

ZOT

PCB Division Capability Sheet

For other enquiries, please visit our website or contact us directly



info@zot.co.uk



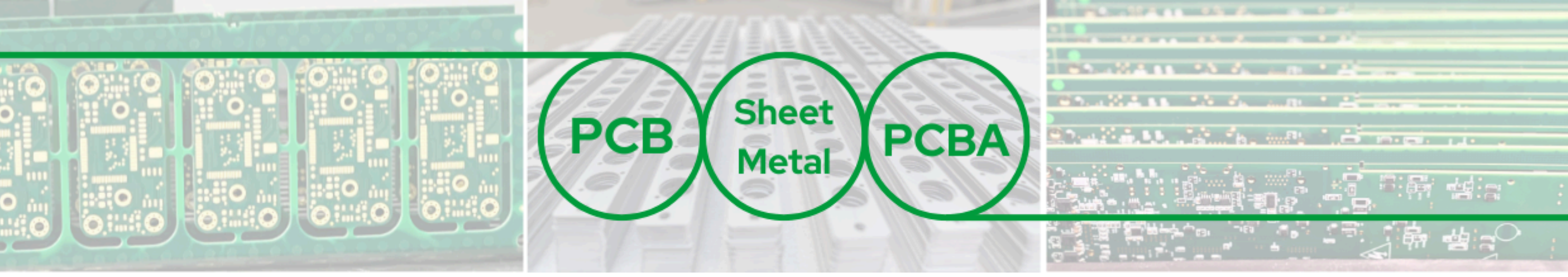
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PCB
Sheet Metal
PCBA

<u>Material</u>	Standard	Prototype	<u>Other</u>	Standard	Prototype
	Capabilities	Capabilities		Capabilities	Capabilities
FR4 – High TG Isola 370HR, VT47	Y	Y	Blind & Buried Microvia	Y	Y
FR4 - Mid TG Ventec VT 481 , IS 400	Y	Y	Buried Resistors x	Y	Y
FR4 - Low TG	Y	Y	Non Conductive hole fill	Y	Y
Polyimide – various options	Y	Y	Copper filled via – via in pad	Y	Y
PTFE – Rogers 3000 (SS / PTH only)	Y	Y	Multi copper weight PCB	Y	Y
Rogers 4000 series	Y	Y	Depth Control Drill & Rout	Y	Y
EMC	Y	Y	Countersink	Y	Y
Omega Ply	Y	Y	Back Drilling	Y	Y
Halogen Free	Y	Y	Impedance (Single Ended & Differential)	+/-10%	
DuPont – Pyralux AP/FR/LF	Y	Y	Scoring	Y	Y
Other Flex material – on request	Y	Y	PCB Edge Chamfer	Y	Y
			Laser Direct Imaging	Y	Y
Ask for other materials			Mixed Dielectrics & Hybrid constructions	Y	Y
			Sequential Lamination	Y	Y

Surface Finishes

ENIG	Y	Y
Lead Free HASL	Y	Y
Leaded HASL	Y	Y
Immersion Silver	Y	Y
Electrolytic Nickel /Gold	Y	Y
Selective & Multiple Surface Finish	Y	Y
Immersion Tin	S	S
ENEIPG	S	S

S = subcontract, this will add to lead-time

Standard Features

Maximum Panel Size	574mm X 406mm	574mm X 406mm
Minimum Panel Thickness	0.400mm	0.100mm
Maximum Panel Thickness	3.2mm	6.00mm
Maximum PTH Aspect Ratio	8:1	15:1
Maximum Copper weight	3oz	6oz
Maximum Layer Count	2-18	18-28
Minimum Core Thickness	0.100mm	0.075mm
Minimum Dielectric	0.065mm	0.025mm
Minimum Drill size (pth)	0.200mm	0.150mm
Soldermask Registration	+/- 0.100mm	+/-0.037mm
Copper feature to PCB edge	+/-0.200mm	+/-0.150mm
Minimum Track & Space – Outer*	0.100mm	0.075mm
Minimum Track & Space – Inner*	0.100mm	0.075mm

Microvia Features

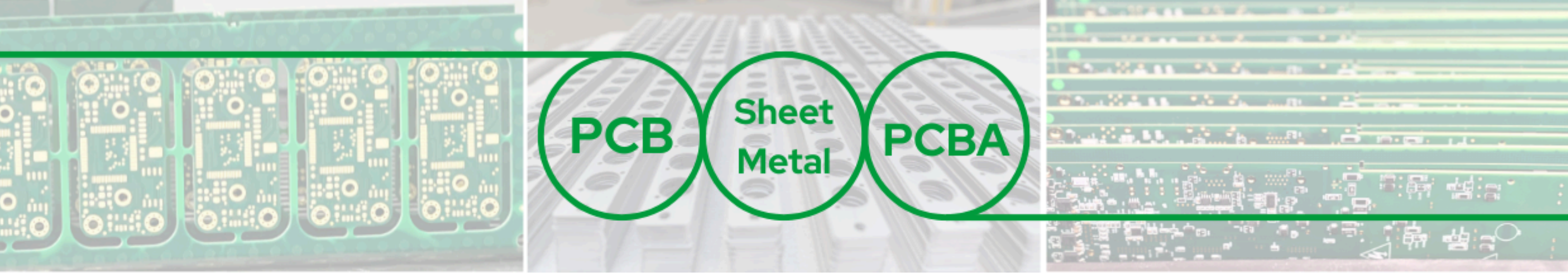
Stacked	Y	Y
Staggered	Y	Y
Solid Copper Fill	Y	Y
1+N+1	Y	Y
2+N+2	Y	Y
3+N+3	N	Y

