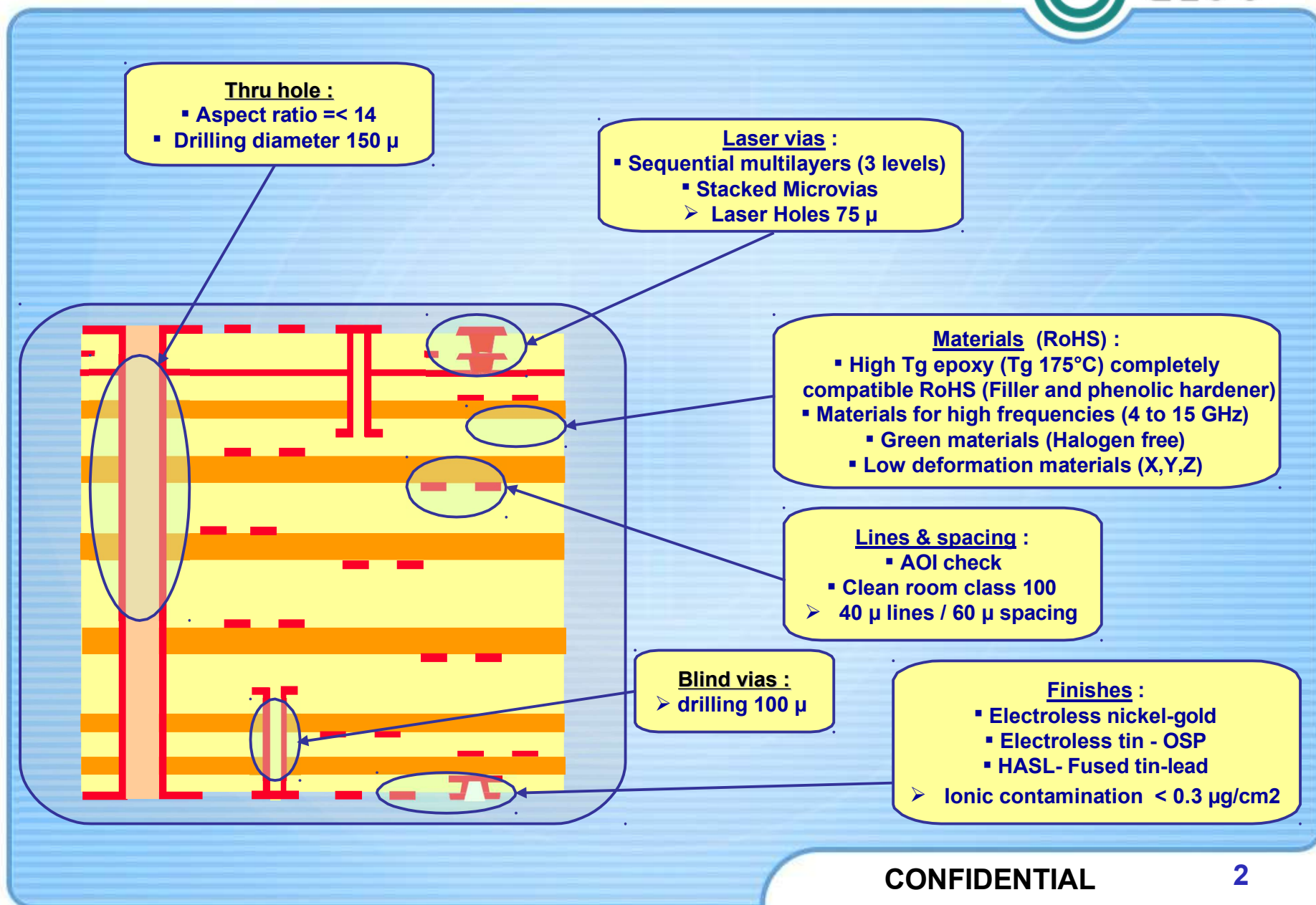


**Advanced technology
for
Specific Needs (close to silicon devices)**



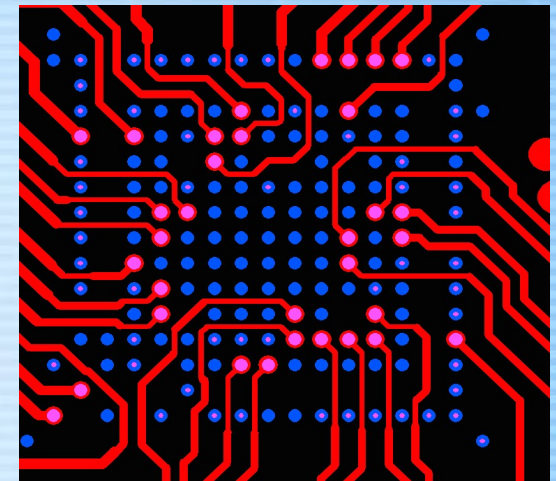
		Standard	Advanced	Emerging	Future
1. Line and Space	<i>Line Width Line Space</i>	100u 100u	75u 75u	50u 50u	20-35u 30u
2. Drilled Via Size	<i>Drill Size</i>	200u	150u	100u	75u
3. MicroVia Size	<i>Via Size</i>	100u	75u	60u	50u
4. Drilled Aspect	<i>Aspect Ratio</i>	12:1	18:1	24:1	30:1
5. MicroVia Aspect	<i>Aspect Ratio</i>	0.7:1	1:1	1.2:1	2:1
6. Microvia Stack-up	<i># Layers Buried Sub Stacked Vias</i>	1+1 No No	3+3 Yes Yes	5+5 Yes Yes	Any layer Yes Yes
