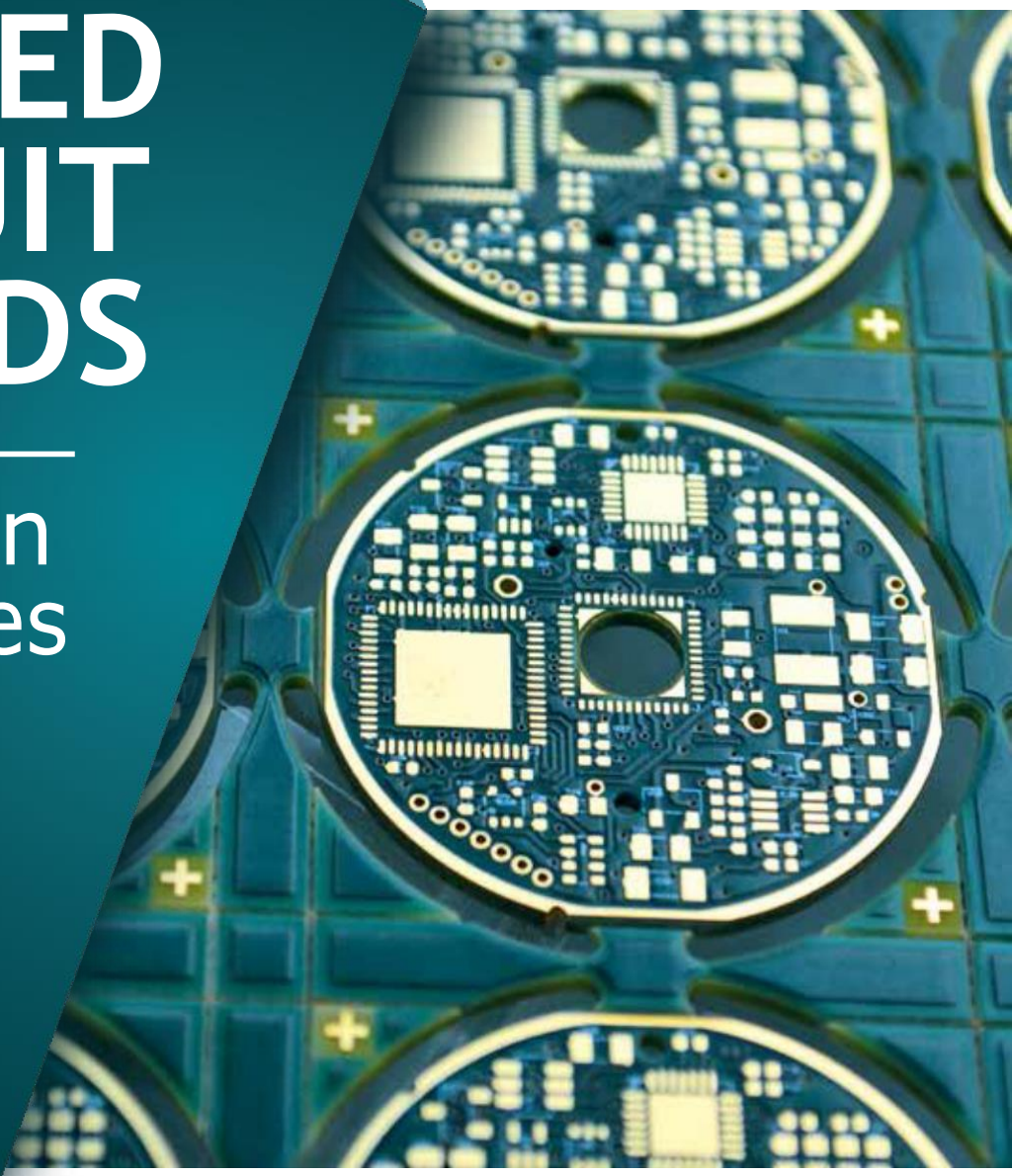
hi-tech corporation

PRINTED CIRCUIT BOARDS

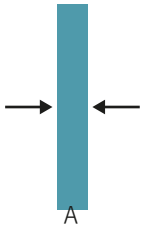
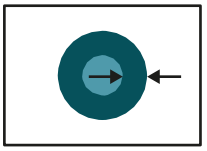
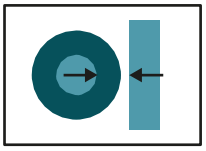
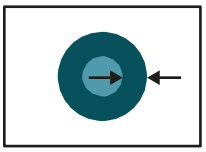
Production Capabilities



