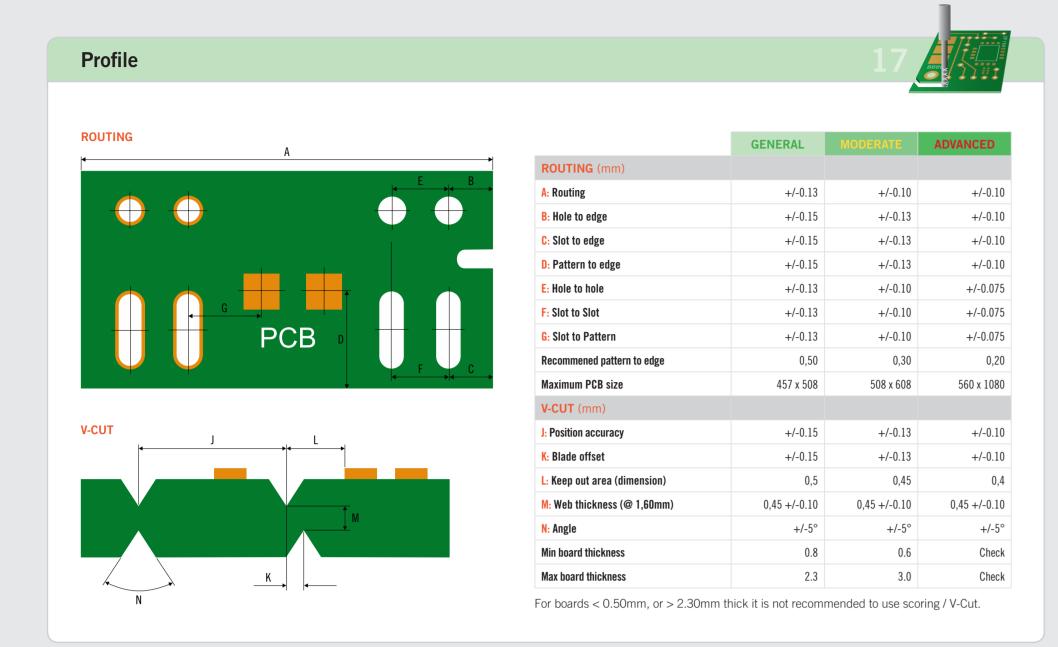
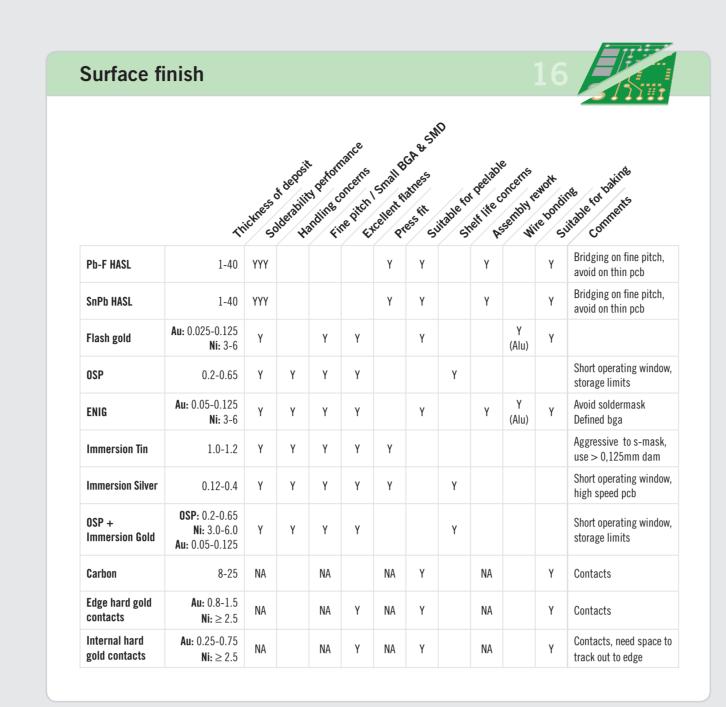
