micro-via) – a hole formed by a laser beam with depth control through a thin layer of prepreg, which allows the holes of small diameter (less than 0,1mm). Such micro-vias have an aspect ratio of 1:1 (the ratio of the thickness of the prepreg layer to the diameter of the micro-via). That is why the depth of the micro-vias could not exceed their diameter:



Micro-vias are formed after pressing the stack-up of cores and prepregs. Further, the metallization is made simultaneously with the metallization of the other through holes and vias.

Please note that it is not recommended to place micro-vias over the buried vias because this increases the mechanical stresses in the PCB structure. Optimal distances are shown in the diagram below:



3. Recommended HDI build-ups for printed circuit boards

Below, you can find a list of the most common variants of HDI layer build-ups.

4-layer HDI PCB build-ups with single core

| 1-2-1 Structure | | Required board thickness: 0,8 +/- 10% | | |
|--------------------------------------|------------|---------------------------------------|----------|-------------------|
| Layer | | Thickness, um | Material | |
| Nr. 1 | SMT TOP | 1 | 20 | Solder mask |
| | INT1 | 2 | 18 | Final Copper Foil |
| | INT2 | 3 | 75 | Laser prepreg |
| | BOTTOM SMB | 4 | 18 | Copper Foil |
| | | | 510 | Core |
| | | | 18 | Copper Foil |
| | | | 75 | Laser prepreg |
| | | | 18 | Final Copper Foil |
| | | | 20 | Solder mask |
| Approximate board thickness: 0,75 mm | | | | |

| 1-2-1 Structure | | Required board thickness: 1,0 +/- 10% | | |
|--------------------------------------|------------|---------------------------------------|----------|-------------------|
| Layer | | Thickness, um | Material | |
| Nr. 2 | SMT TOP | 1 | 20 | Solder mask |
| | INT1 | 2 | 18 | Final Copper Foil |
| | INT2 | 3 | 75 | Laser prepreg |
| | BOTTOM SMB | 4 | 18 | Copper Foil |
| | | | 700 | Core |
| | | | 18 | Copper Foil |
| | | | 75 | Laser prepreg |
| | | | 18 | Final Copper Foil |
| | | | 20 | Solder mask |
| Approximate board thickness: 0,95 mm | | | | |

| 1-2-1 Structure | | Required board thickness: 1,6 +/- 10% | | |
|--------------------------------------|------------|---------------------------------------|----------|-------------------|
| Layer | | Thickness, um | Material | |
| Nr. 3 | SMT TOP | 1 | 20 | Solder mask |
| | INT1 | 2 | 18 | Final Copper Foil |
| | INT2 | 3 | 75 | Prepreg |
| | BOTTOM SMB | 4 | 18 | Copper Foil |
| | | | 1400 | Core |
| | | | 18 | Copper Foil |
| | | | 75 | Prepreg |
| | | | 18 | Final Copper Foil |
| | | | 20 | Solder mask |
| Approximate board thickness: 1,55 mm | | | | |

Possible drilling types for 4-layer HDI PCB

| 1-2-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6 +/- 10% | | | |
|-----------------|---------|--|------|--|-------------------|
| | | Layer | | Thickness, um | Material |
| Nr. 4 | SMT TOP | 1 | | 20 | Solder mask |
| | | | | 18 | Final Copper Foil |
| | | | | 75 | Laser prepreg |
| | | | | 18 | Copper Foil |
| | INT1 | 2 | Core | | |
| | INT2 | 3 | | | |
| | BOTTOM | 4 | | | |
| | SMB | | | | |
| | | Possible types of holes: 1-2, 3-4 (microvia); 1-4 (PTH) | | Approximate board thickness: 0,75, 0,95, 1,55 mm | |

| 1-2-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6 +/- 10% | | | |
|-----------------|---------|---|------|--|-------------------|
| | | Layer | | Thickness, um | Material |
| Nr. 5 | SMT TOP | 1 | | 20 | Solder mask |
| | | | | 18 | Final Copper Foil |
| | | | | 75 | Laser prepreg |
| | | | | 18 | Copper Foil |
| | INT1 | 2 | Core | | |
| | INT2 | 3 | | | |
| | BOTTOM | 4 | | | |
| | SMB | | | | |
| | | Possible types of holes: 1-2, 3-4 (microvia); 2-3 (buried); 1-4 (PTH) | | Approximate board thickness: 0,75, 0,95, 1,55 mm | |

6-layer HDI PCB build-ups with single core

| 1-4-1 Structure | | Required board thickness: 0,7 +/- 10% | | | |
|-----------------|---------|---------------------------------------|------|---------------|-------------------|
| | | Layer | | Thickness, um | Material |
| Nr. 1 | SMT TOP | 1 | | 20 | Solder mask |
| | | | | 18 | Final Copper Foil |
| | | | | 75 | Laser prepreg |
| | | | | 18 | Copper Foil |
| | | | | 105 | Preprag |
| | | | | 18 | Copper Foil |
| | INT1 | 2 | Core | | |
| | INT2 | 3 | | | |
| | INT3 | 4 | | | |
| | INT4 | 5 | | | |
| | BOTTOM | 6 | | | |
| | SMB | | | | |
| | | Approximate board thickness: 0,65 mm | | | |

| 1-4-1 Structure | | Required board thickness: 1,0 +/- 10% | | | |
|-----------------|---------|---------------------------------------|------|---------------|-------------------|
| | | Layer | | Thickness, um | Material |
| Nr. 2 | SMT TOP | 1 | | 20 | Solder mask |
| | | | | 18 | Final Copper Foil |
| | | | | 75 | Laser prepreg |
| | | | | 18 | Copper Foil |
| | | | | 105 | Preprag |
| | | | | 18 | Copper Foil |
| | INT1 | 2 | Core | | |
| | INT2 | 3 | | | |
| | INT3 | 4 | | | |
| | INT4 | 5 | | | |
| | BOTTOM | 6 | | | |
| | SMB | | | | |
| | | Approximate board thickness: 0,95 mm | | | |

| 1-4-1 Structure | | Required board thickness: 1,6 +/- 10% | | | |
|-----------------|------------|---------------------------------------|---------------|-------------------|--|
| | Layer | | Thickness, um | Material | |
| Nr. 3 | SMT TOP | 1 | 20 | Solder mask | |
| | | | 18 | Final Copper Foil | |
| | | | 75 | Laser prepreg | |
| | INT1 | 2 | 18 | Copper Foil | |
| | | | 75 | Prepreg | |
| | | | 18 | Copper Foil | |
| | INT2 | 3 | 1000 | Core | |
| | INT3 | 4 | 18 | Copper Foil | |
| | | | 75 | Preprag | |
| | INT4 | 5 | 18 | Copper Foil | |
| | | | 75 | Laser prepreg | |
| | BOTTOM SMB | 6 | 18 | Final Copper Foil | |
| | | | 20 | Solder mask | |

Approximate board thickness: 1,55 mm

6-layer HDI PCB build-ups with two cores

| 1-4-1 Structure | | Required board thickness: 0,7 +/- 10% | | | |
|-----------------|------------|---------------------------------------|---------------|-------------------|-------------|
| | Layer | | Thickness, um | Material | |
| Nr. 4 | SMT TOP | 1 | 20 | Solder mask | |
| | | | 18 | Final Copper Foil | |
| | | | 75 | Laser prepreg | |
| | INT1 | 2 | 18 | Copper Foil | |
| | | | 130 | Core | |
| | | INT2 | 3 | 18 | Copper Foil |
| | | | 105 | Prepreg | |
| | INT3 | 4 | 18 | Copper Foil | |
| | | | 130 | Core | |
| | INT4 | 5 | 18 | Copper Foil | |
| | | | 75 | Laser prepreg | |
| | BOTTOM SMB | 6 | 18 | Final Copper Foil | |
| | | | 20 | Solder mask | |

Approximate board thickness: 0,65 mm

| 1-4-1 Structure | | Required board thickness: 1,0 +/- 10% | | | |
|-----------------|------------|---------------------------------------|---------------|-------------------|-------------|
| | Layer | | Thickness, um | Material | |
| Nr. 5 | SMT TOP | 1 | 20 | Solder mask | |
| | | | 18 | Final Copper Foil | |
| | | | 75 | Laser prepreg | |
| | INT1 | 2 | 18 | Copper Foil | |
| | | | 250 | Core | |
| | | INT2 | 3 | 18 | Copper Foil |
| | | | 185 | Prepreg | |
| | INT3 | 4 | 18 | Copper Foil | |
| | | | 250 | Core | |
| | INT4 | 5 | 18 | Copper Foil | |
| | | | 75 | Laser prepreg | |
| | BOTTOM SMB | 6 | 18 | Final Copper Foil | |
| | | | 20 | Solder mask | |

Approximate board thickness: 0,95 mm

Possible drilling types for 6-layer HDI PCB

| 1-4-1 Structure | | Required possible board thickness: 0,7, 1,0, 1,6 +/- 10% | | Thickness, um | Material |
|---|------------|--|--|---------------|-------------------|
| Nr. 7 | SMT TOP | 1 | | 20 | Solder mask |
| | INT1 | 2 | | 18 | Final Copper Foil |
| | INT2 | 3 | | 75 | Laser prepreg |
| | INT3 | 4 | | 18 | Copper Foil |
| | INT4 | 5 | | 18 | Prepreg |
| | BOTTOM SMB | 6 | | 18 | Copper Foil |
| | | | | 20 | Solder mask |
| Possible types of holes: 1-2, 5-6 (microvia); 1-6 (PTH) Approximate board thickness: 0,65, 0,95, 1,55 mm | | | | | |

| 1-1-2-1-1 Structure | | Required possible board thickness: 0,7, 1,0, 1,6 +/- 10% | | Thickness, um | Material |
|---|------------|--|--|---------------|-------------------|
| Nr. 8 | SMT TOP | 1 | | 20 | Solder mask |
| | INT1 | 2 | | 18 | Final Copper Foil |
| | INT2 | 3 | | 75 | Laser prepreg |
| | INT3 | 4 | | 18 | Copper Foil |
| | INT4 | 5 | | 18 | Laser prepreg |
| | BOTTOM SMB | 6 | | 18 | Copper Foil |
| | | | | 20 | Solder mask |
| Possible types of holes: 1-2, 2-3, 4-5, 5-6 (microvia); 1-6 (PTH) Approximate board thickness: 0,65, 0,95, 1,55 mm | | | | | |

