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# PCB's manufacture parameters

summary of most habitual

## Spacings, widths and rings

| CLASSES | | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Minimum conductor width and spacing: | | | | | | |
| OUTER LAYERS | Thickness copper foil of 17 µ | 0.30 | 0.20 | 0.15 | 0.125 | 0.10 |
| | Thickness copper foil of 35 µ | 0.30 | 0.20 | 0.15 | 0.15 | |
| | Thickness copper foil of 70 µ | 0.35 | 0.25 | 0.20 | 0.175 | |
| INNER LAYERS | Thickness copper foil of 17 µ | 0.25 | 0.15 | 0.125 | 0.10 | 0.075 |
| | Thickness copper foil of 35 µ | 0.30 | 0.20 | 0.15 | 0.125 | 0.10 |
| | Thickness copper foil of 70 µ | 0.30 | 0.20 | 0.175 | 0.15 | |
| Aspect-Ratio (pcb thickness/minimum hole) | | 5 | 5 | 6 | 8 | 13(1) |
| Minimum plated hole | | 0.50 | 0.30 | 0.30 | 0.20 | 0.15 |
| Minimum non plated hole | | 0.60 | 0.40 | 0.40 | 0.30 | 0.25 |
| Minimum anular ring in outer layer | | 0.22 | 0.17 | 0.13 | 0.10 | 0.075 |
| Minimum anular ring in inner layer | | 0.25 | 0.22 | 0.19 | 0.15 | 0.125 |
| Minimum anular spacing in ground plane | | 0.40 | 0.40 | 0.30 | 0.25 | 0.20 |

(1) Maximum thickness: 2 mm

## HDI microvias

| CLASSES | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|
| Minimum diameter microvia | | | 0.10(1) | 0.075(2) | 0.075(2) |
| Microvia surface pad | | | 0.35 | 0.30 | 0.25 |
| Microvia landing pad | | | 0.30 | 0.25 | 0.20 |
| Minimum wall between microvia and thru hole | | | 0.25 | 0.20 | 0.15 |
| Minimum buried drill | | | 0.30 | 0.20 | 0.15 |
| Minimum wall between microvia and buried hole | | | 0.20 | 0.15 | 0.10 |
| Minimum wall between microvias | | | 0.20 | 0.15 | 0.10 |
| Minimum wall between microvias in 2 levels | | | 0.20 | 0.15 | 0.10 |

(1) Maximum thickness: 0.10 mm.
(2) Maximum thickness: 0.065 mm.

## Drills

| CONVENTIONAL DRILLS | STANDARD | SPECIALIZED |
|---|---|---|
| Minimum wall between plated holes | 0.40 | 0.35 |
| Minimum wall between non plated holes | 0.25 | 0.20 |
| Minimum anular ring in non plated holes | 0.25 | 0.20 |
| Minimum distance conductor/non plated holes | 0.20 | 0.15 |

## Non-plated finishing

| SOLDERMASK | STANDARD | SPECIALIZED |
|---|---|---|
| Photoimageable soldermask clearance | 0.10 | 0.075 |
| Soldermask minimum line (SMT) | 0.10 | 0.075 |

| LEGEND | STANDARD | SPECIALIZED |
|---|---|---|
| Minimum legend line | 0.15 | 0.125 |

| PEEL-OFF MASK | STANDARD | SPECIALIZED |
|---|---|---|
| Minimum peel-off mask overlapping | 1 | 0.60 |
| Mínimum peel-off mask/pad spacing | 0.50 | 0.50 |
| Mínimum peel-off mask/boardedge spacing | 0.40 | 0.40 |
| Maximum pell-off mask filled hole | 2 | 2 |

| GRAPHITE | STANDARD | SPECIALIZED |
|---|---|---|
| Minimum graphite overlapping | 0.20 | 0.125 |
| Minimum graphite spacing | 0.50 | 0.40 |
| Minimum graphite/conductor spacing | 0.40 | 0.30 |

## Mechanical finishing

| MILLING | STANDARD | SPECIALIZED |
|---|---|---|
| Conductor to boardedge minimum spacing | 0.20 | 0.15 |

| SCORING | STANDARD | SPECIALIZED |
|---|---|---|
| Copper clearance for scoring | 1 | 0.75 |

This table indicates the most habitual parameters, for more information, see web.