Electrical Test

Cad Net-list testing (ipc-356A)	Y	Y
Computer Aided test Engineering work stations	Y	Y
Electrical Test compliance to IPC-9252	Y	Y
Flying Probe pitch	0.400mm	0.300mm
Standard SMD pitch	0.400mm	0.300mm

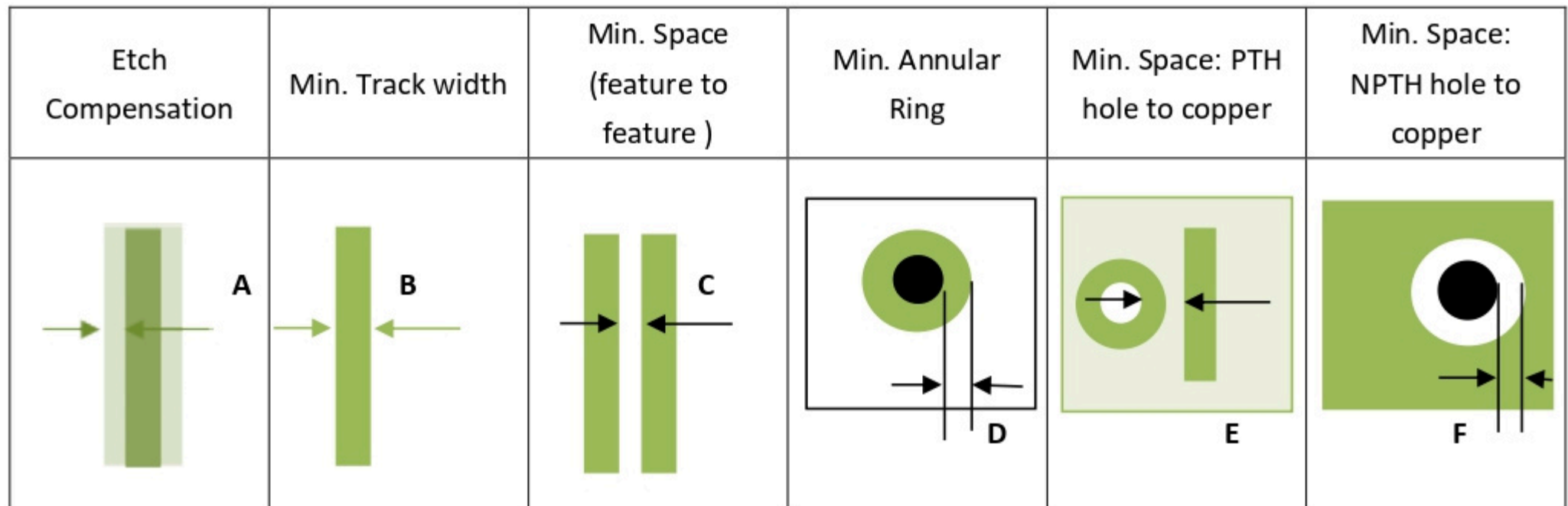
Quality System & Certifications

AS9100
ISO 9001
UL CERTIFICATE NO. E76334
BS EN 123000
IPC-600,6011 / 6012 / 6013 / 6016
UNLESS OTHERWISE STATED DEFAULT IS CLASS 2



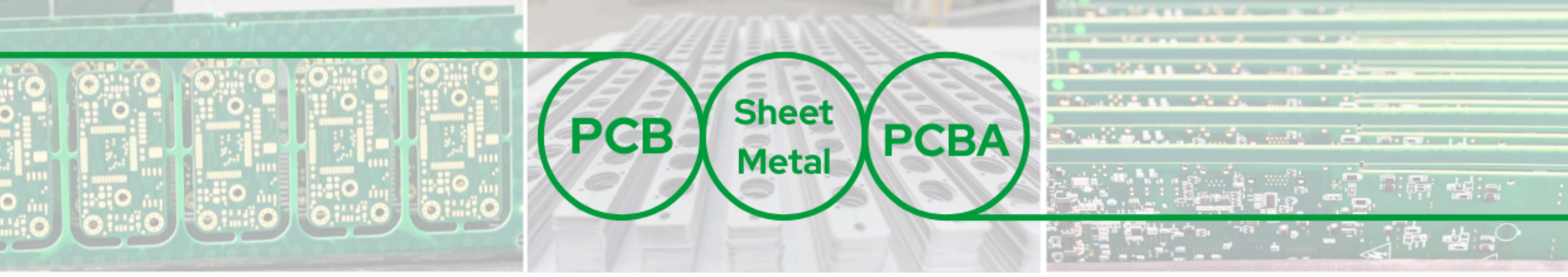
1 Inner and outer layer copper features

1.1 Description



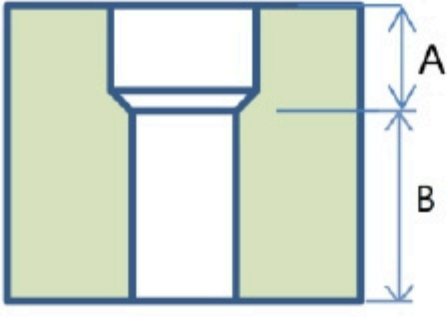
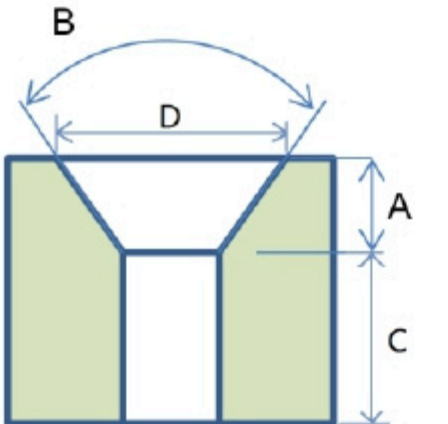
1.2 Capability