| 1-(1-2-1)-1 Structure | | Required possible board thickness: 0,7, 1,0, 1,6 +/- 10% | | Thickness, um | Material |
|---|------------|--|--|---------------|-------------------|
| Nr. 9 | SMT TOP | 1 | | 20 | Solder mask |
| | INT1 | 2 | | 18 | Final Copper Foil |
| | INT2 | 3 | | 75 | Prepreg |
| | INT3 | 4 | | 18 | Copper Foil |
| | INT4 | 5 | | 18 | Laser prepreg |
| | BOTTOM SMB | 6 | | 18 | Copper Foil |
| | | | | 20 | Solder mask |
| Possible types of holes: 2-3, 4-5 (microvia); 2-5 (buried); 1-6 (PTH) Approximate board thickness: 0,65, 0,95, 1,55 mm | | | | | |

| 1-1-2-1-1 Structure | | Required possible board thickness: 0,7, 1,0, 1,6 +/- 10% | |
|---------------------|---------|--|-------------------|
| Layer | | Thickness, um | Material |
| Nr. 10 | SMT TOP | 20 | Solder mask |
| | 1 | 18 | Final Copper Foil |
| | INT1 | 75 | Laser prepreg |
| | 2 | 18 | Copper Foil |
| | INT2 | 18 | Laser prepreg |
| | 3 | 18 | Copper Foil |
| INT3 | 18 | Core | |
| 4 | 18 | Copper Foil | |
| INT4 | 18 | Laser prepreg | |
| 5 | 18 | Copper Foil | |
| BOTTOM SMB | 6 | 18 | Final Copper Foil |
| | | 20 | Solder mask |

Possible types of holes: 1-2, 2-3, 4-5, 5-6 (microvia); 2-5 or/and 3-4 (buried); 1-6 (PTH)
 Approximate board thickness: 0,65, 0,95, 1,55 mm

| 1-4-1 Structure | | Required possible board thickness: 0,7, 1,0, 1,6 +/- 10% | |
|-----------------|---------|--|-------------------|
| Layer | | Thickness, um | Material |
| Nr. 11 | SMT TOP | 20 | Solder mask |
| | 1 | 18 | Final Copper Foil |
| | INT1 | 75 | Laser prepreg |
| | 2 | 18 | Copper Foil |
| | INT2 | 18 | Core |
| | 3 | 18 | Copper Foil |
| INT3 | 18 | Prepreg | |
| 4 | 18 | Copper Foil | |
| INT4 | 18 | Core | |
| 5 | 18 | Copper Foil | |
| BOTTOM SMB | 6 | 18 | Copper Foil |
| | | 75 | Laser prepreg |
| | | 18 | Final Copper Foil |
| | | 20 | Solder mask |

Possible types of holes: 1-2, 5-6 (microvia); 1-6 (PTH)
 Approximate board thickness: 0,65, 0,95, 1,55 mm

| 1-4-1 Structure | | Required possible board thickness: 0,7, 1,0, 1,6 +/- 10% | |
|-----------------|---------|--|-------------------|
| Layer | | Thickness, um | Material |
| Nr. 12 | SMT TOP | 20 | Solder mask |
| | 1 | 18 | Final Copper Foil |
| | INT1 | 75 | Laser prepreg |
| | 2 | 18 | Copper Foil |
| | INT2 | 18 | Core |
| | 3 | 18 | Copper Foil |
| INT3 | 18 | Prepreg | |
| 4 | 18 | Copper Foil | |
| INT4 | 18 | Core | |
| 5 | 18 | Copper Foil | |
| BOTTOM SMB | 6 | 75 | Laser prepreg |
| | | 18 | Final Copper Foil |
| | | 20 | Solder mask |

Possible types of holes: 1-2, 5-6 (microvia); 2-5 (buried); 1-6 (PTH)
 Approximate board thickness: 0,65, 0,95, 1,55 mm

| 1-2-2-1 Structure | | Required possible board thickness: 0,7, 1,0, 1,6 +/- 10% | |
|-------------------|---------|--|-------------------|
| Layer | | Thickness, um | Material |
| Nr. 13 | SMT TOP | 20 | Solder mask |
| | 1 | 18 | Final Copper Foil |
| | INT1 | 75 | Laser prepreg |
| | 2 | 18 | Copper Foil |
| | INT2 | 18 | Core |
| | 3 | 18 | Copper Foil |
| INT3 | 18 | Prepreg | |
| 4 | 18 | Copper Foil | |
| INT4 | 18 | Core | |
| 5 | 18 | Copper Foil | |
| BOTTOM SMB | 6 | 75 | Laser prepreg |
| | | 18 | Final Copper Foil |
| | | 20 | Solder mask |

Possible types of holes: 1-2, 5-6 (microvia); 2-3 or/and 4-5 or/and 2-5 (buried); 1-6 (PTH)
 Approximate board thickness: 0,65, 0,95, 1,55 mm

| 1-2-2-1 Structure | | Required possible board thickness: 0,7, 1,0, 1,6 +/- 10% | | | |
|-------------------|------------|--|--------|---------------|-----------------------|
| | Layer | | | Thickness, um | Material |
| Nr. 14 | SMT TOP | 1 | | 20 | Solder mask |
| | | | | 18 | Final Copper Foil |
| | | | 1x1080 | 75 | Laser prepreg |
| | INT1 | 2 | | 18 | Copper Foil |
| | | | | | Core |
| | | | | 18 | Copper Foil |
| | INT2 | 3 | | 18 | Preprag |
| | | | | | Core (without cooper) |
| | | | | | Preprag |
| | INT3 | 4 | | 18 | Copper Foil |
| | | | | | Core |
| | | | | 18 | Copper Foil |
| | INT4 | 5 | | 18 | Preprag |
| | | | 1x1080 | 75 | Laser prepreg |
| | | | | 18 | Final Copper Foil |
| | BOTTOM SMB | 6 | | 20 | Solder mask |

Possible types of holes: 1-2, 5-6 (microvia); 2-3 or/and 4-5 or/and 2-5 (buried); 1-6 (PTH)
 Approximate board thickness: 0,65, 0,95, 1,55 mm

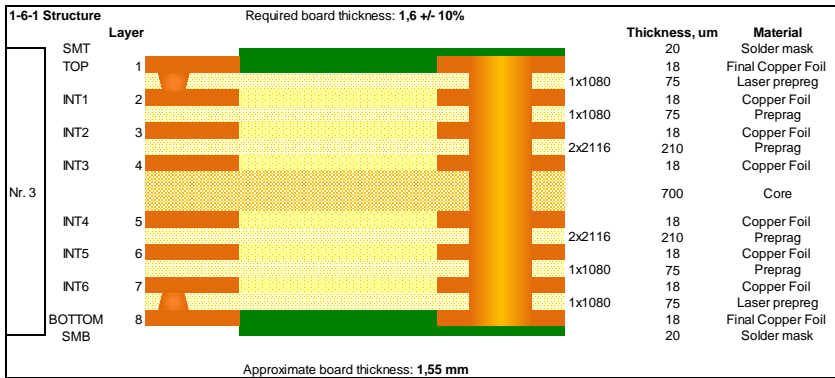
8-layer HDI PCB build-ups with single core

| 1-6-1 Structure | | Required board thickness: 0,8 +/- 10% | | | |
|-----------------|------------|---------------------------------------|--------|---------------|-------------------|
| | Layer | | | Thickness, um | Material |
| Nr. 1 | SMT TOP | 1 | | 20 | Solder mask |
| | | | | 18 | Final Copper Foil |
| | | | 1x1080 | 75 | Laser prepreg |
| | INT1 | 2 | | 18 | Copper Foil |
| | | | 1x1080 | 75 | Preprag |
| | INT2 | 3 | | 18 | Copper Foil |
| | | | 1x1080 | 75 | Preprag |
| | INT3 | 4 | | 18 | Copper Foil |
| | | | 150 | Core | |
| | INT4 | 5 | | 18 | Copper Foil |
| | | | 1x1080 | 75 | Preprag |
| | INT5 | 6 | | 18 | Copper Foil |
| | | | 1x1080 | 75 | Preprag |
| | INT6 | 7 | | 18 | Copper Foil |
| | | | 1x1080 | 75 | Laser prepreg |
| | BOTTOM SMB | 8 | | 18 | Final Copper Foil |
| | | | | 20 | Solder mask |

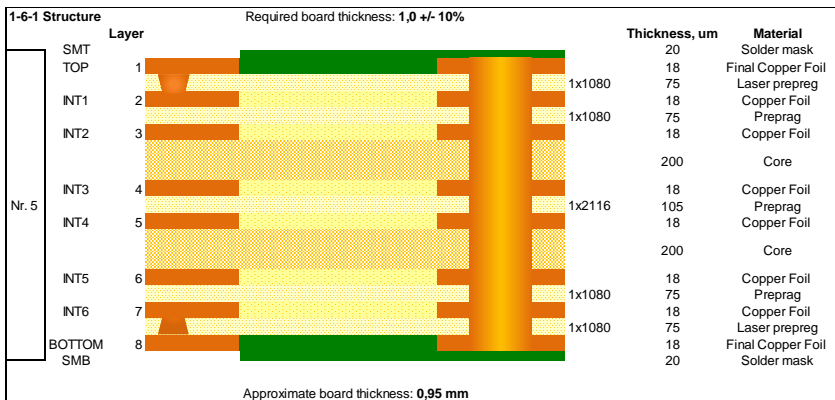
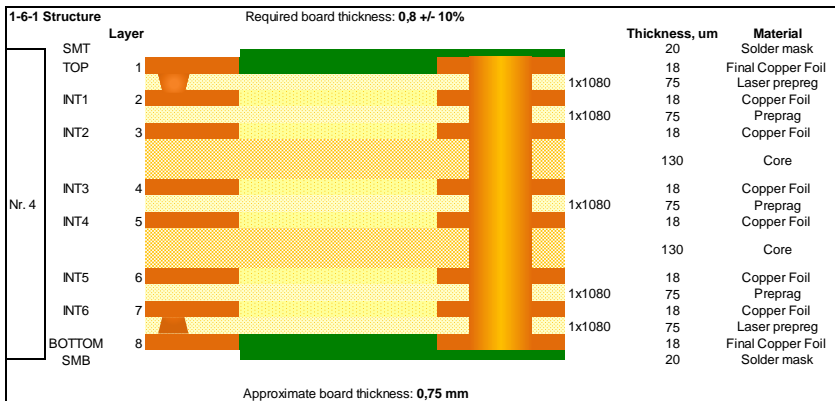
Approximate board thickness: 0,75 mm