7. Hole Fill/Cap Plate	<i>Min Hole Aspect Ratio</i>	200u 12:1	100u 18:1	75u 12:1	<75u >24

High Density PCB's



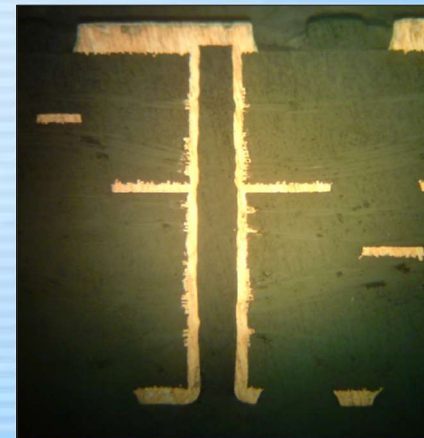
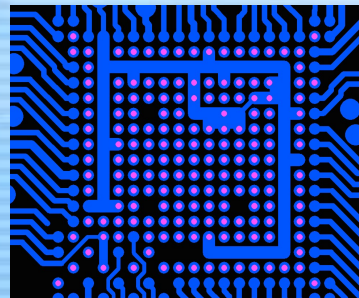
1	CU	9		50
	PPG	50		100
	PPG	50		
2	CU	18		18
	STRAT	100		100
3	CU	18		18
	PPG	50		86
	PPG	50		
4	CU	18		18
	STRAT	100		100
5	CU	18		18
	PPG	50		110
	PPG	50		
6	CU	9		27
	PPG	50		460
	PPG	50		
	PPG	50		
0	CU	0		
	STRAT	150		
0	CU	0		
	PPG	50		
	PPG	50		
	PPG	50		
7	CU	18		18
	STRAT	508		500
8	CU	18		50

Pad layer 6: 250um drill 100um
Min line: 75 um (at base)
Min space: 75 um



DESIGN

BGA 500um pitch (17*17 = 289 balls)
External layer pad : 350 um drill 100um
External min line: 100 um