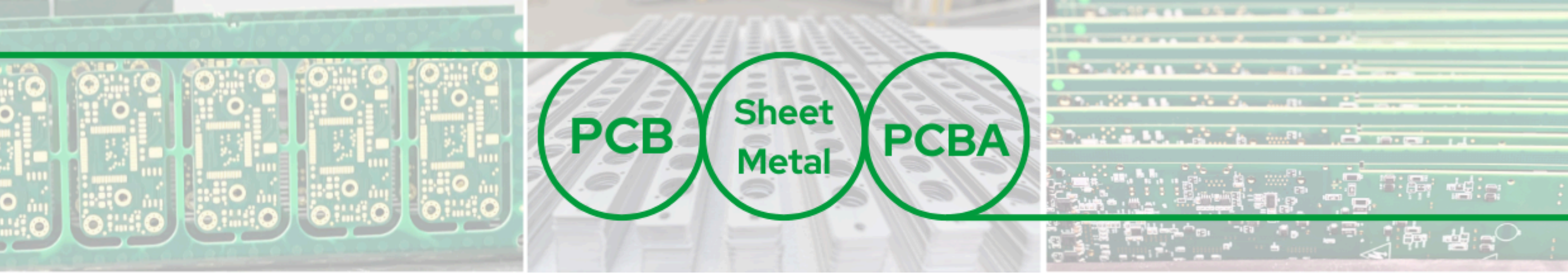
Base copper thickness		A	B	C	D	E	F
Inner layer	18um / 1/2 oz	0.0075	0.075	0.075	0.075	0.125	0.15
	35um / 1oz	0.015	0.100	0.100	0.090	0.190	0.15
	70um / 2oz	0.030	0.175	0.185	0.105	0.280	0.15
	105um / 3oz	0.045	0.225	0.240	0.115	0.340	0.15
	140um / 4oz	0.060	0.300	0.270	0.135	0.435	0.15
	175um / 5oz	0.075	0.300	0.300	0.150	0.450	0.15
	210um / 6oz	0.090	0.300	0.330	0.165	0.465	0.15
Outer layer	12um / 1/3oz	0.008	0.075	0.075	0.075	0.125	0.15
	18um / 1/2oz	0.015	0.100	0.100	0.075	0.175	0.15
	35um / 1oz	0.025	0.125	0.125	0.100	0.225	0.15
	70um / 2oz	0.040	0.150	0.180	0.125	0.275	0.15
	105um / 3oz	0.055	0.200	0.259	0.150	0.350	0.15
	140um / 4oz	0.070	0.200	0.274	0.175	0.375	0.15
	175um / 5oz	0.090	0.250	0.330	0.200	0.450	0.15
	210um / 6oz	0.110	0.300	0.370	0.225	0.525	0.15