| 1-6-1 Structure | | Required board thickness: 1,0 +/- 10% | | | |
|-----------------|------------|---------------------------------------|--------|---------------|-------------------|
| | Layer | | | Thickness, um | Material |
| Nr. 2 | SMT TOP | 1 | | 20 | Solder mask |
| | | | | 18 | Final Copper Foil |
| | | | 1x1080 | 75 | Laser prepreg |
| | INT1 | 2 | | 18 | Copper Foil |
| | | | 1x1080 | 75 | Preprag |
| | INT2 | 3 | | 18 | Copper Foil |
| | | | 1x2116 | 105 | Preprag |
| | INT3 | 4 | | 18 | Copper Foil |
| | | | 300 | Core | |
| | INT4 | 5 | | 18 | Copper Foil |
| | | | 1x2116 | 105 | Preprag |
| | INT5 | 6 | | 18 | Copper Foil |
| | | | 1x1080 | 75 | Preprag |
| | INT6 | 7 | | 18 | Copper Foil |
| | | | 1x1080 | 75 | Laser prepreg |
| | BOTTOM SMB | 8 | | 18 | Final Copper Foil |
| | | | | 20 | Solder mask |

Approximate board thickness: 0,95 mm



8-layer HDI PCB build-ups with two cores



| 1-6-1 Structure | | Required board thickness: 1,6 +/- 10% | | | | |
|-----------------|---------|---------------------------------------|-------------------|---------------|-------------------|--|
| | Layer | | | Thickness, um | Material | |
| Nr. 9 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | | 350 | Core | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | INT3 | 4 | | 105 | Preprag | |
| | | | | 18 | Copper Foil | |
| INT4 | 5 | 18 | Copper Foil | | | |
| INT5 | 6 | 105 | Preprag | | | |
| | | 18 | Copper Foil | | | |
| | | 350 | Core | | | |
| INT6 | 7 | 18 | Copper Foil | | | |
| BOTTOM SMB | 8 | 75 | Laser prepreg | | | |
| | | 18 | Final Copper Foil | | | |
| | | 20 | Solder mask | | | |

Approximate board thickness: 1,55 mm

| 1-6-1 Structure | | Required board thickness: 2,0 +/- 10% | | | | |
|-----------------|---------|---------------------------------------|-------------------|---------------|-------------------|--|
| | Layer | | | Thickness, um | Material | |
| Nr. 10 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | | 400 | Core | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | INT3 | 4 | | 210 | Preprag | |
| | | | | 18 | Copper Foil | |
| INT4 | 5 | 18 | Copper Foil | | | |
| INT5 | 6 | 210 | Preprag | | | |
| | | 18 | Copper Foil | | | |
| | | 400 | Core | | | |
| INT6 | 7 | 18 | Copper Foil | | | |
| BOTTOM SMB | 8 | 75 | Laser prepreg | | | |
| | | 18 | Final Copper Foil | | | |
| | | 20 | Solder mask | | | |

Approximate board thickness: 1,90 mm

Possible drilling types for 8-layer HDI PCB

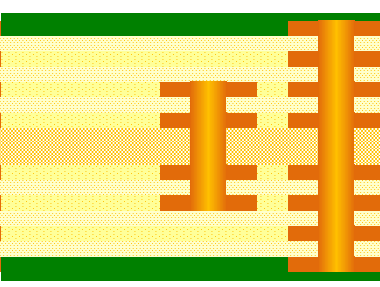
| 1-6-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6 +/- 10% | | | | |
|-----------------|---------|--|-------------------|---------------|-------------------|--|
| | Layer | | | Thickness, um | Material | |
| Nr. 11 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | | 18 | Copper Foil | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | | 18 | Copper Foil | |
| INT4 | 5 | 18 | Copper Foil | | | |
| INT5 | 6 | 18 | Copper Foil | | | |
| | | 18 | Copper Foil | | | |
| | | 18 | Copper Foil | | | |
| INT6 | 7 | 18 | Copper Foil | | | |
| BOTTOM SMB | 8 | 75 | Laser prepreg | | | |
| | | 18 | Final Copper Foil | | | |
| | | 20 | Solder mask | | | |

Possible types of holes: 1-2, 7-8 (microvia); 1-8 (PTH)
Approximate board thickness: 0,75, 0,95, 1,55 mm

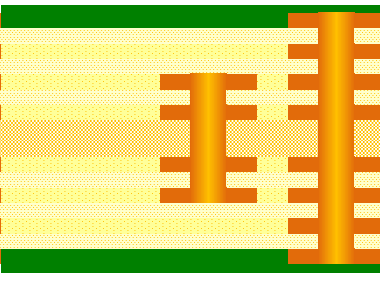
| 1-1-4-1-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6 +/- 10% | | | | | |
|---|---------|--|--|---------------|--------|-------------------|---------------|
| | Layer | | | Thickness, um | | Material | |
| Nr. 12 | SMT TOP | 1 | | 20 | | Solder mask | |
| | | | | 18 | | Final Copper Foil | |
| | | | | 75 | 1x1080 | | Laser prepreg |
| | INT1 | 2 | | 18 | | Copper Foil | |
| | | | | 75 | 1x1080 | | Laser prepreg |
| | INT2 | 3 | | 18 | | | Copper Foil |
| | | | | 75 | 1x1080 | | Preprag |
| | | | | 18 | | | Copper Foil |
| INT3 | 4 | | | | Core | | |
| | | | | | | | |
| INT4 | 5 | | | 18 | | Copper Foil | |
| | | | | 75 | 1x1080 | Laser prepreg | |
| INT5 | 6 | | | 18 | | Copper Foil | |
| | | | | 75 | 1x1080 | Laser prepreg | |
| INT6 | 7 | | | 18 | | Copper Foil | |
| | | | | 75 | 1x1080 | Laser prepreg | |
| BOTTOM SMB | 8 | | | 18 | | Final Copper Foil | |
| | | | | 20 | | Solder mask | |
| Possible types of holes: 1-2, 2-3, 6-7, 7-8 (microvia); 1-8 (PTH) Approximate board thickness: 0,75, 0,95, 1,55 mm | | | | | | | |

| 1-1-1-2-1-1-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6 +/- 10% | | | | | |
|---|---------|--|--|---------------|--------|-------------------|---------------|
| | Layer | | | Thickness, um | | Material | |
| Nr. 13 | SMT TOP | 1 | | 20 | | Solder mask | |
| | | | | 18 | | Final Copper Foil | |
| | | | | 75 | 1x1080 | | Laser prepreg |
| | INT1 | 2 | | 18 | | Copper Foil | |
| | | | | 75 | 1x1080 | | Laser prepreg |
| | INT2 | 3 | | 18 | | Copper Foil | |
| | | | | 75 | 1x1080 | | Laser prepreg |
| | | | | 18 | | | Copper Foil |
| INT3 | 4 | | | 18 | | Core | |
| | | | | | | | |
| INT4 | 5 | | | 18 | | Copper Foil | |
| | | | | 75 | 1x1080 | Laser prepreg | |
| INT5 | 6 | | | 18 | | Copper Foil | |
| | | | | 75 | 1x1080 | Laser prepreg | |
| INT6 | 7 | | | 18 | | Copper Foil | |
| | | | | 75 | 1x1080 | Laser prepreg | |
| BOTTOM SMB | 8 | | | 18 | | Final Copper Foil | |
| | | | | 20 | | Solder mask | |
| Possible types of holes: 1-2, 2-3, 3-4, 5-6, 6-7, 7-8 (microvia); 1-8 (PTH) Approximate board thickness: 0,75, 0,95, 1,55 mm | | | | | | | |

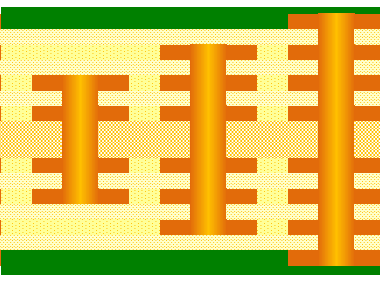
| 1-1-1-2-1-1-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6 +/- 10% | | | | | |
|--|---------|--|--|---------------|--------|-------------------|---------------|
| | Layer | | | Thickness, um | | Material | |
| Nr. 14 | SMT TOP | 1 | | 20 | | Solder mask | |
| | | | | 18 | | Final Copper Foil | |
| | | | | 75 | 1x1080 | | Laser prepreg |
| | INT1 | 2 | | 18 | | Copper Foil | |
| | | | | 75 | 1x1080 | | Laser prepreg |
| | INT2 | 3 | | 18 | | Copper Foil | |
| | | | | 75 | 1x1080 | | Laser prepreg |
| | | | | 18 | | | Copper Foil |
| INT3 | 4 | | | 18 | | Core | |
| | | | | | | | |
| INT4 | 5 | | | 18 | | Copper Foil | |
| | | | | 75 | 1x1080 | Laser prepreg | |
| INT5 | 6 | | | 18 | | Copper Foil | |
| | | | | 75 | 1x1080 | Laser prepreg | |
| INT6 | 7 | | | 18 | | Copper Foil | |
| | | | | 75 | 1x1080 | Laser prepreg | |
| BOTTOM SMB | 8 | | | 18 | | Final Copper Foil | |
| | | | | 20 | | Solder mask | |
| Possible types of holes: 1-2, 2-3, 3-4, 5-6, 6-7, 7-8 (microvia); 4-5 or/and 3-6 (buried); 1-8 (PTH) Approximate board thickness: 0,75, 0,95, 1,55 mm | | | | | | | |

| 1-1-4-1-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6 +/- 10% | | | | |
|---------------------|---------|--|---|---------------|-------------------|--------|
| | Layer | | | Thickness, um | Material | |
| Nr. 15 | SMT TOP | 1 |  | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | 75 | Preprag | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | | | Core | |
| | | | | 18 | Copper Foil | |
| INT4 | 5 | | | 18 | Copper Foil | |
| | | | | 18 | Preprag | |
| INT5 | 6 | | | 18 | Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| INT6 | 7 | | | 18 | Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| BOTTOM SMB | 8 | | | 18 | Final Copper Foil | |
| | | | | 20 | Solder mask | |