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High Density PCB's

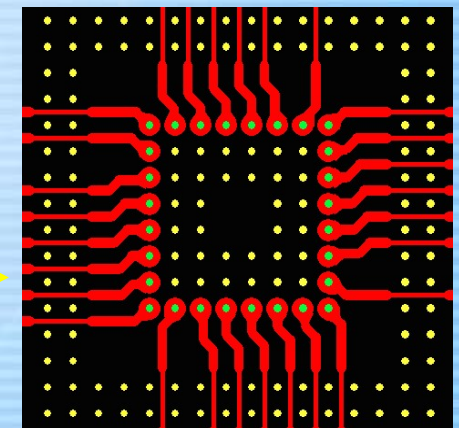
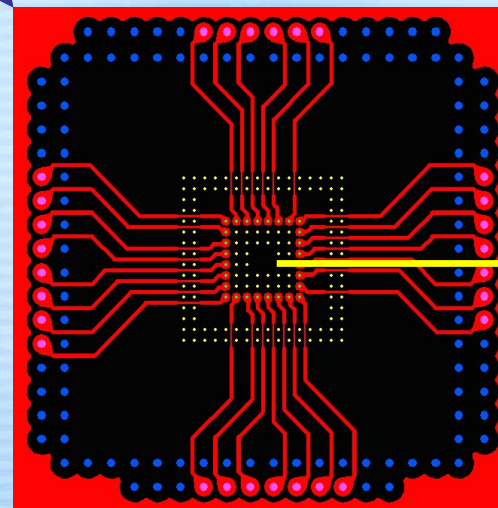
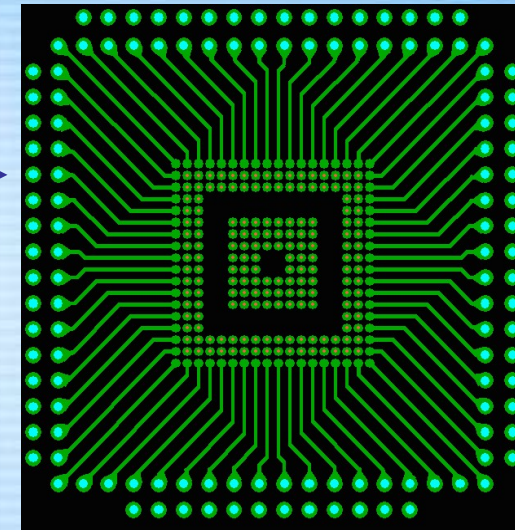


BGA at 0.5 mm pitch : one line between 2 pads
sequential board

COUCHE TYPE CUIVRE (*)
(microns)

1	E	45	==	===
2	P	18	---	---
3	L	18	---	---
4	P	18	---	---
5	L	18	---	---
6	EP	25	==	===
	L	18	---	---
	L	18	---	---
7	EP	25	==	===
8	L	18	---	---
9	P	18	---	---
10	L	18	---	---
11	P	18	---	---
12	E	45	==	===

==== cuivre "externe"
----- cuivre "interne"



**Drilled holes at 150μ
60 μ lines**

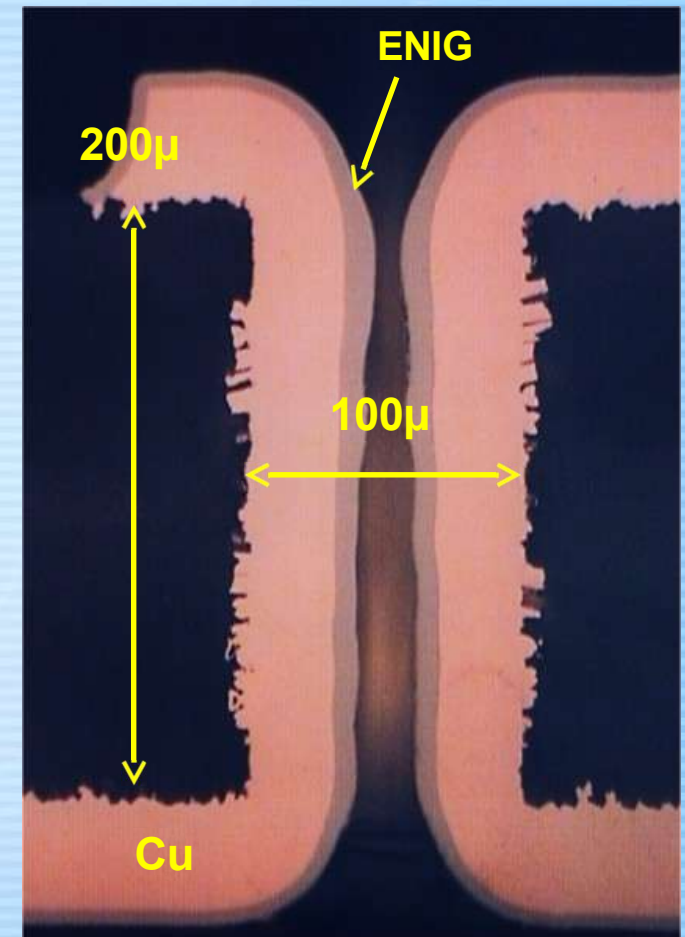
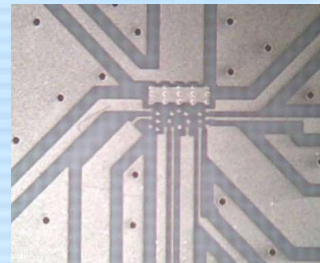
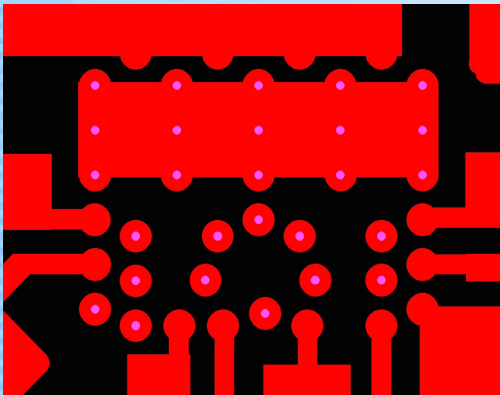
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High Density PCB's