2 Drilling/Routing/V-cut/Bevel

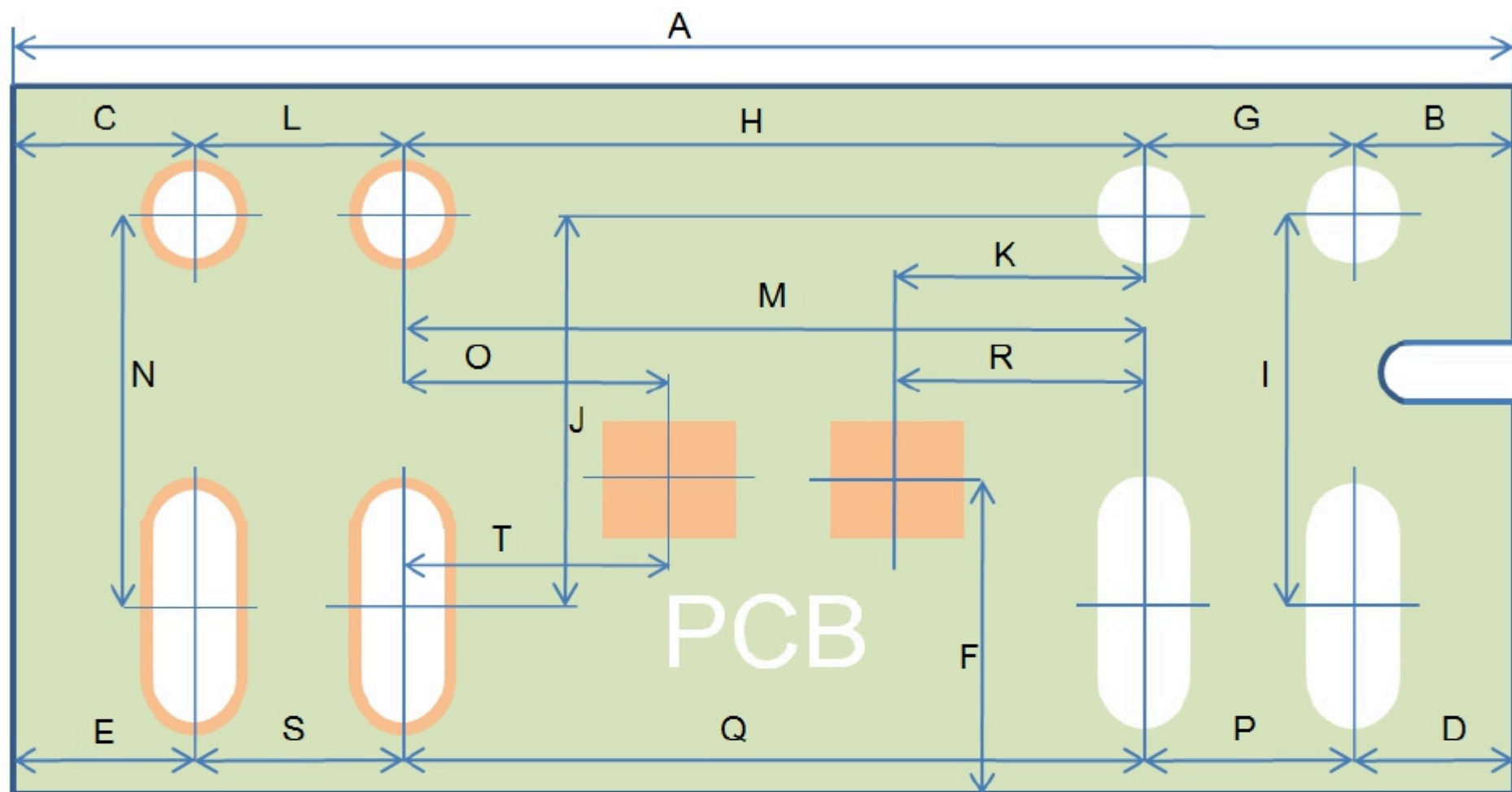
2.1 Drilling

	Size		Best tolerance PTH		Best tolerance NPTH	
Min. hole mechanically drilled	0.15	mm	0.05	+/-mm	0.025	+/-mm
Max. hole mechanically drilled	6.3	mm	0.05	+/-mm	0.025	+/-mm
Min. slot width mechanically drilled	0.5	mm	0.05	+/-mm	0.025	+/-mm
Min. slot length mechanically drilled	1.0	mm	0.05	+/-mm	0.025	+/-mm
True positional tolerance	hole to hole		0.075	+/-mm	0.075	+/-mm
Aspect Ratio	15:1 (0.2mm drill)					
Min. space between holes	0.175 mm					
Min. space between NPTH and edge	0.200 mm					
Back drilling / Counter bore			Depth tolerance (A)	0.050 +/- mm	0.050 +/- mm	
			Min. remain thickness and tolerance (B)	0.075 +/- mm	0.075 +/- mm	
Counter sink holes			Depth tolerance (A)	0.05 +/- mm	0.05 +/- mm	
			Angle and tolerance (B)	4 +/-Degree	4 +/-Degree	
			Min. remain thickness and tolerance (C)	0.075 +/- mm	0.075 +/- mm	
			Countersink tolerance (D)	0.05 +/- mm	0.05 +/- mm	

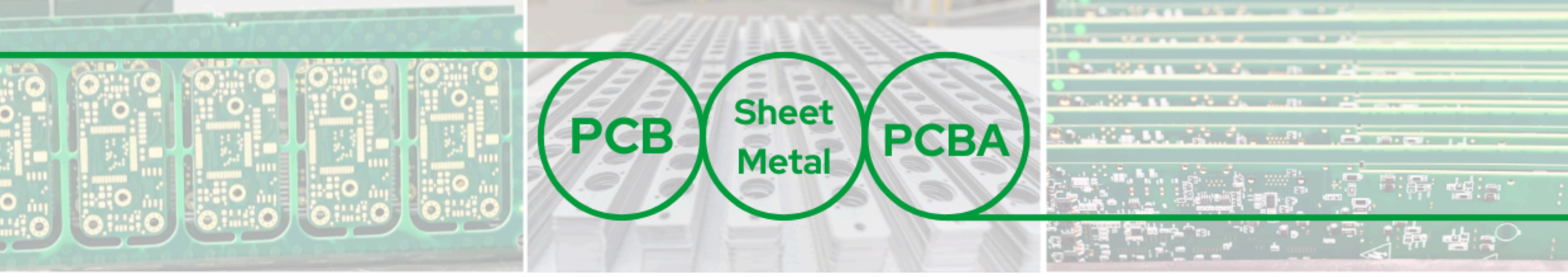


2.2 Routing

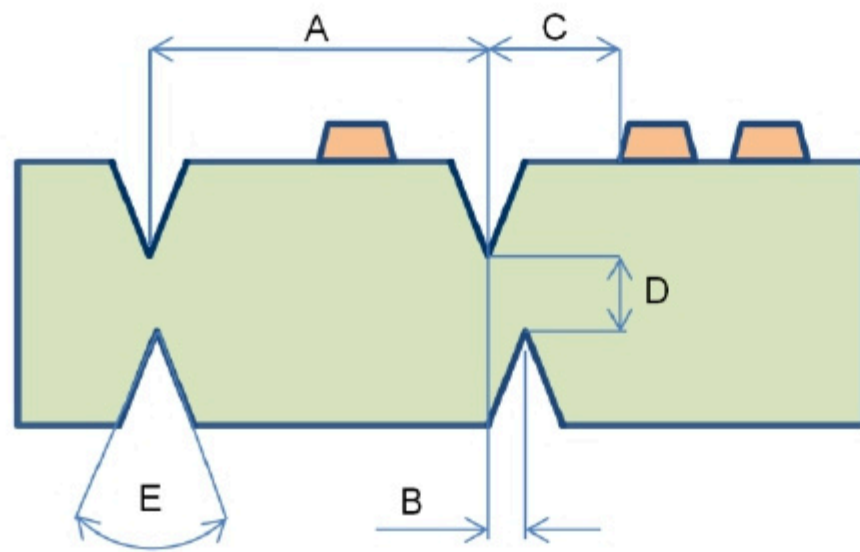
Rout Diameter	Standard:	2.4	mm
	Other:	0.5 – 3.175	mm