Possible types of holes: 1-2, 2-3, 6-7, 7-8 (microvia); 3-6 (buried); 1-8 (PTH)
Approximate board thickness: 0,75, 0,95, 1,55 mm

| 1-(1-4-1)-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6 +/- 10% | | | | |
|-----------------------|---------|--|---|---------------|-------------------|--------|
| | Layer | | | Thickness, um | Material | |
| Nr. 16 | SMT TOP | 1 |  | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Preprag | |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | 75 | Preprag | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | | | Core | |
| | | | | 18 | Copper Foil | |
| INT4 | 5 | | | 18 | Copper Foil | |
| | | | | 18 | Preprag | |
| INT5 | 6 | | | 18 | Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| INT6 | 7 | | | 18 | Copper Foil | |
| | | | | 75 | Preprag | |
| BOTTOM SMB | 8 | | | 18 | Final Copper Foil | |
| | | | | 20 | Solder mask | |

Possible types of holes: 2-3, 6-7 (microvia); 3-6 (buried); 1-8 (PTH)
Approximate board thickness: 0,75, 0,95, 1,55 mm

| 1-1-4-1-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6 +/- 10% | | | | |
|---------------------|---------|--|--|---------------|-------------------|--------|
| | Layer | | | Thickness, um | Material | |
| Nr. 17 | SMT TOP | 1 |  | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | 75 | Preprag | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | | | Core | |
| | | | | 18 | Copper Foil | |
| INT4 | 5 | | | 18 | Copper Foil | |
| | | | | 18 | Preprag | |
| INT5 | 6 | | | 18 | Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| INT6 | 7 | | | 18 | Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| BOTTOM SMB | 8 | | | 18 | Final Copper Foil | |
| | | | | 20 | Solder mask | |

Possible types of holes: 1-2, 2-3, 6-7, 7-8 (microvia); 2-7 or/and 3-6 (buried); 1-8 (PTH)
Approximate board thickness: 0,75, 0,95, 1,55 mm

| 1-6-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6 +/- 10% | | | | |
|-----------------|---------|--|-------------------|---------------|-------------------|--|
| | Layer | | | Thickness, um | Material | |
| Nr. 18 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | | 18 | Preprag | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | 18 | Preprag | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | 18 | Preprag | | | |
| INT4 | 5 | 18 | Copper Foil | | | |
| | | 18 | Preprag | | | |
| INT5 | 6 | 18 | Copper Foil | | | |
| | | 18 | Preprag | | | |
| INT6 | 7 | 18 | Copper Foil | | | |
| | | 75 | Laser prepreg | | | |
| BOTTOM SMB | 8 | 18 | Final Copper Foil | | | |
| | | 20 | Solder mask | | | |

Possible types of holes: 1-2, 7-8 (microvia); 2-7 or/and 3-6 (buried); 1-8 (PTH)
Approximate board thickness: 0,75, 0,95, 1,55 mm

| 1-(1-4-1)-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6 +/- 10% | | | | |
|-----------------------|---------|--|-------------------|---------------|-------------------|--|
| | Layer | | | Thickness, um | Material | |
| Nr. 19 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | | 18 | Preprag | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | 18 | Preprag | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | 18 | Preprag | | | |
| INT4 | 5 | 18 | Copper Foil | | | |
| | | 18 | Preprag | | | |
| INT5 | 6 | 18 | Copper Foil | | | |
| | | 75 | Laser prepreg | | | |
| INT6 | 7 | 18 | Copper Foil | | | |
| | | 75 | Laser prepreg | | | |
| BOTTOM SMB | 8 | 18 | Final Copper Foil | | | |
| | | 20 | Solder mask | | | |

Possible types of holes: 2-3, 6-7 (microvia); 2-7 or/and 3-6 (buried); 1-8 (PTH)
Approximate board thickness: 0,75, 0,95, 1,55 mm

| 1-6-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6 +/- 10% | | | | |
|-----------------|---------|--|-------------------|---------------|-------------------|--|
| | Layer | | | Thickness, um | Material | |
| Nr. 20 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | | 18 | Preprag | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | 18 | Preprag | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | 18 | Preprag | | | |
| INT4 | 5 | 18 | Copper Foil | | | |
| | | 18 | Preprag | | | |
| INT5 | 6 | 18 | Copper Foil | | | |
| | | 18 | Preprag | | | |
| INT6 | 7 | 18 | Copper Foil | | | |
| | | 75 | Laser prepreg | | | |
| BOTTOM SMB | 8 | 18 | Final Copper Foil | | | |
| | | 20 | Solder mask | | | |

Possible types of holes: 1-2, 7-8 (microvia); 1-8 (PTH)
Approximate board thickness: 0,75, 0,95, 1,55 mm

| 1-1-4-1-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6 +/- 10% | | | | |
|---------------------|---------|--|-------------------|---------------|-------------------|--------|
| | Layer | | | Thickness, um | Material | |
| Nr. 21 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| | INT1 | 2 | | 18 | Copper Foil | 1x1080 |
| | | | | 75 | Laser prepreg | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | | Core | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | Preprag | | | |
| INT4 | 5 | 18 | Copper Foil | | | |
| | | | Core | | | |
| | | | 18 | Copper Foil | | |
| | | | 75 | Laser prepreg | 1x1080 | |
| | | | 18 | Copper Foil | | |
| | | | 75 | Laser prepreg | 1x1080 | |
| BOTTOM SMB | 8 | 18 | Final Copper Foil | | | |
| | | | 20 | Solder mask | | |

Possible types of holes: 1-2, 2-3, 6-7, 7-8 (microvia); 1-8 (PTH)
Approximate board thickness: 0,75, 0,95, 1,55 mm

| 1-1-4-1-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6 +/- 10% | | | | |
|---------------------|---------|--|-------------------|---------------|-------------------|--------|
| | Layer | | | Thickness, um | Material | |
| Nr. 22 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| | INT1 | 2 | | 18 | Copper Foil | 1x1080 |
| | | | | 75 | Laser prepreg | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | | Core | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | Preprag | | | |
| INT4 | 5 | 18 | Copper Foil | | | |
| | | | Core | | | |
| | | | 18 | Copper Foil | | |
| | | | 75 | Laser prepreg | 1x1080 | |
| | | | 18 | Copper Foil | | |
| | | | 75 | Laser prepreg | 1x1080 | |
| BOTTOM SMB | 8 | 18 | Final Copper Foil | | | |
| | | | 20 | Solder mask | | |

Possible types of holes: 1-2, 2-3, 6-7, 7-8 (microvia); 2-7 (buried); 1-8 (PTH)
Approximate board thickness: 0,75, 0,95, 1,55 mm

| 1-(1-4)-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6 +/- 10% | | | | |
|---------------------|---------|--|-------------------|---------------|-------------------|--------|
| | Layer | | | Thickness, um | Material | |
| Nr. 23 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | | 75 | Laser prepreg | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | | Core | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | Preprag | | | |
| INT4 | 5 | 18 | Copper Foil | | | |
| | | | Core | | | |
| | | | 18 | Copper Foil | | |
| | | | 75 | Laser prepreg | 1x1080 | |
| | | | 18 | Copper Foil | | |
| | | | 75 | Laser prepreg | | |
| BOTTOM SMB | 8 | 18 | Final Copper Foil | | | |
| | | | 20 | Solder mask | | |

Possible types of holes: 2-3, 6-7 (microvia); 2-7 (buried); 1-8 (PTH)
Approximate board thickness: 0,75, 0,95, 1,55 mm

| 1-(1-2-2-1)-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6 +/- 10% | | |
|-------------------------|------------|--|---------------|----------------------------------|
| | Layer | | Thickness, um | Material |
| Nr. 24 | SMT TOP | 1 | 20 | Solder mask |
| | INT1 | 2 | 18 | Final Copper Foil |
| | INT2 | 3 | 75 | Laser prepreg |
| | INT3 | 4 | 18 | Copper Foil |
| | INT4 | 5 | 18 | Preprag |
| | INT5 | 6 | 18 | Copper Foil |
| | INT6 | 7 | 18 | Preprag |
| | BOTTOM SMB | 8 | 20 | Final Copper Foil Solder mask |

Possible types of holes: 1-2, 7-8 (microvia); 3-4 or/and 5-6 or/and 2-7 (buried); 1-8 (PTH)
Approximate board thickness: 0,75, 0,95, 1,55 mm

| 1-6-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6, 2,0 +/- 10% | | |
|-----------------|------------|---|---------------|--|
| | Layer | | Thickness, um | Material |
| Nr. 25 | SMT TOP | 1 | 20 | Solder mask |
| | INT1 | 2 | 18 | Final Copper Foil |
| | INT2 | 3 | 75 | Laser prepreg |
| | INT3 | 4 | 18 | Copper Foil |
| | INT4 | 5 | 18 | Core |
| | INT5 | 6 | 18 | Copper Foil |
| | INT6 | 7 | 18 | Preprag |
| | BOTTOM SMB | 8 | 20 | Copper Foil Laser prepreg Final Copper Foil Solder mask |

Possible types of holes: 1-2, 7-8 (microvia); 1-8 (PTH)
Approximate board thickness: 0,75, 0,95, 1,55, 1,90 mm

| 1-2-2-2-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6, 2,0 +/- 10% | | |
|---------------------|------------|---|---------------|--|
| | Layer | | Thickness, um | Material |
| Nr. 26 | SMT TOP | 1 | 20 | Solder mask |
| | INT1 | 2 | 18 | Final Copper Foil |
| | INT2 | 3 | 75 | Laser prepreg |
| | INT3 | 4 | 18 | Copper Foil |
| | INT4 | 5 | 18 | Core |
| | INT5 | 6 | 18 | Copper Foil |
| | INT6 | 7 | 18 | Preprag |
| | BOTTOM SMB | 8 | 20 | Copper Foil Laser prepreg Final Copper Foil Solder mask |