Double sided board :

- Flip-chip at 250 μ pitch
- 165 μ pad
- Drilling at 100 μ
- Base material : Hitachi 679F



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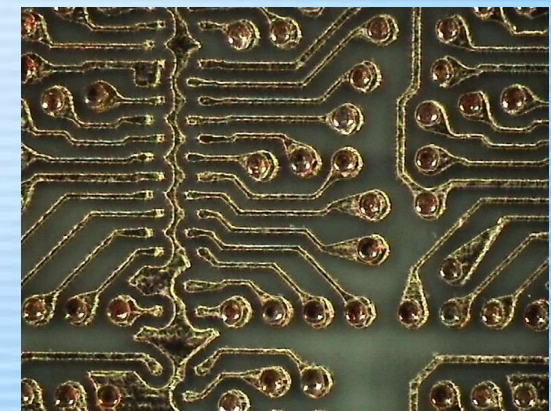
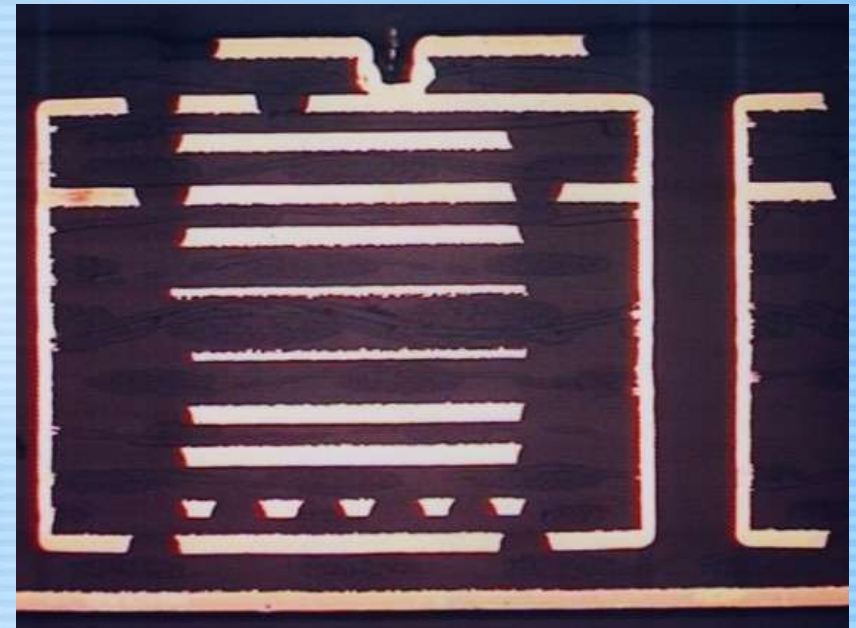
High Density PCB's