Tolerance in mm (±)	Board Edge	NPTH	PTH	NP Slot	PT Slot	Cu Pad
Board Edge	A 0.20 +/-mm	B 0.20 +/-mm	C 0.20 +/-mm	D 0.20 +/-mm	E 0.2 +/-mm	F 0.15 +/-mm
NPTH		G 0.20 +/-mm	H 0.10 +/-mm	I 0.20 +/-mm	J 0.20 +/-mm	K 0.075 +/-mm
PTH			L 0.25 +/- mm	M 0.20 +/-mm	N 0.075 +/-mm	O 0.075 +/- mm
NP Slot				P 0.60 +/-mm	Q 0.20 +/-mm	R 0.10 +/-mm
PT Slot					S 0.55 +/-mm	T 0.10 +/-mm



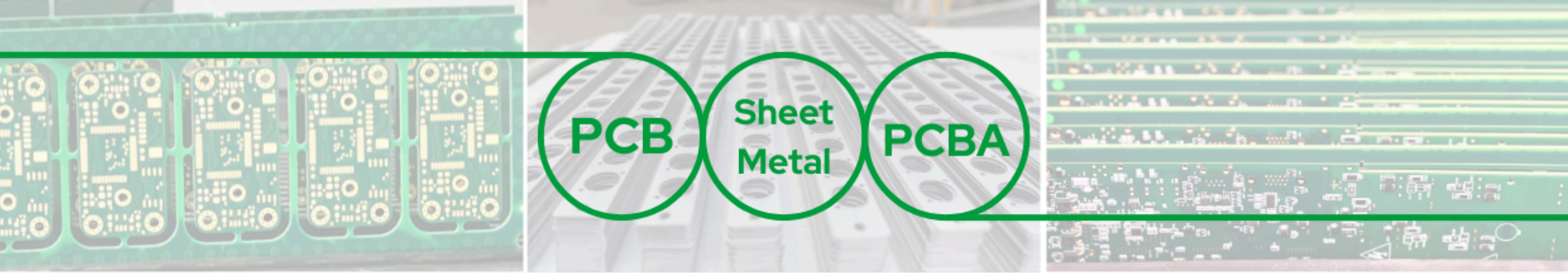
2.3 Scoring/V-cut



Feature type		Nom (mm)	Min (mm)	Tolerance +/- (mm)
Position accuracy	A	0.2	0.10	
Blade offset	B	0.050	0.025	
Keep out area	C	0.20	0.15	
Web	D	0.4	0.10	
Angle	E	30	30	
Min board thickness:			0.30mm	
Max board thickness:			2.40mm	
Min safe buffered distance from the cutting point to the beginning of jump v-cut			0.20mm	

2.4 Chamfer/Bevel

Feature type			
	A - Bevel height tolerance	0.1	+/-mm
	B - Bevel angle range	20 - 45	degree
	Bevel angle tolerance	5	+/-degree



3 Solder mask Capability (Rigid board)

3.1 Finished solder mask type and thickness capability:

Brand + type	Available colors	Matte	Gloss	Semi gloss / matte	Halogen Free	
Sun Chem XV501T	Green			Y		
Sun Chem XV501T	Black			Y	Y	
Sun Chem XV501T	Red			Y	Y	
Sun Chem XV501T	Blue			Y	Y	
Sun Chem XV501T	Yellow			Y	Y	
Sun Chem XV501T	White			y	Y	
Electra EFP140/3044	Green			y		
Electra EFP140/3044	Brown			y		

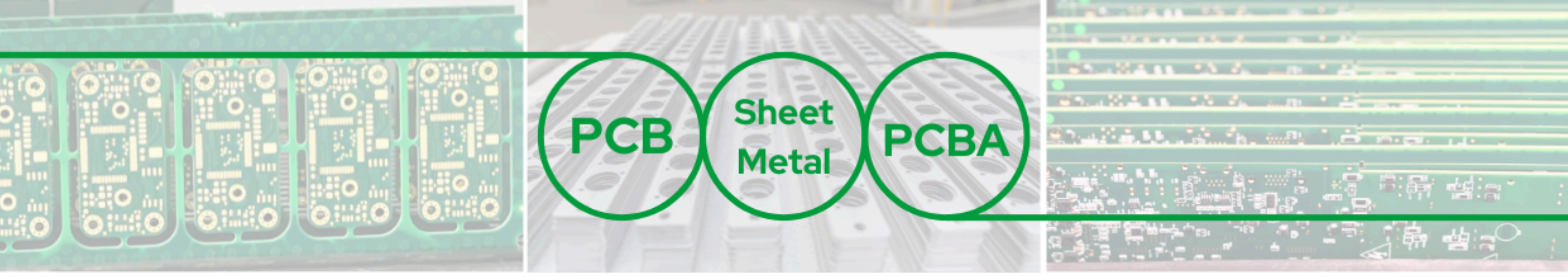
3.2 Via hole plugging techniques:

3.2.1 General

Plugging techniques	Detail	Yes or No	Max hole size	Min hole size
	Over plated/ capped IPC 4761 type VII	Y	0.50mm	0.15mm