Possible types of holes: 1-2, 7-8 (microvia); 4-5 (buried); 1-8 (PTH)
Approximate board thickness: 0,75, 0,95, 1,55, 1,90 mm

| 1-2-2-2-1 Structure | | Required possible board thickness: 0,8, 1,0, 1,6, 2,0 +/- 10% | | | | |
|---------------------|------------|---|--|---------------|-------------------|-------------------|
| | Layer | | | Thickness, um | Material | |
| Nr. 27 | SMT TOP | 1 | | 20 | Solder mask | |
| | INT1 | 2 | | 1x1080 | 18 | Final Copper Foil |
| | INT2 | 3 | | 18 | Laser prepreg | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | INT4 | 5 | | 18 | Preprag | |
| | INT5 | 6 | | 18 | Copper Foil | |
| | INT6 | 7 | | 18 | Core | |
| | BOTTOM SMB | 8 | | 1x1080 | 18 | Copper Foil |
| | | | | 75 | Laser prepreg | |
| | | | | 18 | Final Copper Foil | |
| | | | | 20 | Solder mask | |

Possible types of holes: 1-2, 7-8 (microvia); 2-3 or/and 4-5 or/and 6-7 (buried); 1-8 (PTH)
 Approximate board thickness: 0,75, 0,95, 1,55, 1,90 mm

10-layer HDI PCB build-ups with two cores

| 1-8-1 Structure | | Required board thickness: 1,0 +/- 10% | | | | |
|-----------------|------------|---------------------------------------|--|---------------|-------------------|-------------------|
| | Layer | | | Thickness, um | Material | |
| Nr. 1 | SMT TOP | 1 | | 20 | Solder mask | |
| | INT1 | 2 | | 1x1080 | 18 | Final Copper Foil |
| | INT2 | 3 | | 1x1080 | 75 | Laser prepreg |
| | INT3 | 4 | | 1x1080 | 18 | Copper Foil |
| | INT4 | 5 | | 1x1080 | 18 | Preprag |
| | INT5 | 6 | | 1x1080 | 75 | Copper Foil |
| | INT6 | 7 | | 1x1080 | 18 | Preprag |
| | INT7 | 8 | | 1x1080 | 18 | Copper Foil |
| | INT8 | 9 | | 1x1080 | 75 | Preprag |
| | BOTTOM SMB | 10 | | 1x1080 | 75 | Copper Foil |
| | | | | 18 | Laser prepreg | |
| | | | | 18 | Final Copper Foil | |
| | | | | 20 | Solder mask | |

Approximate board thickness: 0,95 mm

| 1-8-1 Structure | | Required board thickness: 1,6 +/- 10% | | | |
|-----------------|---------|---------------------------------------|-------------------|-------------------|--|
| | Layer | | Thickness, um | Material | |
| Nr. 2 | SMT TOP | 1 | 20 | Solder mask | |
| | | | 18 | Final Copper Foil | |
| | | | 75 | Laser prepreg | |
| | INT1 | 2 | 18 | Copper Foil | |
| | | | 75 | Preprag | |
| | INT2 | 3 | 18 | Copper Foil | |
| | | | 75 | Preprag | |
| | INT3 | 4 | 18 | Copper Foil | |
| | | | 350 | Core | |
| | INT4 | 5 | 18 | Copper Foil | |
| | | 210 | Preprag | | |
| INT5 | 6 | 18 | Copper Foil | | |
| | | 350 | Core | | |
| INT6 | 7 | 18 | Copper Foil | | |
| | | 75 | Preprag | | |
| INT7 | 8 | 18 | Copper Foil | | |
| | | 75 | Preprag | | |
| INT8 | 9 | 18 | Copper Foil | | |
| | | 75 | Laser prepreg | | |
| BOTTOM SMB | 10 | 18 | Final Copper Foil | | |
| | | 20 | Solder mask | | |

Approximate board thickness: 1,55 mm

| 1-8-1 Structure | | Required board thickness: 2,0 +/- 10% | | | |
|-----------------|---------|---------------------------------------|-------------------|-------------------|--|
| | Layer | | Thickness, um | Material | |
| Nr. 3 | SMT TOP | 1 | 20 | Solder mask | |
| | | | 18 | Final Copper Foil | |
| | | | 75 | Laser prepreg | |
| | INT1 | 2 | 18 | Copper Foil | |
| | | | 75 | Preprag | |
| | INT2 | 3 | 18 | Copper Foil | |
| | | | 210 | Preprag | |
| | INT3 | 4 | 18 | Copper Foil | |
| | | | 400 | Core | |
| | INT4 | 5 | 18 | Copper Foil | |
| | | 210 | Preprag | | |
| INT5 | 6 | 18 | Copper Foil | | |
| | | 400 | Core | | |
| INT6 | 7 | 18 | Copper Foil | | |
| | | 210 | Preprag | | |
| INT7 | 8 | 18 | Copper Foil | | |
| | | 75 | Preprag | | |
| INT8 | 9 | 18 | Copper Foil | | |
| | | 75 | Laser prepreg | | |
| BOTTOM SMB | 10 | 18 | Final Copper Foil | | |
| | | 20 | Solder mask | | |

Approximate board thickness: 1,90 mm

10-layer HDI PCB build-ups with three cores

| 1-8-1 Structure | | Required board thickness: 1,0 +/- 10% | | | | |
|-----------------|---------|---------------------------------------|---------------|-------------------|-------------|--|
| | Layer | | Thickness, um | Material | | |
| Nr. 4 | SMT TOP | 1 | 20 | Solder mask | | |
| | | | 18 | Final Copper Foil | | |
| | | | 75 | Laser prepreg | | |
| | INT1 | 2 | 1x1080 | 18 | Copper Foil | |
| | | | 75 | Preprag | | |
| | INT2 | 3 | 1x1080 | 18 | Copper Foil | |
| | | | 100 | Core | | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | 1x2116 | 105 | Preprag | |
| | INT4 | 5 | | 18 | Copper Foil | |
| | | 100 | Core | | | |
| INT5 | 6 | | 18 | Copper Foil | | |
| | | 1x2116 | 75 | Preprag | | |
| INT6 | 7 | | 18 | Copper Foil | | |
| | | 100 | Core | | | |
| INT7 | 8 | | 18 | Copper Foil | | |
| | | 1x1080 | 75 | Preprag | | |
| INT8 | 9 | | 18 | Copper Foil | | |
| | | 1x1080 | 75 | Laser prepreg | | |
| BOTTOM SMB | 10 | | 18 | Final Copper Foil | | |
| | | | 20 | Solder mask | | |

Approximate board thickness: 0,95 mm

| 1-8-1 Structure | | Required board thickness: 1,6 +/- 10% | | | | |
|-----------------|---------|---------------------------------------|---------------|-------------------|-------------|--|
| | Layer | | Thickness, um | Material | | |
| Nr. 5 | SMT TOP | 1 | 20 | Solder mask | | |
| | | | 18 | Final Copper Foil | | |
| | | | 75 | Laser prepreg | | |
| | INT1 | 2 | 1x1080 | 18 | Copper Foil | |
| | | | 75 | Preprag | | |
| | INT2 | 3 | 1x1080 | 18 | Copper Foil | |
| | | | 200 | Core | | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | 2x2116 | 210 | Preprag | |
| | INT4 | 5 | | 18 | Copper Foil | |
| | | 200 | Core | | | |
| INT5 | 6 | | 18 | Copper Foil | | |
| | | 2x2116 | 210 | Preprag | | |
| INT6 | 7 | | 18 | Copper Foil | | |
| | | 200 | Core | | | |
| INT7 | 8 | | 18 | Copper Foil | | |
| | | 1x1080 | 75 | Preprag | | |
| INT8 | 9 | | 18 | Copper Foil | | |
| | | 1x1080 | 75 | Laser prepreg | | |
| BOTTOM SMB | 10 | | 18 | Final Copper Foil | | |
| | | | 20 | Solder mask | | |

Approximate board thickness: 1,55 mm

| 1-8-1 Structure | | Required board thickness: 2,0 +/- 10% | | | | |
|-----------------|------------|---------------------------------------|--------|-------------------|-------------------|--|
| | Layer | | | Thickness, um | Material | |
| Nr. 6 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | 1x1080 | 75 | Laser prepreg | |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | 1x1080 | 75 | Preprag | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | 350 | Core | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | 2x2116 | 210 | Preprag | |
| | INT4 | 5 | | 18 | Copper Foil | |
| | | | 350 | Core | | |
| | | | 18 | Copper Foil | | |
| | | 2x2116 | 210 | Preprag | | |
| | | | 18 | Copper Foil | | |
| | | | 350 | Core | | |
| | | | 18 | Copper Foil | | |
| | | 1x1080 | 75 | Preprag | | |
| | | | 18 | Copper Foil | | |
| | | 1x1080 | 75 | Laser prepreg | | |
| | | | 18 | Final Copper Foil | | |
| | | | 20 | Solder mask | | |
| | BOTTOM SMB | 10 | | | | |

Approximate board thickness: 1,90 mm

| 1-8-1 Structure | | Required board thickness: 2,5 +/- 10% | | | | |
|-----------------|------------|---------------------------------------|--------|-------------------|-------------------|--|
| | Layer | | | Thickness, um | Material | |
| Nr. 7 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | 1x1080 | 75 | Laser prepreg | |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | 1x2116 | 105 | Preprag | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | 500 | Core | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | 2x2116 | 210 | Preprag | |
| | INT4 | 5 | | 18 | Copper Foil | |
| | | | 500 | Core | | |
| | | | 18 | Copper Foil | | |
| | | 2x2116 | 210 | Preprag | | |
| | | | 18 | Copper Foil | | |
| | | | 500 | Core | | |
| | | | 18 | Copper Foil | | |
| | | 1x2116 | 105 | Preprag | | |
| | | | 18 | Copper Foil | | |
| | | 1x1080 | 75 | Laser prepreg | | |
| | | | 18 | Final Copper Foil | | |
| | | | 20 | Solder mask | | |
| | BOTTOM SMB | 10 | | | | |