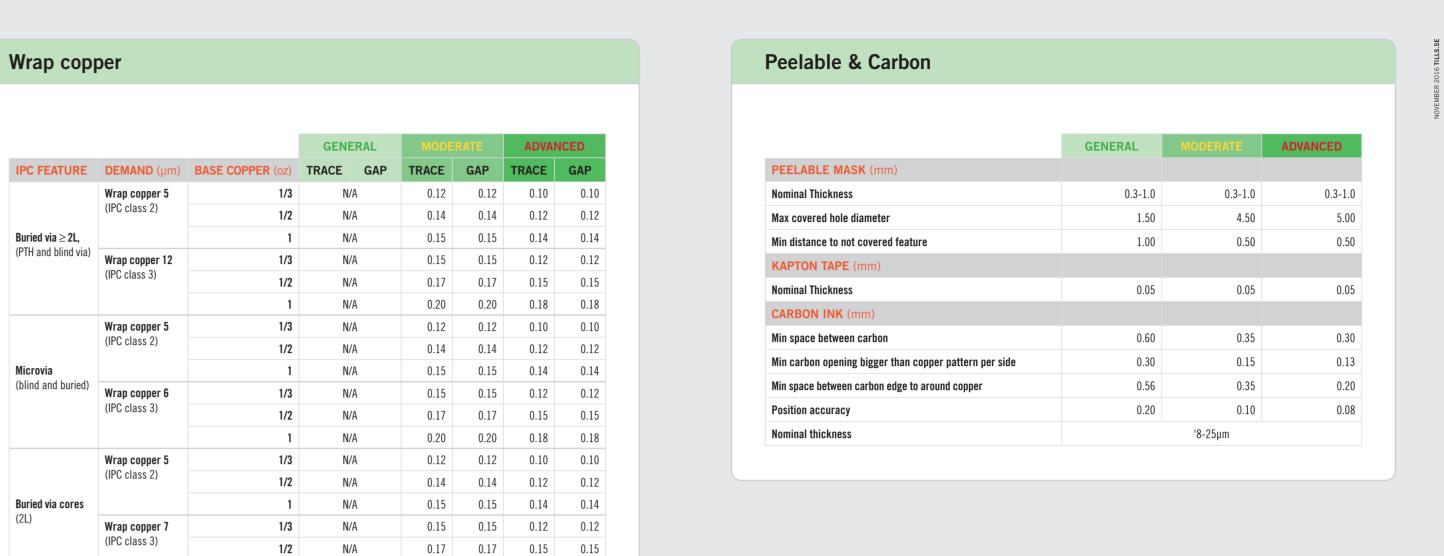
PCB DESIGN GUIDELINES 1.0