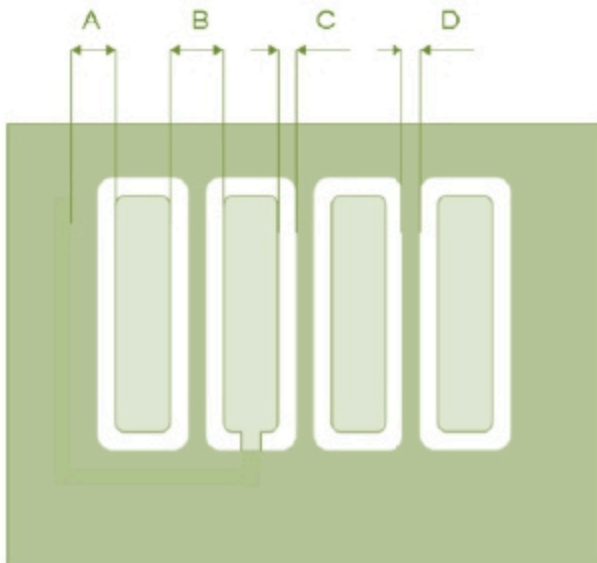
3.2.2 Plug depth (soldermask IPC4761 type VI)

Board Thickness (H) Holes size(D)	0.4 - 1.0mm	1.0 - 1.8mm	1.8 - 2.4mm	2.4 - 3.6mm
	0.2mm ≤ D < 0.6mm	80%	80%	70%
0.6mm ≤ D ≤ 0.8mm				

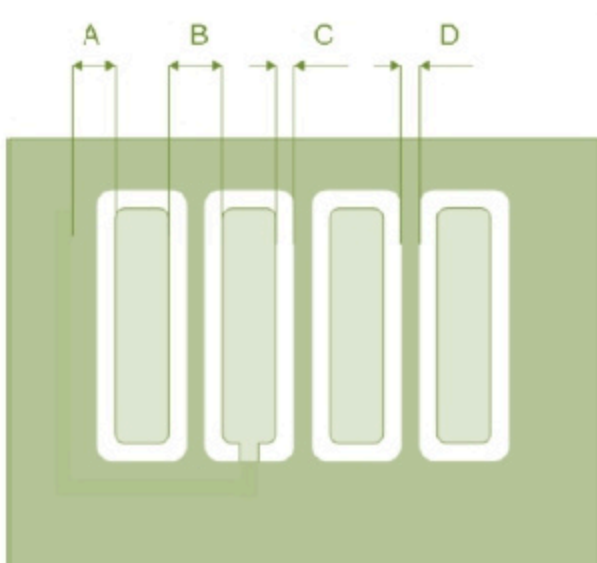


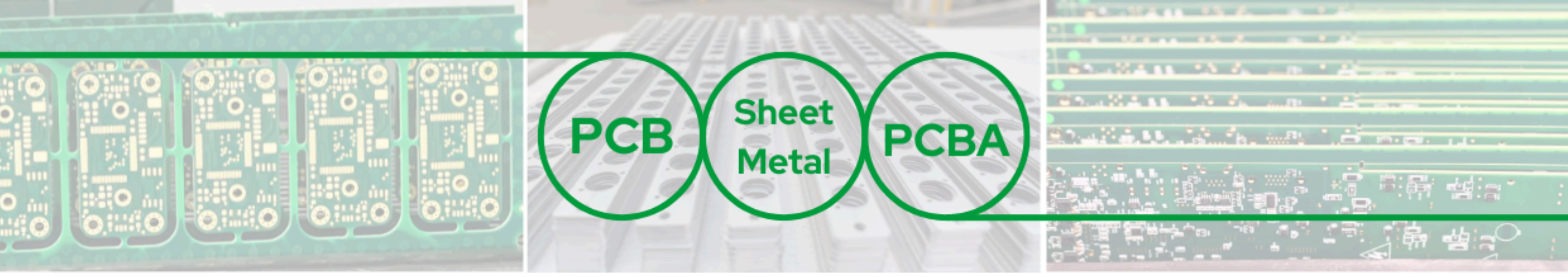
3.3 Soldermask capability:

3.3.1 Green Solder resist features to ensure no encroachment

Feature type		Base copper Hoz	Base copper 1oz	Base copper 2oz	Base copper 3oz	Base copper 4oz
	SMT to covered copper	0.10	0.125	0.180	0.260	0.275
	Copper to copper spacing	0.10	0.125	0.180	0.260	0.275
	Solder mask oversize	0.062	0.062	0.087	0.112	0.137
	Minimum soldermask web	0.075	0.075	0.1	Not specified	Not specified

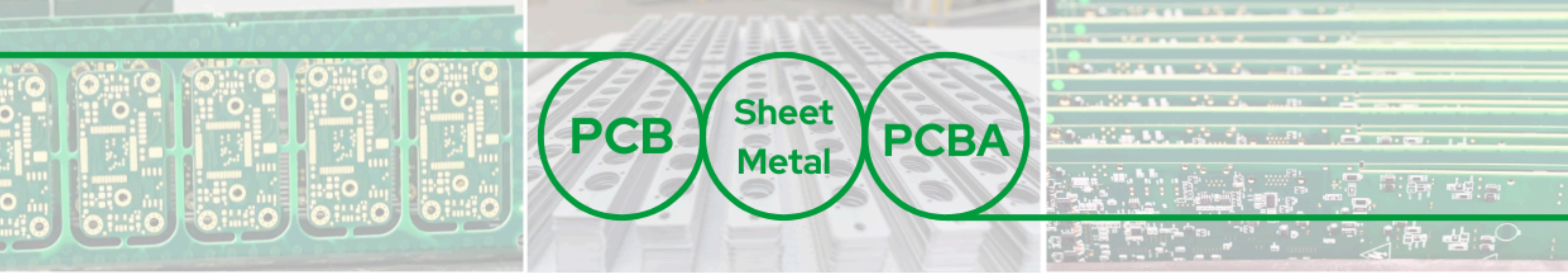
3.3.2 Red/blue/yellow Solder resist features to ensure no encroachment