PCB Manufacturer

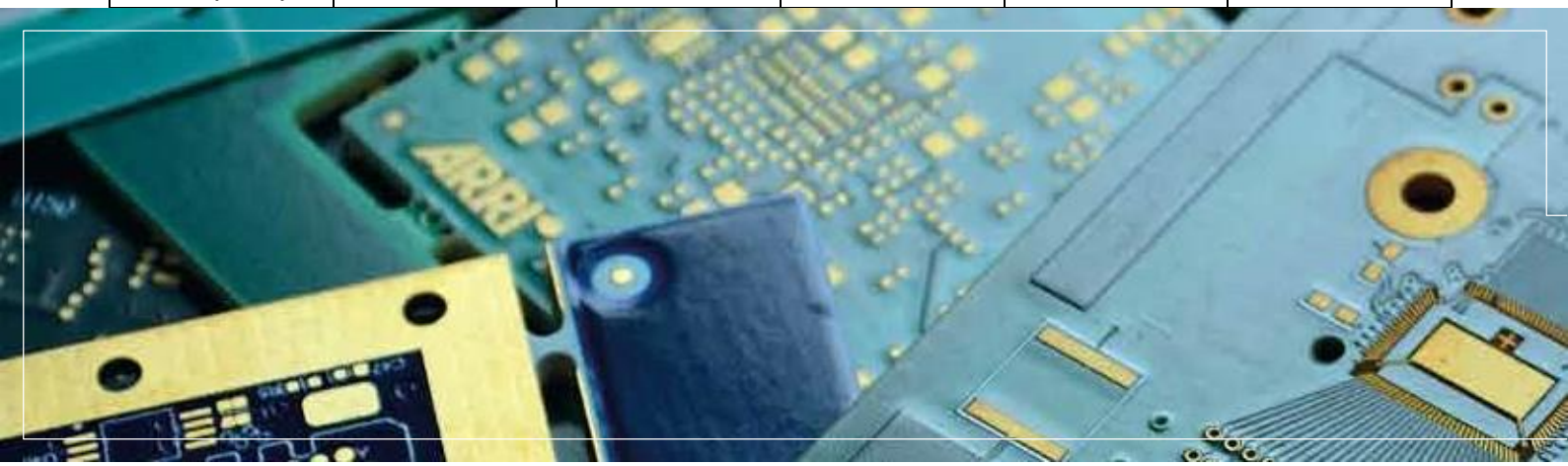
1 INNER AND OUTER LAYER COPPER FEATURES

1.1 Description

MIN. TRACK WIDTH	MIN. SPACE (FEATURE TO FEATURE)	MIN. ANNULAR RING	MIN. SPACE: PTH HOLE TO COPPER	MIN. SPACE: NPTH HOLE TO COPPER
 A	 B	 C	 D	 E

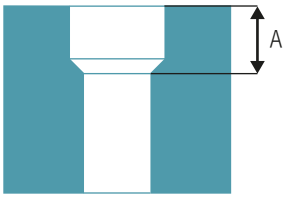
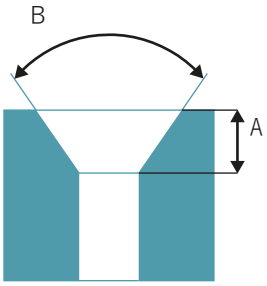
1.2 Capability

FINISHED COPPER (µm)	A	B	C	D	E
18 um (inner)	50	50	75	150	200
18 um (outer)	50	50	75	150	150
35 um (inner)	50	50	75	150	200
35 um (outer)	50	50	75	150	150
70 um (inner)	150	150	150	300	200
70 um (outer)	150	150	150	300	150
105 um (inner)	250	250	150	400	200
105 um (outer)	250	250	150	400	150
140 um (inner)	300	300	200	500	300
140 um (outer)	300	300	200	500	300
210 um (inner)	400	400	500	900	400
210 um (outer)	500	500	500	1000	500
280 um (inner)	700	700	700	1400	700
280 um (outer)	700	700	700	1400	700
400 um (inner)	1000	1000	1000	2000	1000
400 um (outer)	1000	1000	1000	2000	1000