Approximate board thickness: 2,40 mm

10-layer HDI PCB build-ups with four cores

| 1-8-1 Structure | | Required board thickness: 1,0 +/- 10% | | | | | |
|-----------------|---------|---------------------------------------|-----|-------------------|-------------------|---------------|--|
| | Layer | | | Thickness, um | Material | | |
| Nr. 8 | SMT TOP | 1 | | 20 | Solder mask | | |
| | | | | 18 | Final Copper Foil | | |
| | INT1 | 2 | | 1x1080 | 75 | Laser prepreg | |
| | | | | | 18 | Copper Foil | |
| | | | | | 100 | Core | |
| | INT2 | 3 | | | 18 | Copper Foil | |
| | INT3 | 4 | | 1x1080 | 75 | Preprag | |
| | | | | | 18 | Copper Foil | |
| | | | | | 100 | Core | |
| | INT4 | 5 | | | 18 | Copper Foil | |
| INT5 | 6 | 1x1080 | 75 | Preprag | | | |
| | | | 18 | Copper Foil | | | |
| | | | 100 | Core | | | |
| INT6 | 7 | | 18 | Copper Foil | | | |
| INT7 | 8 | 1x1080 | 75 | Preprag | | | |
| | | | 18 | Copper Foil | | | |
| | | | 100 | Core | | | |
| INT8 | 9 | | 18 | Copper Foil | | | |
| BOTTOM SMB | 10 | 1x1080 | 75 | Laser prepreg | | | |
| | | | 18 | Final Copper Foil | | | |
| | | | 20 | Solder mask | | | |

Approximate board thickness: 0,95 mm

| 1-8-1 Structure | | Required board thickness: 1,6 +/- 10% | | | | | |
|-----------------|---------|---------------------------------------|-----|-------------------|-------------------|---------------|--|
| | Layer | | | Thickness, um | Material | | |
| Nr. 9 | SMT TOP | 1 | | 20 | Solder mask | | |
| | | | | 18 | Final Copper Foil | | |
| | INT1 | 2 | | 1x1080 | 75 | Laser prepreg | |
| | | | | | 18 | Copper Foil | |
| | | | | | 200 | Core | |
| | INT2 | 3 | | | 18 | Copper Foil | |
| | INT3 | 4 | | 1x2116 | 105 | Preprag | |
| | | | | | 18 | Copper Foil | |
| | | | | | 200 | Core | |
| | INT4 | 5 | | | 18 | Copper Foil | |
| INT5 | 6 | 2x2116 | 210 | Preprag | | | |
| | | | 18 | Copper Foil | | | |
| | | | 200 | Core | | | |
| INT6 | 7 | | 18 | Copper Foil | | | |
| INT7 | 8 | 1x2116 | 105 | Preprag | | | |
| | | | 18 | Copper Foil | | | |
| | | | 200 | Core | | | |
| INT8 | 9 | | 18 | Copper Foil | | | |
| BOTTOM SMB | 10 | 1x1080 | 75 | Laser prepreg | | | |
| | | | 18 | Final Copper Foil | | | |
| | | | 20 | Solder mask | | | |

Approximate board thickness: 1,55 mm

| 1-8-1 Structure | | Required board thickness: 2,0 +/- 10% | | | | |
|-----------------|---------|---------------------------------------|-----|-------------------|-------------------|--------|
| | Layer | | | Thickness, um | Material | |
| Nr. 10 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | | 250 | Core | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | 210 | Preprag | 2x2116 |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | | 250 | Core | |
| | INT4 | 5 | | 18 | Copper Foil | |
| | | | 210 | Preprag | 2x2116 | |
| INT5 | 6 | | 18 | Copper Foil | | |
| | | | 250 | Core | | |
| INT6 | 7 | | 18 | Copper Foil | | |
| | | | 210 | Preprag | 2x2116 | |
| INT7 | 8 | | 18 | Copper Foil | | |
| | | | 250 | Core | | |
| INT8 | 9 | | 18 | Copper Foil | | |
| | | | 75 | Laser prepreg | 1x1080 | |
| BOTTOM SMB | 10 | | 18 | Final Copper Foil | | |
| | | | 20 | Solder mask | | |

Approximate board thickness: 1,90 mm

| 1-8-1 Structure | | Required board thickness: 2,5 +/- 10% | | | | |
|-----------------|---------|---------------------------------------|-----|-------------------|-------------------|--------|
| | Layer | | | Thickness, um | Material | |
| Nr. 11 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | | 350 | Core | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | 185 | Preprag | 1x7628 |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | | 350 | Core | |
| | INT4 | 5 | | 18 | Copper Foil | |
| | | | 370 | Preprag | 2x7628 | |
| INT5 | 6 | | 18 | Copper Foil | | |
| | | | 350 | Core | | |
| INT6 | 7 | | 18 | Copper Foil | | |
| | | | 185 | Preprag | 1x7628 | |
| INT7 | 8 | | 18 | Copper Foil | | |
| | | | 350 | Core | | |
| INT8 | 9 | | 18 | Copper Foil | | |
| | | | 75 | Laser prepreg | 1x1080 | |
| BOTTOM SMB | 10 | | 18 | Final Copper Foil | | |
| | | | 20 | Solder mask | | |

Approximate board thickness: 2,40 mm

| 1-8-1 Structure | | Required board thickness: 3,0 +/- 10% | | | | |
|-----------------|---------|---------------------------------------|-------------------|---------------|-------------------|--------|
| | Layer | | | Thickness, um | Material | |
| Nr. 12 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | | 450 | Core | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | 210 | Preprag | 2x2116 |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | | 450 | Core | |
| | INT4 | 5 | | 18 | Copper Foil | |
| | | 370 | Preprag | 2x7628 | | |
| INT5 | 6 | 18 | Copper Foil | | | |
| | | 450 | Core | | | |
| INT6 | 7 | 18 | Copper Foil | | | |
| | | 210 | Preprag | 2x2116 | | |
| INT7 | 8 | 18 | Copper Foil | | | |
| | | 450 | Core | | | |
| INT8 | 9 | 18 | Copper Foil | | | |
| | | 75 | Laser prepreg | 1x1080 | | |
| BOTTOM SMB | 10 | 18 | Final Copper Foil | | | |
| | | 20 | Solder mask | | | |

Approximate board thickness: 2,90 mm

Possible drilling types for 10-layer HDI PCB

| 1-8-1 Structure | | Required possible board thickness: 1,0, 1,6, 2,0 +/- 10% | | | | |
|-----------------|---------|--|-------------------|---------------|-------------------|--------|
| | Layer | | | Thickness, um | Material | |
| Nr. 13 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | 1x1080 |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | | 18 | Preprag | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | 18 | Preprag | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | | | Core | |
| | INT4 | 5 | | 18 | Copper Foil | |
| | | 18 | Preprag | | | |
| INT5 | 6 | 18 | Copper Foil | | | |
| | | | Core | | | |
| INT6 | 7 | 18 | Copper Foil | | | |
| | | 18 | Preprag | | | |
| INT7 | 8 | 18 | Copper Foil | | | |
| | | 18 | Preprag | | | |
| INT8 | 9 | 18 | Copper Foil | | | |
| | | 75 | Laser prepreg | 1x1080 | | |
| BOTTOM SMB | 10 | 18 | Final Copper Foil | | | |
| | | 20 | Solder mask | | | |

Possible types of holes: 1-2, 9-10 (microvia); 1-10 (PTH)
 Approximate board thickness: 0,95, 1,55, 1,90 mm

| 1-1-6-1-1 Structure | | Required possible board thickness: 1,0, 1,6, 2,0 +/- 10% | | | | |
|---------------------|---------|--|--------|-------------------|-------------------|--|
| | Layer | | | Thickness, um | Material | |
| Nr. 14 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | 1x1080 | 75 | Laser prepreg | |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | 1x1080 | 75 | Laser prepreg | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | | Preprag | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | | | Core | |
| | INT4 | 5 | | 18 | Copper Foil | |
| | | | | Preprag | | |
| INT5 | 6 | | 18 | Copper Foil | | |
| | | | | Core | | |
| INT6 | 7 | | 18 | Copper Foil | | |
| | | | | Preprag | | |
| INT7 | 8 | | 18 | Copper Foil | | |
| | | 1x1080 | 75 | Laser prepreg | | |
| INT8 | 9 | | 18 | Copper Foil | | |
| | | 1x1080 | 75 | Laser prepreg | | |
| BOTTOM SMB | 10 | | 18 | Final Copper Foil | | |
| | | | 20 | Solder mask | | |

Possible types of holes: 1-2, 2-3, 8-9, 9-10 (microvia); 1-10 (PTH)
 Approximate board thickness: 0,95, 1,55, 1,90 mm

| 1-1-1-4-1-1-1 Structure | | Required possible board thickness: 1,0, 1,6, 2,0 +/- 10% | | | | |
|-------------------------|---------|--|--------|-------------------|-------------------|--|
| | Layer | | | Thickness, um | Material | |
| Nr. 15 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | 1x1080 | 75 | Laser prepreg | |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | 1x1080 | 75 | Laser prepreg | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | 1x1080 | 75 | Laser prepreg | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | | | Core | |
| | INT4 | 5 | | 18 | Copper Foil | |
| | | | | Preprag | | |
| INT5 | 6 | | 18 | Copper Foil | | |
| | | | | Core | | |
| INT6 | 7 | | 18 | Copper Foil | | |
| | | 1x1080 | 75 | Laser prepreg | | |
| INT7 | 8 | | 18 | Copper Foil | | |
| | | 1x1080 | 75 | Laser prepreg | | |
| INT8 | 9 | | 18 | Copper Foil | | |
| | | 1x1080 | 75 | Laser prepreg | | |
| BOTTOM SMB | 10 | | 18 | Final Copper Foil | | |
| | | | 20 | Solder mask | | |

Possible types of holes: 1-2, 2-3, 3-4, 7-8, 8-9, 9-10 (microvia); 1-10 (PTH)
 Approximate board thickness: 0,95, 1,55, 1,90 mm

| 1-1-1-2-2-1-1-1 Structure | | Required possible board thickness: 1,0, 1,6, 2,0 +/- 10% | | | | | |
|---------------------------|---------|--|-------------------|---------------|-------------------|--------|--|
| | Layer | | | Thickness, um | Material | | |
| Nr. 16 | SMT TOP | 1 | | 20 | Solder mask | | |
| | | | | 18 | Final Copper Foil | | |
| | | | | 75 | Laser prepreg | 1x1080 | |
| | INT1 | 2 | | 18 | Copper Foil | | |
| | | | | 75 | Laser prepreg | 1x1080 | |
| | INT2 | 3 | | 18 | Copper Foil | | |
| | | | | 75 | Laser prepreg | 1x1080 | |
| | INT3 | 4 | | 18 | Copper Foil | | |
| | | | | Core | | | |
| | INT4 | 5 | | 18 | Copper Foil | | |
| | | Preprag | | | | | |
| INT5 | 6 | 18 | Copper Foil | | | | |
| | | Core | | | | | |
| INT6 | 7 | 18 | Copper Foil | | | | |
| | | 75 | Laser prepreg | 1x1080 | | | |
| INT7 | 8 | 18 | Copper Foil | | | | |
| | | 75 | Laser prepreg | 1x1080 | | | |
| INT8 | 9 | 18 | Copper Foil | | | | |
| | | 75 | Laser prepreg | 1x1080 | | | |
| BOTTOM SMB | 10 | 18 | Final Copper Foil | | | | |
| | | 20 | Solder mask | | | | |