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units in milimetres
version 1.1

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summary of most habitual

## Spacings, widths and rings

| CLASSES | | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Minimum conductor width and spacing: | | | | | | |
| OUTER LAYERS | Thickness copper foil of 17 µ | 12 | 8 | 6 | 5 | 4 |
| | Thickness copper foil of 35 µ | 12 | 8 | 6 | 6 | |
| | Thickness copper foil of 70 µ | 14 | 10 | 8 | 7 | |
| INNER LAYERS | Thickness copper foil of 17 µ | 10 | 6 | 5 | 4 | 3 |
| | Thickness copper foil of 35 µ | 12 | 8 | 6 | 5 | 4 |
| | Thickness copper foil of 70 µ | 12 | 8 | 7 | 6 | |
| Aspect-Ratio (pcb thickness/minimum hole) | | 5 | 5 | 6 | 8 | 13(1) |
| Minimum plated hole | | 20 | 12 | 12 | 8 | 6 |
| Minimum non plated hole | | 24 | 16 | 16 | 12 | 10 |
| Minimum anular ring in outer layer | | 9 | 7 | 5 | 4 | 3 |
| Minimum anular ring in inner layer | | 10 | 9 | 8 | 6 | 5 |
| Minimum anular spacing in ground plane | | 16 | 16 | 12 | 10 | 8 |

(1) Maximum thickness: 80 mils

## HDI microvias

| CLASSES | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|
| Minimum diameter microvia | | | 4(1) | 3(2) | 3(2) |
| Microvia surface pad | | | 14 | 12 | 10 |
| Microvia landing pad | | | 12 | 10 | 8 |
| Minimum wall between microvia and thru hole | | | 10 | 8 | 6 |
| Minimum buried drill | | | 12 | 8 | 6 |
| Minimum wall between microvia and buried hole | | | 8 | 6 | 4 |
| Minimum wall between microvias | | | 8 | 6 | 4 |
| Minimum wall between microvias in 2 levels | | | 8 | 6 | 4 |

(1) Maximum thickness: 4 mils.
(2) Maximum thickness: 3 mils.

## Drills

| CONVENTIONAL DRILLS | STANDARD | SPECIALIZED |
|---|---|---|
| Minimum wall between plated holes | 16 | 14 |
| Minimum wall between non plated holes | 10 | 8 |
| Minimum anular ring in non plated holes | 10 | 8 |
| Minimum distance conductor/non plated holes | 8 | 6 |

## Non-plated finishing

| SOLDERMASK | STANDARD | SPECIALIZED |
|---|---|---|
| Photoimageable soldermask clearance | 4 | 3 |
| Soldermask minimum line (SMT) | 4 | 3 |

| LEGEND | STANDARD | SPECIALIZED |
|---|---|---|
| Minimum legend line | 6 | 5 |

| PEEL-OFF MASK | STANDARD | SPECIALIZED |
|---|---|---|
| Minimum peel-off mask overlapping | 40 | 24 |
| Mínimum peel-off mask/pad spacing | 20 | 20 |
| Mínimum peel-off mask/boardedge spacing | 16 | 16 |
| Maximum pell-off mask filled hole | 80 | 80 |

| GRAPHITE | STANDARD | SPECIALIZED |
|---|---|---|
| Minimum graphite overlapping | 8 | 5 |
| Minimum graphite spacing | 20 | 16 |
| Minimum graphite/conductor spacing | 16 | 12 |

## Mechanical finishing

| MILLING | STANDARD | SPECIALIZED |
|---|---|---|
| Conductor to boardedge minimum spacing | 8 | 6 |

| SCORING | STANDARD | SPECIALIZED |
|---|---|---|
| Copper clearance for scoring | 40 | 30 |

This table indicates the most habitual parameters, for more information, see web.

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units in mils
version 1.1