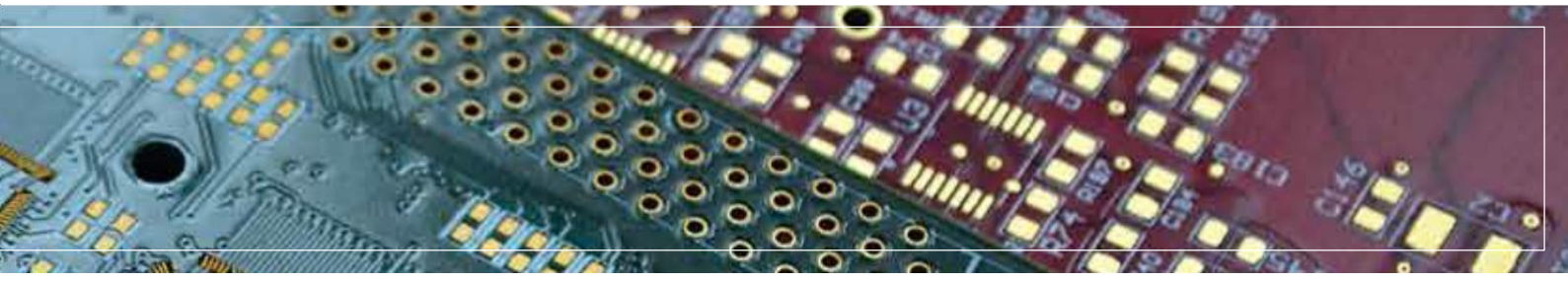
2 DRILLING/ROUTING/V-CUT/BEVEL

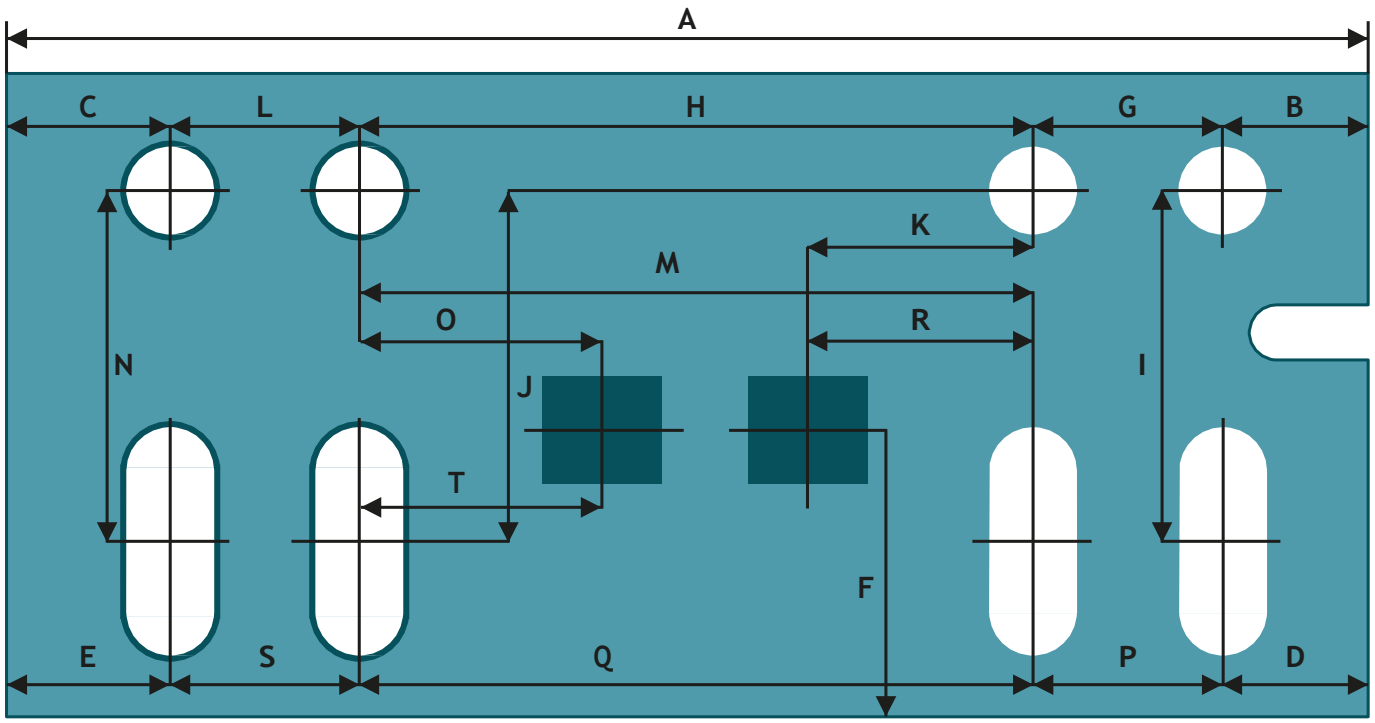
2.1 Drilling

DESCRIPTION	SIZE	BEST TOLERANCE PTH	BEST TOLERANCE NPTH
Min. hole mechanically drilled	0.10 mm	+/- 0.05 mm	+/- 0.05 mm
Max. hole mechanically drilled	6.20 mm	+/- 0.05 mm	+/- 0.05 mm
Min. slot width mechanically drilled	0.60 mm	+/- 0.05 mm	+/- 0.05 mm
Min. slot length mechanically drilled	3.50 mm	+/- 0.05 mm	+/- 0.05 mm
True positional tolerance	hole to hole	+/- 0.05 mm	+/- 0.075 mm
Aspect Ratio	/	1:10	/
BACK DRILLING / COUNTER BORE			
	Depth tolerance (A)	/	+/- 0.10 mm
COUNTER SINK HOLES			
	Depth tolerance (B) Angel (B)	/	+/- 0.10 mm 5˚ Degrees

2.2 Routing

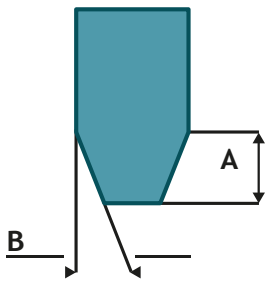