Possible types of holes: 1-2, 2-3, 3-4, 7-8, 8-9, 9-10 (microvia); 4-5 or/and 6-7 or/and 4-7 (it can be changed to 3-8 or 2-9) (buried); 1-10 (PTH)
 Approximate board thickness: 0,95, 1,55, 1,90 mm

| 1-8-1 Structure | | Required possible board thickness: 1,0, 1,6, 2,0, 2,5 +/- 10% | | | | | |
|-----------------|---------|---|-------------------|---------------|-------------------|--------|--|
| | Layer | | | Thickness, um | Material | | |
| Nr. 17 | SMT TOP | 1 | | 20 | Solder mask | | |
| | | | | 18 | Final Copper Foil | | |
| | | | | 75 | Laser prepreg | 1x1080 | |
| | INT1 | 2 | | 18 | Copper Foil | | |
| | | | | Preprag | | | |
| | INT2 | 3 | | 18 | Copper Foil | | |
| | | | | Core | | | |
| | INT3 | 4 | | 18 | Copper Foil | | |
| | | | | Preprag | | | |
| | INT4 | 5 | | 18 | Copper Foil | | |
| | | Core | | | | | |
| INT5 | 6 | 18 | Copper Foil | | | | |
| | | Preprag | | | | | |
| INT6 | 7 | 18 | Copper Foil | | | | |
| | | Core | | | | | |
| INT7 | 8 | 18 | Copper Foil | | | | |
| | | Preprag | | | | | |
| INT8 | 9 | 18 | Copper Foil | | | | |
| | | 75 | Laser prepreg | 1x1080 | | | |
| BOTTOM SMB | 10 | 18 | Final Copper Foil | | | | |
| | | 20 | Solder mask | | | | |

Possible types of holes: 1-2, 9-10 (microvia); 1-10 (PTH)
 Approximate board thickness: 0,95, 1,55, 1,90, 2,40 mm

| 1-1-6-1-1 Structure | | Required possible board thickness: 1,0, 1,6, 2,0, 2,5 +/- 10% | | | | |
|---------------------|---------|---|--------|-------------------|-------------------|--|
| | Layer | | | Thickness, um | Material | |
| Nr. 18 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | 1x1080 | 75 | Laser prepreg | |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | 1x1080 | 75 | Laser prepreg | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | | Core | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | | | Preprag | |
| | INT4 | 5 | | 18 | Copper Foil | |
| | | | | Core | | |
| INT5 | 6 | | 18 | Copper Foil | | |
| | | | | Preprag | | |
| INT6 | 7 | | 18 | Copper Foil | | |
| | | | | Core | | |
| INT7 | 8 | | 18 | Copper Foil | | |
| | | 1x1080 | 75 | Laser prepreg | | |
| INT8 | 9 | | 18 | Copper Foil | | |
| | | 1x1080 | 75 | Laser prepreg | | |
| BOTTOM SMB | 10 | | 18 | Final Copper Foil | | |
| | | | 20 | Solder mask | | |

Possible types of holes: 1-2, 2-3, 8-9, 9-10 (microvia); 1-10 (PTH)
 Approximate board thickness: 0,95, 1,55, 1,90, 2,40 mm

| 1-1-6-1-1 Structure | | Required possible board thickness: 1,0, 1,6, 2,0, 2,5 +/- 10% | | | | |
|---------------------|---------|---|--------|-------------------|-------------------|--|
| | Layer | | | Thickness, um | Material | |
| Nr. 19 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | 1x1080 | 75 | Laser prepreg | |
| | INT1 | 2 | | 18 | Copper Foil | |
| | | | 1x1080 | 75 | Laser prepreg | |
| | INT2 | 3 | | 18 | Copper Foil | |
| | | | | | Core | |
| | INT3 | 4 | | 18 | Copper Foil | |
| | | | | | Preprag | |
| | INT4 | 5 | | 18 | Copper Foil | |
| | | | | Core | | |
| INT5 | 6 | | 18 | Copper Foil | | |
| | | | | Preprag | | |
| INT6 | 7 | | 18 | Copper Foil | | |
| | | | | Core | | |
| INT7 | 8 | | 18 | Copper Foil | | |
| | | 1x1080 | 75 | Laser prepreg | | |
| INT8 | 9 | | 18 | Copper Foil | | |
| | | 1x1080 | 75 | Laser prepreg | | |
| BOTTOM SMB | 10 | | 18 | Final Copper Foil | | |
| | | | 20 | Solder mask | | |

Possible types of holes: 1-2, 2-3, 8-9, 9-10 (microvia); 5-6 (it can be changed to 3-6 or 5-8) or/and 3-8 (it can be changed to 2-9) (buried); 1-10 (PTH)
 Approximate board thickness: 0,95, 1,55, 1,90, 2,40 mm

| 1-1-2-2-1-1 Structure | | Required possible board thickness: 1,0, 1,6, 2,0, 2,5, 3,0 +/- 10% | | | | |
|-----------------------|---------|--|--------|---------------|-------------------|-------------|
| | Layer | | | Thickness, um | Material | |
| Nr. 20 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | |
| | INT1 | 2 | | 1x1080 | 18 | Copper Foil |
| | | | | 75 | Laser prepreg | |
| | INT2 | 3 | | 1x1080 | 18 | Copper Foil |
| | | | | | | Core |
| | INT3 | 4 | | | 18 | Copper Foil |
| | | | | | | Preprag |
| | INT4 | 5 | | | 18 | Copper Foil |
| | | | | | Core | |
| INT5 | 6 | | | 18 | Copper Foil | |
| | | | | | Preprag | |
| INT6 | 7 | | | 18 | Copper Foil | |
| | | | | | Core | |
| INT7 | 8 | | | 18 | Copper Foil | |
| | | | | | Preprag | |
| INT8 | 9 | | 1x1080 | 75 | Laser prepreg | |
| | | | | | Copper Foil | |
| | | | | | Laser prepreg | |
| BOTTOM SMB | 10 | | 1x1080 | 75 | Laser prepreg | |
| | | | | 18 | Final Copper Foil | |
| | | | | 20 | Solder mask | |

Possible types of holes: 1-2, 2-3, 8-9, 9-10 (microvia); 3-4 or/and 7-8 or/and 3-8 (It can be changed to 2-9) (buried); 1-10 (PTH)
 Approximate board thickness: 0,95, 1,55, 1,90, 2,40 mm

| 1-8-1 Structure | | Required possible board thickness: 1,0, 1,6, 2,0, 2,5, 3,0 +/- 10% | | | | |
|-----------------|---------|--|--------|---------------|-------------------|-------------|
| | Layer | | | Thickness, um | Material | |
| Nr. 21 | SMT TOP | 1 | | 20 | Solder mask | |
| | | | | 18 | Final Copper Foil | |
| | | | | 75 | Laser prepreg | |
| | INT1 | 2 | | 1x1080 | 18 | Copper Foil |
| | | | | | | Core |
| | INT2 | 3 | | | 18 | Copper Foil |
| | | | | | | Preprag |
| | INT3 | 4 | | | 18 | Copper Foil |
| | | | | | | Core |
| | INT4 | 5 | | | 18 | Copper Foil |
| | | | | | Preprag | |
| INT5 | 6 | | | 18 | Copper Foil | |
| | | | | | Core | |
| INT6 | 7 | | | 18 | Copper Foil | |
| | | | | | Preprag | |
| INT7 | 8 | | | 18 | Copper Foil | |
| | | | | | Core | |
| INT8 | 9 | | | 18 | Copper Foil | |
| | | | | | Preprag | |
| BOTTOM SMB | 10 | | 1x1080 | 75 | Laser prepreg | |
| | | | | 18 | Final Copper Foil | |
| | | | | 20 | Solder mask | |

Possible types of holes: 1-2, 9-10 (microvia); 1-10 (PTH)
 Approximate board thickness: 0,95, 1,55, 1,90, 2,40, 2,90 mm

| 1-2-2-2-1 Structure | | Required possible board thickness: 1,0, 1,6, 2,0, 2,5, 3,0 +/- 10% | |
|---------------------|---------|--|-------------------|
| Layer | | Thickness, um | Material |
| Nr. 22 | SMT TOP | 20 | Solder mask |
| | 1 | 18 | Final Copper Foil |
| | | 75 | Laser prepreg |
| | INT1 | 18 | Copper Foil |
| | | | Core |
| | INT2 | 18 | Copper Foil |
| | | | Preprag |
| | INT3 | 18 | Copper Foil |
| | | | Core |
| | INT4 | 18 | Copper Foil |
| | | Preprag | |
| INT5 | 18 | Copper Foil | |
| | | Core | |
| INT6 | 18 | Copper Foil | |
| | | Preprag | |
| INT7 | 18 | Copper Foil | |
| | | Core | |
| INT8 | 18 | Copper Foil | |
| | | Laser prepreg | |
| BOTTOM SMB | 20 | Final Copper Foil | |
| | | Solder mask | |

Possible types of holes: 1-2, 9-10 (microvia); 2-3 or/and 4-5 or/and 6-7 or/and 8-9 (buried); 1-10 (PTH)
 Approximate board thickness: 0,95, 1,55, 1,90, 2,40, 2,90 mm

| 1-2-4-2-1 Structure | | Required possible board thickness: 1,0, 1,6, 2,0, 2,5, 3,0 +/- 10% | |
|---------------------|---------|--|-------------------|
| Layer | | Thickness, um | Material |
| Nr. 23 | SMT TOP | 20 | Solder mask |
| | 1 | 18 | Final Copper Foil |
| | | 75 | Laser prepreg |
| | INT1 | 18 | Copper Foil |
| | | | Core |
| | INT2 | 18 | Copper Foil |
| | | | Preprag |
| | INT3 | 18 | Copper Foil |
| | | | Core |
| | INT4 | 18 | Copper Foil |
| | | Preprag | |
| INT5 | 18 | Copper Foil | |
| | | Core | |
| INT6 | 18 | Copper Foil | |
| | | Preprag | |
| INT7 | 18 | Copper Foil | |
| | | Core | |
| INT8 | 18 | Copper Foil | |
| | | Laser prepreg | |
| BOTTOM SMB | 20 | Final Copper Foil | |
| | | Solder mask | |