		(microns)		(microns)
1	E	45	==	32
			==	67
2	ELP	25	==	30
			==	38
3	ELP	25	==	30
			==	63
4	ELP	25	==	31
			==	43
5	ELP	25	==	30
			==	72
6	LP	12	--	12
			--	100
7	LP	12	--	13
			--	82
8	ELP	25	==	30
			==	43
9	ELP	25	==	32
			==	64
10	ELP	25	==	27
			==	36
11	ELP	25	==	31
			==	68
12	E	45	==	30

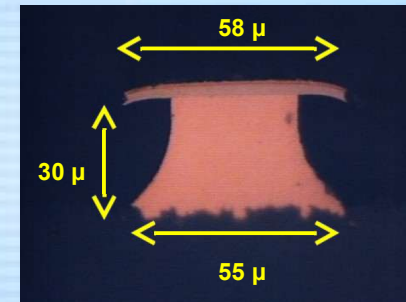
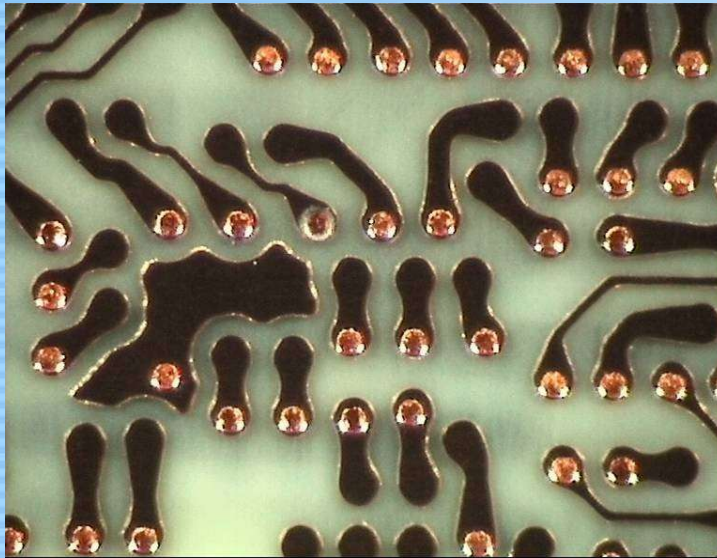
TOTAL		314		
-------	--	-----	--	--

==== cuivre "externe"
 ----- cuivre "interne"

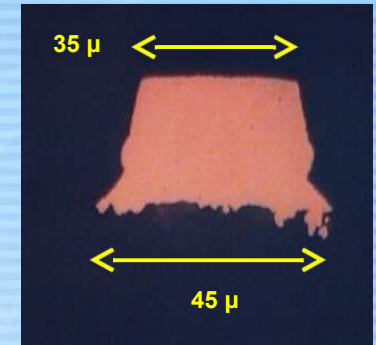


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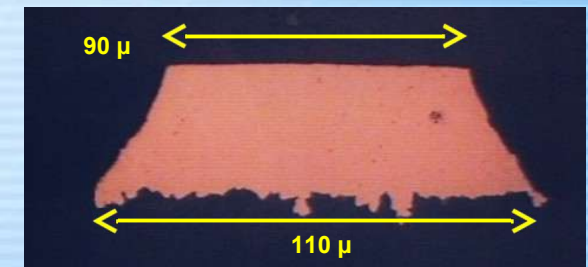
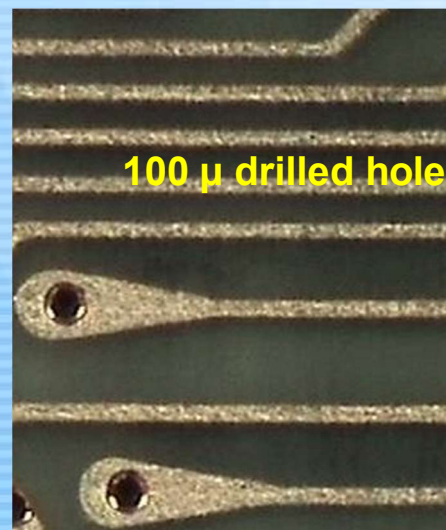
High Density PCB's



External line with Nickel & Gold



Inner line



Inner line

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