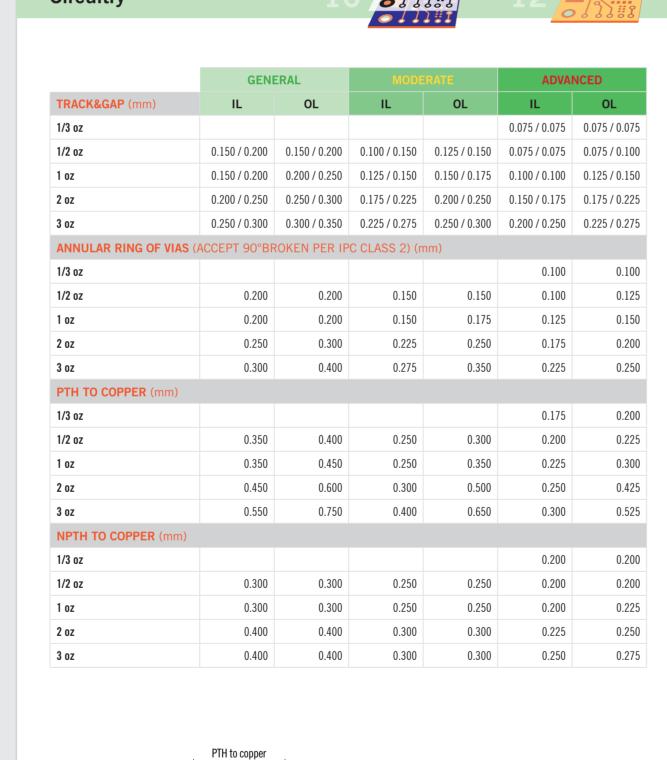


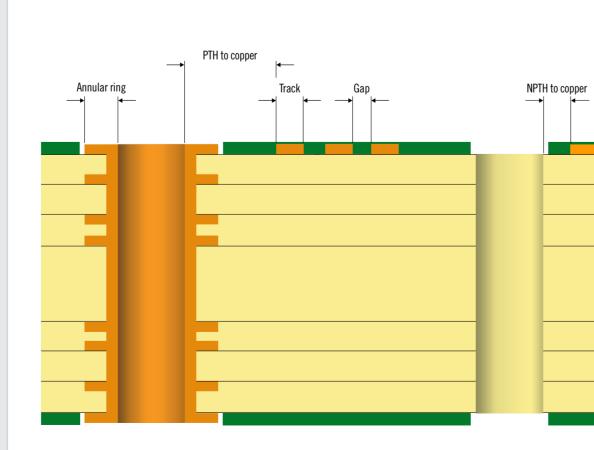




Drilling & hole size	zes					
				•		
DRILLING	← B		GENERAL	MODERATE	ADVANCED	
		DRILLING (mm)				
		Min. finished PTH size (mech. drilled)	0,25	0,2	0,15	
		Max. finished PTH size (mech. drilled)	5,35	6,2	6,35	
		Min. slot width mechanically drilled	0.6	0.5	0.4	
		True positional tolerance	+/-0.1	+/-0.075	+/-0.05	
	 A	Aspect Ratio	(0,30) 6:1	(0,30) 12:1	(0,25) 16:1	
	A	A: Min. space between holes	0,36	0,3	0,25	
BACK DRILLING /	COUNTER SINK HOLES	B: Min. space between NPTH and edge	0,4	0,3	0,25	
COUNTER BORE	D	BACK DRILLING / COUNTER BORE	(mm)			
	F	A: Depth tolerance	+/-0.20	+/-0.15	+/-0.10	
+	1	B: Min. remain thickness and tolerance	0.5+/-0.25	0.35+/-0.1	0.3+/-0.1	
A	C	COUNTER SINK HOLES (mm)	COUNTER SINK HOLES (mm)			
1	<u> </u>	C: Depth tolerance	+/-0.20	+/-0.15	+/-0.1	
В	E	D: Angle and tolerance	90+/-10°	82, 90+/-10°	82, 90, 135+/-10°	
-	· ·	E: Min. remain thickness and tolerance	0.50 +/-0.25	0.35 +/-0.1	0.3 +/-0.1	
<u> </u>		F: Countersink tolerance	+/-0.40	+/-0.15	+/-0.10	







naterials 2			2	Getting it right from the star		
	GENERAL	MODERATE	ADVANCED	Nothing affects the PCB's cost and quality as much as the initial design. As mod-		
TYPE	& THICKNESS			ern electronic products are expected to offer more and more advanced functions,		
	CEM-3, FR4 (standard, mid perfor- mance, high performance, halogen free)	FR2, CEM-1, CEM-3, FR4 (standard, mid performance, high performance, halogen free)	FR4 (standard, mid performance, high performance, halogen free, high thermal conductivity FR4), Polyimide (PI) High Speed materials:	while the products themselves are becoming smaller and smaller, this puts greated demands on the PCB design and the importance of making the right choices at the design stage.		
			Mid – loss material (Panasonic / EMC / TUC)	More than 30% of the Gerber data packs we receive do have some issues, generally, ambiguous information, errors, design rule conflicts, missing information and		
			Low — loss material (Nelco / Panasonic / Isola / EMC/ TUC)	contradictions between the data and specifications. To prevent that it gets wrong f the start, we have put together these design guidelines, to use as a checklist		
			Ultra low – loss material (Panasonic / Isola / Rogers	When using combinations of parameters, you should always consult your local		

NCAB technical contact person.

0.20 0.20 0.18 0.18

/ Hitachi / Getek /)

Micro-wave: Taconic / Arlon/rogers

PI, LCP material

Aluminum, copper, stainless

steel based: (Bergquist / Ventec / Polytronics /

Doosan / Chin-shi / etc.)

Dielectric thickness = 50 - 200um Thermal conductivity = 1 w/m.k -

7 w/m.k

0.22

0.18

0.12

0.13

0.08

0.05

12-30

0.5-8.0

1.2-8.0

For HDI+VIA IN PAD TYPE VII+Blind Vias etc high technology, please contact NCAB for confirmation of features.

