

Specifications Rigid Printed Circuit Boards (ref. qpi_spec_es_1208_2011_ML)

CAD/CAM

- Gerber + aperture list for all kinds of layers
- Gerber RS274X for all kinds of layers
- DPF for all kinds of layers
- ODB++ for all kinds of layers
- HPGL for mechanical drawings
- DXF for mechanical drawings
- DWG for mechanical drawings
- Excellon for all drill and rout files
- Sieb & Meyer for all drill and rout files
- Mentor neutral file for netlist comparison
- IPC356 file for netlist comparison

Dimensions/Thickness/Layer count

- Max. board size 1199x600 mm (47.2x23.6")*
*special sizes upon request
- Min. thickness 100µm (4mil)
- Max. thickness 8,0mm (0.31")
- Max. layer count rigid 54 layers

Materials

- CEM 3
- Fr-4 Standard Tg
- Fr-4 Mid Tg
- Fr-4 Hi Tg
- Aluminium base
- Teflon (Rogers®, Taconic®, Arlon®)
- BT epoxy
- PTFE alternatives
- Thermount®
- Copper Invar Copper

PCB types

- Single sided
- Double sided
- Multi layer
- Combination builds
(e.g. P.T.F.E./Fr-4, Non-ferrous Metal Core,
P.T.F.E. Polyimide)
- Metalcore
- 3 Dimensional Heat Sink
- H.D.I.
- V.H.D.I.
- Buried components

Via constructions

- Through hole via
- Laser drilled via
- Buried via
- Blind via
- Copper filled via
- Resin filled via
- Resist filled via
- Via on via
- plugged via

Solder resist

Solder resist colour options: Green, Red, Blue, Yellow, Black, White
Min thickness 15-30 µm (0.4 – 1.2 mil)
Min. clearance 75µm (3mil)
Min. line width 100µm (4mil)

Peel able resist

Silk screen

Legend colour options: White, Black, Yellow, Red
Min. line width 100µm (4mil)
Min. text height 500µm (20mil)

Solderable finishes

- Hot air solder level (HAL Pb)
- Hot air solder level (HAL Pb free)
- Immersion Ni/Au (Enig)
- Immersion Ni/Pd/Au (universal finish)
- Immersion Sn
- Immersion Ag
- Entek (OSP)
- ASIG
- Palladium
- Electrolytic NiAu (min. track/gap 100µm (4mil))
- Electrolytic silver over copper
- Au (soft gold, bondable)
- Carbon ink
- Gold edge connector

Controlled impedance

- Surface microstrip
 - Embedded microstrip
 - Coated microstrip
 - Edge-coupled surface microstrip
 - Edge-coupled embedded microstrip
 - Edge-coupled coated microstrip
 - Symmetrical stripline
 - Offset stripline
 - Edge-coupled Symmetrical stripline
 - Edge-coupled offset stripline
 - Broadside-coupled stripline
- Impedance tolerance 10% , 5%

Electrical test

- Flying probe
 - Dedicated (bed of needles) fixture test
- High voltage test optional



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Tolerances

Profile tolerance	+/-	100µm	4mil
Hole tolerance	+/-	50µm	2mil
Positional tolerance	+/-	25µm	1mil
Lamination tolerance	+/-	200µm	8mil
Scoring tolerance (Min. distance of copper to the middle of the scoring line 700µm (27.5mil))	+/-	100µm	4mil
Track width tolerance	+/-	10µm	0.4mil
Solder resist positional tolerance	+/-	75µm	3mil

Copper foil thicknesses

2µm*	35µm		1Oz
5µm*	70µm		2Oz
9µm	105µm	0.25Oz	3Oz
12µm	140µm	0.4Oz	4Oz
18µm	210µm	0.5Oz	6Oz

*Special Special constructions optional

PCB Features/Design rules

	Standard		HDI		VHDI	
	µm	mil	µm	mil	µm	mil
Track	100	4	75	3	20	0.8
Gap	100	4	75	3	20	0.8
Min. Drilled hole	250	10	75 /125	3/5	50	2
Aspect ratio	12:1	12:1	12:1	12:1	16:1	16:1
Aspect ratio blind via	1:1	1:1	1:1	1:1	1:1	1:1
Aspect ratio micro blind via	1:1	1:1	1:1	1:1	1:1	1:1
Min. Pad Through hole	500	20	450	18	350	14
Min. Micro via pad	250	10	250	10	225	9
Min. Annular ring	150	6	100	4	75	3
Track to PTH	200	8	150	6	110	4.3
Track to NPTH	225	9	225	9	150	6
Min. Dielectric separation	50	2	50	2	50	2

Approvals

- MIL-P-55110
- MIL-P-50884
- UL-94V0
- ESA certification
- ISO TS16949
- QS9000
- AEC-Q100
- AS9100

Manufacturing according

- IPC-A600 Class 2
- IPC-A600 Class 3

Testing According

- IPC-TM-650

Special products

Q.P.I. always strives to provide its clients with the products and technologies which they require and, should these not already exist, will develop them itself or in cooperation with others. Contact Q.P.I. for further information.