Feature type		Base copper Hoz	Base copper 1oz	Base copper 2oz	Base copper 3oz	Base copper 4oz
	SMT to covered copper	0.10	0.125	0.180	0.260	0.275
	Copper to copper spacing	0.10	0.125	0.180	0.260	0.275
	Solder mask oversize	0.062	0.062	0.087	0.112	0.137
	Minimum soldermask web	0.075	0.075	0.100	Not specified	Not specified



3.3.3 White/black Solder resist features to ensure no encroachment

Feature type		Base copper Hoz	Base copper 1oz	Base copper 2oz	Base copper 3oz	Base copper 4oz
	SMT to covered copper	0.10	0.125	0.180	0.260	0.275
	Copper to copper spacing	0.10	0.125	0.180	0.260	0.275
	Solder mask oversize	0.062	0.062	0.087	0.112	0.137
	Minimum soldermask web	0.1	0.125	0.15	Not specified	Not specified



4 Marking capability

4.1 Silkscreen / Legend

Colors	White	Standard
	Yellow, Black, Red, Blue	Others
Min legend width	0.125	mm
Min legend height	0.125	mm
Position accuracy	0.1	+/- mm

4.2 Soldermask defined text

Min soldermask text width*	0.100	mm
Min soldermask text height	1.0	mm
Position accuracy	0.05	+/- mm

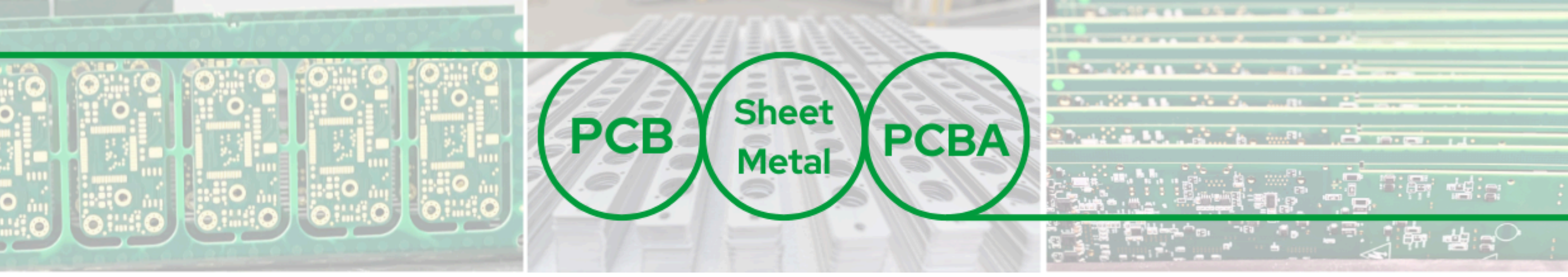
* not applicable with HASL or LF HASL

4.3 Etched copper text

Min etching text width	0.10	mm
Min etching text height	1.0	mm
Position accuracy	0.050	+/- mm

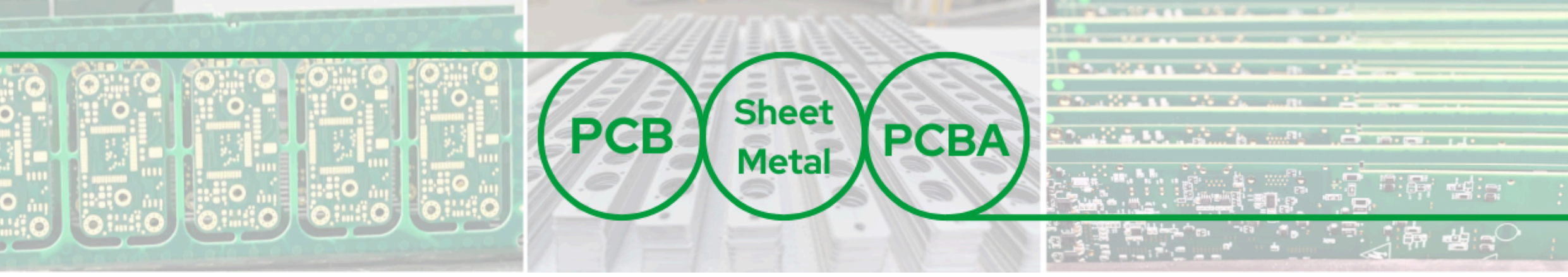
5 Peelable mask & Kapton tape

Peelable Mask	Nominal Thickness:	>300um
	Minimum Thickness:	300um
	Max covered hole diameter:	2.5mm
	Peelable mask used (UL approved)	SD2955
	Min distance to not covered feature:	1.0mm
Kapton tape (to cover larger holes)	Can Use:	JIT4677
	Nominal Thickness:	300um



6 Carbon

Min space between carbon	0.20	mm
Min carbon opening bigger than copper pattern per side	0.20	mm
Min space between carbon edge to around copper	0.20	mm
Position accuracy	0.15	+/- mm