PI, PET material

Aluminum based:

(Bergquist / Ventec / KW / Laird /

Dielectric thickness = 75 - 200um Thermal conductivity = 1 w/m.k -

0.1mm for PCB 0.05mm for PCB; 0.025mm for FPC 0.05mm for PCB; 0.012mm for FPC

1-4

0.6-2.5

0.7-2.5

6-10

0.5-3.2

0.6-6.0

1.3-6.0

0.1-0.4

0.03-0.08

0.075(PI)-1.6(FR4) 0.025(PI)-4.0(FR4)

0.22

0.18

0.13

Base ma

THICKNESS (mm)

COMMON PP THICKNESS (TOLERANCE AS PER IPC-4101 B/L) (mm)

Standard core thickness include 0.10, 0,20, 0,4, 0,6, 0,8 and 1,00mm. Please contact NCAB Group for full details regarding material availability.

Min. dielectric

7628 (50%)

7628 (43%)

2116 (52%)

2116 (56%)

1080 (65%)

106 (75%)

Board thickness

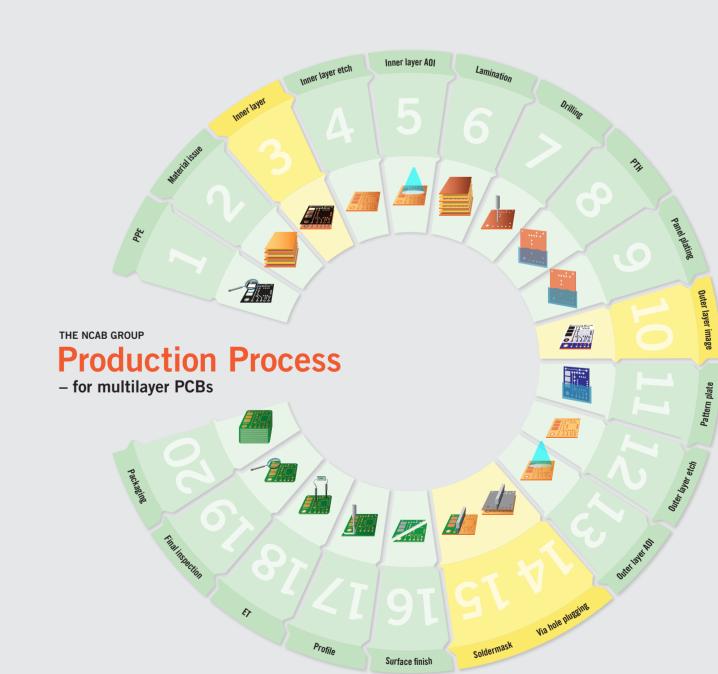
THICKNESS OF ML (mm)

THICKNESS OF FLEX (mm)

12L +

1-2L

Coverlay





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oldermask / Via hole plug	gging			14		
DERMASK		(mm)	GENERAL	MODERATE	ADVANCED	
		Colors	Gloss: green / black / white / red / blue Matte: green / black	Gloss: green / black / white / red / blue / yellow Matte: green / black / red / blue	Gloss: green / black / white / red / blue / yellow / transparent Matte: green / black / red / blue / yellow / white Semi matte: green	
		Thickness		10-30µm on copper surface, 5µm on copper edge		
		A: SMT to covered copper	0.20	0.15	0.10	
		B: Copper to copper spacing	0.24	0.20	0.18	
		C: Solder mask oversize	0.08	0.06	0.05	
		D: Minimum soldermask web	0.10	0.08	0.075	
HOLE PLUGGING	Copper wrap	For >1oz base copper, please conta				
1		(mm)	GENERAL	MODERATE	ADVANCED	
70%		Soldermask IPC 4761 Type VI	0.30-0.60	0.25-0.60	0.20-0.60	
		Resin non conductive IPC4761 Type VI		0.25-0.50	0.20-0.50	
<u> </u>		Resin electrical conductive			0.20-0.50	
	Base copper Type VII resin filled via hole	Resin thermal conductive			0.20-0.50	
oldermask filled via hole. Target						



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