Possible types of holes: 1-2, 9-10 (microvia); 2-3 or/and 4-7 or/and 8-9 (buried); 1-10 (PTH)
 Approximate board thickness: 0,95, 1,55, 1,90, 2,40, 2,90 mm

| 1-4-4-1 Structure | | Required possible board thickness: 1,0, 1,6, 2,0, 2,5, 3,0 +/- 10% | | | |
|-------------------|---------|--|-------------------|-------------------|--------|
| | Layer | | Thickness, um | Material | |
| Nr. 24 | SMT TOP | 1 | 20 | Solder mask | |
| | | | 18 | Final Copper Foil | |
| | | | 75 | Laser prepreg | |
| | INT1 | 2 | 18 | Copper Foil | 1x1080 |
| | | | | Core | |
| | INT2 | 3 | 18 | Copper Foil | |
| | | | | Preprag | |
| | INT3 | 4 | 18 | Copper Foil | |
| | | | | Core | |
| | INT4 | 5 | 18 | Copper Foil | |
| | | | Preprag | | |
| INT5 | 6 | 18 | Copper Foil | | |
| | | | Core | | |
| INT6 | 7 | 18 | Copper Foil | | |
| | | | Preprag | | |
| INT7 | 8 | 18 | Copper Foil | | |
| | | | Core | | |
| INT8 | 9 | 18 | Copper Foil | 1x1080 | |
| | | | 75 | Laser prepreg | |
| BOTTOM SMB | 10 | 18 | Final Copper Foil | | |
| | | | 20 | Solder mask | |

Possible types of holes: 1-2, 9-10 (microvia); 2-5 or/and 6-9 (buried); 1-10 (PTH)
 Approximate board thickness: 0,95, 1,55, 1,90, 2,40, 2,90 mm

| 1-6-2-1 Structure | | Required possible board thickness: 1,0, 1,6, 2,0, 2,5, 3,0 +/- 10% | | | |
|-------------------|---------|--|-------------------|-------------------|--------|
| | Layer | | Thickness, um | Material | |
| Nr. 25 | SMT TOP | 1 | 20 | Solder mask | |
| | | | 18 | Final Copper Foil | |
| | | | 75 | Laser prepreg | |
| | INT1 | 2 | 18 | Copper Foil | 1x1080 |
| | | | | Core | |
| | INT2 | 3 | 18 | Copper Foil | |
| | | | | Preprag | |
| | INT3 | 4 | 18 | Copper Foil | |
| | | | | Core | |
| | INT4 | 5 | 18 | Copper Foil | |
| | | | Preprag | | |
| INT5 | 6 | 18 | Copper Foil | | |
| | | | Core | | |
| INT6 | 7 | 18 | Copper Foil | | |
| | | | Preprag | | |
| INT7 | 8 | 18 | Copper Foil | | |
| | | | Core | | |
| INT8 | 9 | 18 | Copper Foil | 1x1080 | |
| | | | 75 | Laser prepreg | |
| BOTTOM SMB | 10 | 18 | Final Copper Foil | | |
| | | | 20 | Solder mask | |

Possible types of holes: 1-2, 9-10 (microvia); 2-7 or/and 8-9 (buried); 1-10 (PTH)
 Approximate board thickness: 0,95, 1,55, 1,90, 2,40, 2,90 mm

| 1-2-6-1 Structure | | Required possible board thickness: 1,0, 1,6, 2,0, 2,5, 3,0 +/- 10% | | |
|-------------------|---------|--|-------------------|-------------------|
| | Layer | | Thickness, um | Material |
| Nr. 26 | SMT TOP | 1 | 20 | Solder mask |
| | | | 18 | Final Copper Foil |
| | | | 75 | Laser prepreg |
| | INT1 | 2 | 18 | Copper Foil |
| | | | | Core |
| | INT2 | 3 | 18 | Copper Foil |
| | | | | Preprag |
| | INT3 | 4 | 18 | Copper Foil |
| | | | | Core |
| | INT4 | 5 | 18 | Copper Foil |
| | | | Preprag | |
| INT5 | 6 | 18 | Copper Foil | |
| | | | Core | |
| INT6 | 7 | 18 | Copper Foil | |
| | | | Preprag | |
| INT7 | 8 | 18 | Copper Foil | |
| | | | Core | |
| INT8 | 9 | 18 | Copper Foil | |
| | | | Laser prepreg | |
| BOTTOM | | 75 | Final Copper Foil | |
| SMB | | 20 | Solder mask | |

Possible types of holes: 1-2, 9-10 (microvia); 2-3 or/and 4-9 (buried); 1-10 (PTH)
 Approximate board thickness: 0,95, 1,55, 1,90, 2,40, 2,90 mm

3. PCB fabrication capabilities

Multilayer and HDI PCB

| Parameter | Typical | Advanced |
|---|----------------------|-------------------------|
| Number of layers | 4-16 | 4-28 |
| Minimum trace width, mm | 0,1 | 0,075 |
| Minimum spacing, mm | 0,1 / 0,075 | 0,075 / 0,075 |
| Trace to board edge distance (outer/inner layers), mm | 0,5 / 0,5 (V-cut) | 0,25 / 0,4 (routing) |
| Minimum laser hole size, mm | 0,1 | 0,075 |
| Minimum drill hole size, mm | 0,2 | 0,15 |
| Minimum annular ring (outer/inner layers), mm | 0,15 / 0,1 | 0,127 / 0,1 |
| Aspect ratio | 1:8 | 1:12 |
| Via-in-Pad technology | yes | yes |
| Buried (hidden) holes | yes | yes |
| Blind holes | yes | yes |
| Stacked and staggered microvias | yes | yes |
| Solder mask opening/ expansion, mm | 0,05 | 0,05 |

| | | |
|---|------|------|
| Solder bridge, mm | 0,1 | 0,1 |
| Minimum width of marking line (silkscreen), mm | 0,15 | 0,15 |
| Minimum height of marking text (silkscreen), mm | 1 | 0,8 |

Flexible PCB

| Parameter | Typical | Advanced |
|---|------------------------|----------|
| Number of layers | 1-2 | 4 |
| Material | Polyimide, PET | |
| Minimum trace width, mm | 0,15 | 0,1 |
| Minimum spacing, mm | 0,15 | 0,1 |
| Trace to board edge distance, mm | 0,5 | 0,25 |
| Minimum drill hole size, mm | 0,3 | 0,2 |
| Coverlay opening/expansion, mm | 0,15 | 0,15 |
| Possibility of manufacturing a stiffener for flex PCB | Yes (Polyimide or FR4) | |

Rigid-flex PCB

| Parameter | Typical | Advanced |
|---|------------------------|-------------------------|
| Number of layers | 4-16 | 4-28 |
| Minimum trace width, mm | 0,1 | 0,075 |
| Minimum spacing, mm | 0,1 | 0,075 |
| Trace to board edge distance (outer/inner layers), mm | 0,5 / 0,5 (V-cut) | 0,25 / 0,4 (routing) |
| Minimum drill hole size, mm | 0,25 | 0,2 |
| Minimum annular ring (outer/inner layers), mm | 0,15 / 1 | 0,127 / 0,1 |
| Via-in-Pad technology | yes | yes |
| Buried (hidden) holes (rigid part) | yes | yes |
| Blind holes (rigid part) | yes | yes |
| Solder mask (coverlay) opening/ expansion, mm | 0,05 / 0,15 | 0,05 / 0,15 |
| Solder bridge, mm | 0,1 / 0,2 | 0,1 / 0,2 |
| Minimum width of marking line (silkscreen), mm | 0,15 | 0,15 |
| Minimum height of marking text (silkscreen), mm | 1 | 0,8 |
| Possibility of manufacturing a stiffener for flex PCB | Yes (Polyimide or FR4) | |

Aluminum core PCB

| Parameter | Typical | Advanced |
|--|------------------|----------|
| Number of layers | 1-2 | 1-4 |
| Board Thickness, mm | 0,5 – 3,2 | |
| Copper thickness, μm | 35 | |
| Dielectric thickness, μm | 50, 75, 100, 150 | |
| Thermal conductivity, $\text{W}/(\text{m}\cdot\text{K})$ | 1-4 | |
| Dielectric strength, kV | 2-6 | |
| Maximum size, mm | 550,0 x 950,0 | |
| Minimum trace width, mm | 0,2 | 0,15 |
| Minimum spacing, mm | 0,2 | 0,15 |
| Trace to board edge distance, mm | 0,5 | 0,25 |
| Minimum drill hole size, mm | 0,9 | 0,6 |
| Solder bridge, mm | 0,1 | 0,05 |

Notes:

Standard copper via wall thickness is up to 20 μm .

Gold thickness in IG coating — 0,05-0,11 μm , Hard Gold (Gold Fingers) — 0,07-1,27 μm

Below there are the conductor/spacing restrictions on the PCB for different thicknesses of copper:

Outer layers

| | | | | | |
|---------------------------|------------------|------------------|-------------------|-------------------|-------------------|
| Finished copper thickness | 35 μm | 70 μm | 105 μm | 140 μm | 210 μm |
| Minimum trace width | 0,1mm | 0,20mm | 0,23mm | 0,30mm | 0,60mm |
| Minimum clearance | 0,1mm | 0,20mm | 0,24mm | 0,35mm | 0,70mm |

Inner layers

| | | | | | |
|---------------------------|------------------|------------------|-------------------|-------------------|-------------------|
| Finished copper thickness | 35 μm | 70 μm | 105 μm | 140 μm | 210 μm |
| Minimum trace width | 0,1mm | 0,20mm | 0,27mm | 0,34mm | 0,60mm |
| Minimum clearance | 0,1mm | 0,20mm | 0,30mm | 0,45mm | 0,85mm |