ROUT DIAMETER	Standard	0.60; 0.80; 0.90; 1.00; 1.10; 2.00; 2.40 mm
	Other	0.50 mm



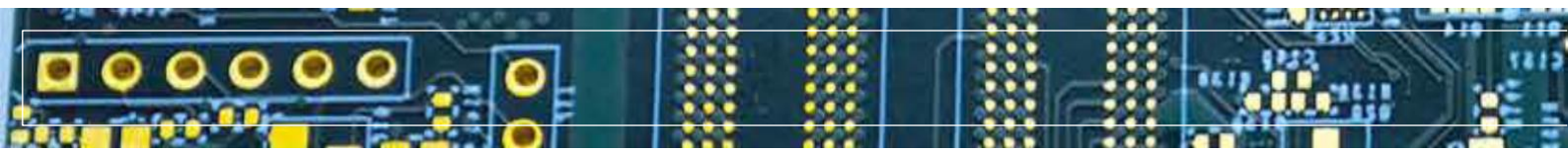


TOLERANCE IN mm (±)	BOARD EDGE	NPTH	PTH	NP SLOT	PT SLOT	CU PAD
BOARD EDGE	(A) +/- 0.13 mm	(B) +/- 0.075 mm	(C) +/- 0.1 mm	(D) +/- 0.1 mm	(E) +/- 0.1 mm	(F) +/- 0.1 mm
NPTH		(G) +/- 0.075 mm	(H) +/- 0.1 mm	(I) +/- 0.075mm	(J) +/- 0.1 mm	(K) +/- 0.1 mm
PTH			(L) +/- 0.05 mm	(M) +/- 0.075mm	(N) +/- 0.1 mm	(O) +/- 0.05 mm
NP SLOT				(P) +/- 0.075 mm	(Q) +/- 0.1 mm	(R) +/- 0.1 mm
PT SLOT					(S) +/- 0.075 mm	(T) +/- 0.1 mm

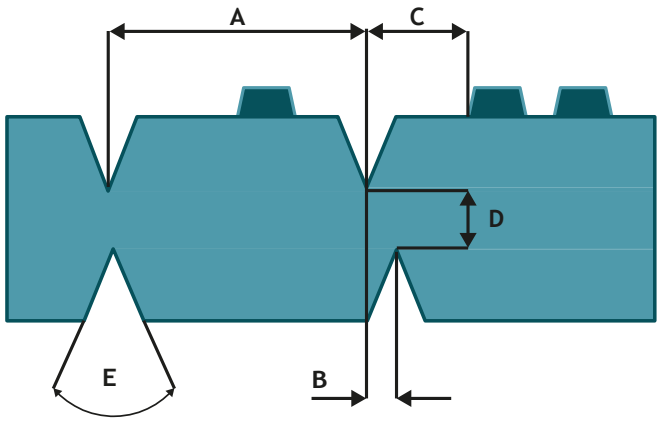
2.3 Chamfer / Bevel



FEATURE TYPE	POSITION	SIZE
Bevel height tolerance	A	+/- 0.13 mm
Bevel angle range	B	20°-60°
Bevel angle tolerance		+/- 5°