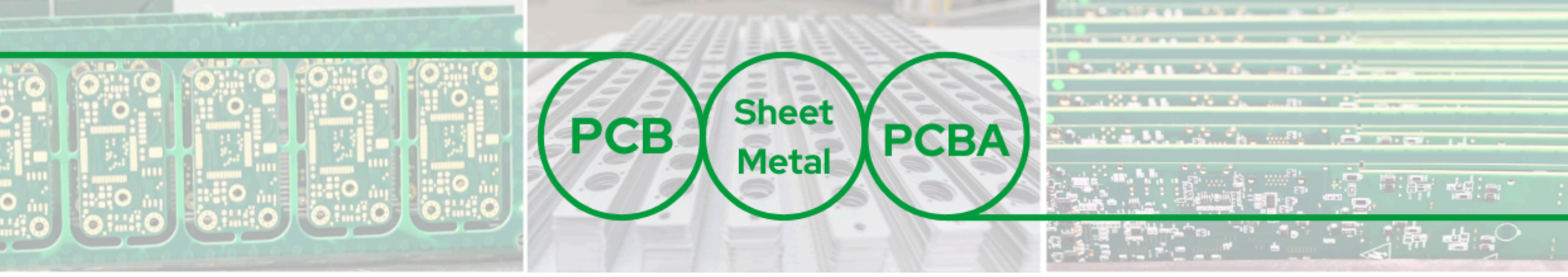


7 Surface finish

Surface Finish	YES/NO	Sub-contracted?	Thickness (um)
Pb-F HASL	YES		Solderable <20um
SnPb HASL	YES		Solderable <20um
Edge hard gold contacts	YES		As Below
Internal hard gold contacts	YES		3-7um Nickel 1.5-3.0um Gold
Flash gold			
ENIG	YES		0.05um-0.1um Gold 3um – 7um Nickel
Immersion Tin		YES	
Immersion Silver	YES		0.25-0.50um
Carbon	YES		15-25um
ENEPIG		YES	

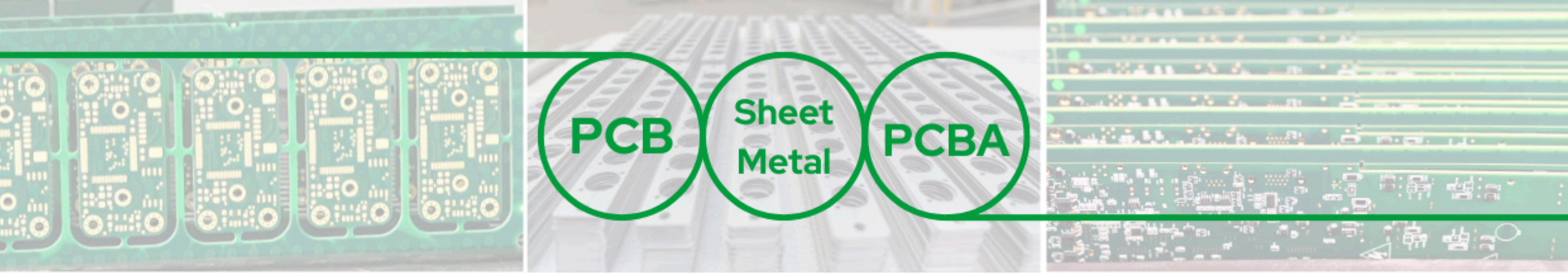
8 E-Test

Max test area	578*412	mm x mm
Minimum Test board thickness	0.05	mm
Minimum test PAD width	0.05	mm
Minimum test pad pitch	0.1	mm
High voltage test	N	V
Automated segregation of pass / fail	N	Y/N



9 HDI (Complete if applicable)

Mechanical Hole	Min. hole size	0.15	mm
	Max. hole size	0.40	mm
Laser Hole	Min. hole size	0.05	mm
	Max. hole size	0.2	mm
Aspect Ratio	Normal	0.7:1	X:X
	Best	1:1	X:X
Build-up material used	RCC	N	
	RCC High Tg	N	
	Polyimide	Y	
	No-Flow prepreg	Y	
Technique Technique (Cont.)	1+N+1	Y	UL
	2+N+2 (staggered μ via)	Y	UL
	3+N+3 (staggered μ via)	Y	Non UL
	2+N+2 (stacked μ via)	Y	UL
Filling technique μvia	Copper filled	Y	
	Resin filled (over plated)	Y	



9.1 Design features HDI

		Preferred	Min.
	Entry pad (A)	300um	250um
	Target pad L1 (A)	300um	250um
	Hole L1-L2 (B)	150um	100um
		Preferred	Min.
	Entry pad (A)	300um	250um
	Target pad L2 (A)	300um	250um
	Entry pad L2 (A)	300um	250um
	Target pad L3 (A)	300um	250um
	Hole L1-L2 (B)	150um	100um
	Hole L2-L3 (B)	150um	100um
Hole Pitch (C)	400um	350um	
		Preferred	Min.
	Entry pad (A)	300um	250um
	Target pad L2 (A)	300um	250um
	Target pad L3 (A)	400um	350um
	Hole L1-L2 (B)	200um	150um
Hole L2-L3 (B)	200um	150um	
		Preferred	Min.
	Entry pad (A)	400um	350um
	Target pad L2 (A)	400um	350um
	Target pad L3 (D)	300um	250um
	Hole L1-L2 (B)	150um	100um
Hole L2-L3 (C)	150um	100um	
		Preferred	Min.
	Entry pad (A)	300um	250um
	Target pad L1 (C)	400um	350um
	µvia hole L1-L2 (B)	200um	150um
	Buried hole (D)	300um	200um