2.4 Scoring / V-Cut

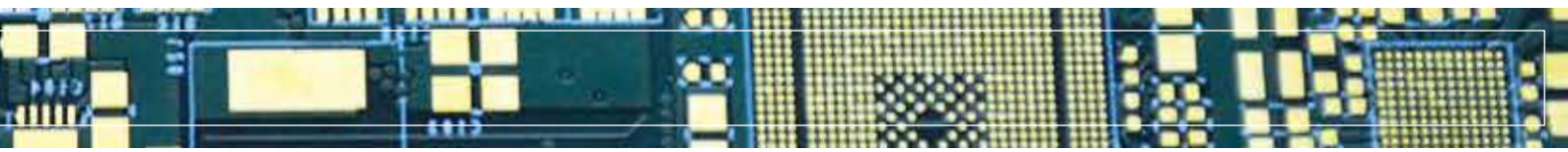


FEATURE TYPE	POSITION	NOM	MIN	TOLERANCE
POSITION ACCURACY	A	0.1 mm	0.05 mm	+/- 0.10 mm
BLADE OFFSET	B	0.05 mm	0 mm	+/- 0.05 mm
KEEP OUT AREA	C	0.35 mm	0.17 mm	/
WEB	D	0.40 mm		+/- 0.10 mm
ANGLE	E	35 mm	30 mm	+/- 5°
MIN BOARD THICKNESS	/	0.30mm		+/- 0.30 mm
MAX BOARD THICKNESS	/	6.00mm		+/- 6.00 mm

3 SOLDER MASK CAPABILITY (RIGID BOARD)

3.1 Finished solder mask thickness capability

BRAND	AVAILABLE COLORS	MATTE	GLOSS	SEMI GLOSS / MATTE	HALOGEN FREE (ACCORDING TO DATA SHEET OF MATERIALS)
SUN CHEMICAL	Green			✓	Y/N
PETERS	Green			✓	Y/N
TAIYO	Black			✓	Y/N
PETERS	White		✓		Y/N
PETERS	Blue			✓	Y/N
PETERS	Red			✓	Y/N
TAIYO	Greenflex solder mask		✓		Y/N



3.2 Via hole plugging techniques

3.2.1 General

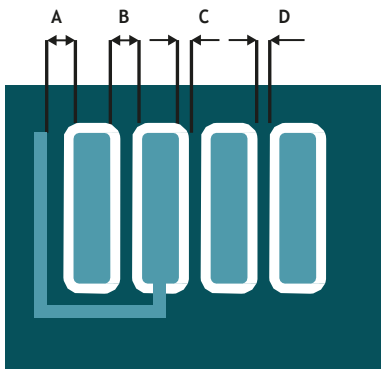
	DETAIL	Y/N	MAX HOLE SIZE	MIN HOLE SIZE
PLUGGING TECHNIQUES	Soldermask IPC 4761 Type IV	Y	0.5mm	0.1mm
	Resin non conductive IPC4761 Type VI	Y	1 mm	0.1mm
	Resin electrical conductive	N		
	Resin thermal conductive	N		
	Over plated/ capped IPC 4761 type VII	Y	1 mm	0.1mm

3.2.2 Plug depth (solder mask IPC4761 type VI)

HOLES SIZE (D)	BOARD THICKNESS (H)			
	0.4 mm ≤ H < 1.0 mm	1.0 mm ≤ H < 1.8 mm	1.8 mm ≤ H < 2.4 mm	2.4 mm ≤ H < 3.6 mm
0.2 mm ≤ D < 0.6 mm	✓	✓	✓	✓
0.6 mm ≤ D ≤ 0.8 mm	✓	✓	✓	✓

3.3 Solder mask capability

3.3.1 Solder resist features to ensure no encroachment



FEATURE TYPE	POSITION	≤ 35 um	≤ 70 um	≤ 105 um
SMT TO COVERED COPPER	A	100 um	150 um	250 um
COPPER TO COPPER SPACING	B	150 um	200 um	300 um
SOLDER MASK OVERSIZE	C	25 um	50 um	50 um
MINIMUM SOLDERMASK WEB	D	Green solder mask		min 70 um
		White solder mask		min 150 um
		Blue solder mask		min 135 um
		Black solder mask		min 135 um
		Red Solder mask		min 100 um
		Green Flex solder mask		min 100 um

4 LEGEND PRINT

4.1 Legend print

COLOR	White (standard)	Yellow	Black	Others
MIN LINE WIDTH	0.1mm			

5 PEELABLE MASK & KAPTON TAPE

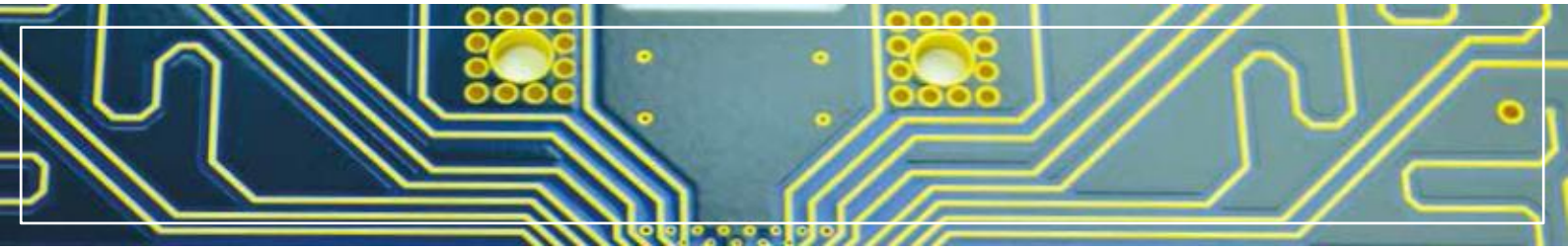
PEELEABLE MASK	Nominal Thickness	300 um
	Minimum Thickness	300 um
	Max covered hole diameter	6 mm
	Min distance to not covered feature	1 mm
KAPTON TAPE (TO COVER LARGER HOLES)	Can Use	Y/N
	Nominal Thickness	/

6 SURFACE FINISH

SURFACE FINISH	YES/NO	THICKNESS (um)
HASL - Lead Free	Yes	/
HASL + Pb	No	/
Hard Gold fingers	Yes	3-6 um Ni, 0.8-1.2 um Au
Selective Hard Gold	Yes	3-6 um Ni, 0.8-1.2 um Au
Soft Gold	No	/
ENEPIG	No	/
ENIG	Yes	3-6 um Ni, 0.05-0.08 um Au
Chemical Tin	Yes	0.8 -1.2 um Sn
Immersion Silver	No	/
ISIG	No	/
OSP	No	/

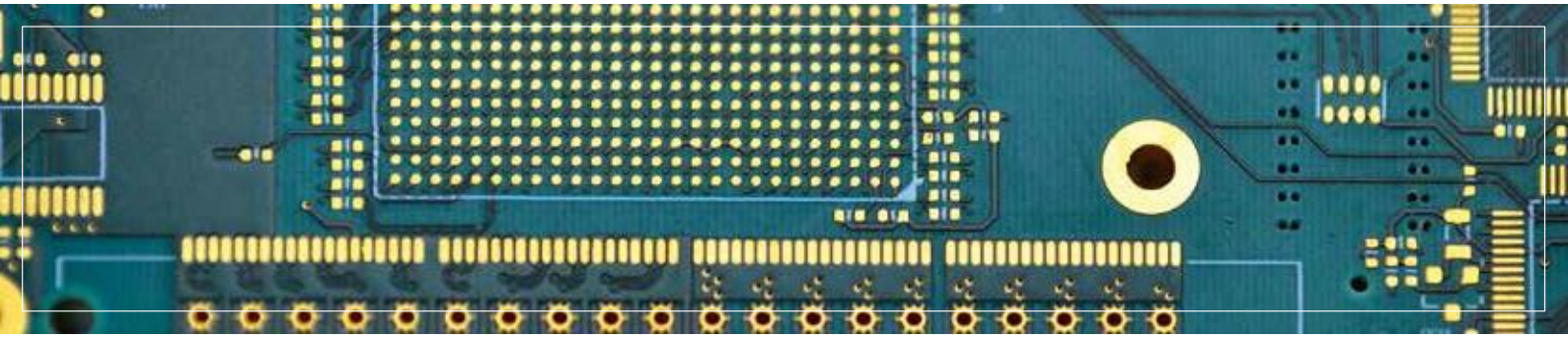
7 E-TEST

MAX TEST AREA	MINIMUM TEST BOARD THICKNESS	MINIMUM TEST PAD WIDTH	MINIMUM TEST PAD PITCH	HIGH VOLTAGE TEST	AUTOMATED SEGREGATION OF PASS / FAIL
620 x 650 mm	0.05 mm	0.08 mm	0.08 mm	1000 V	N (Y/N)

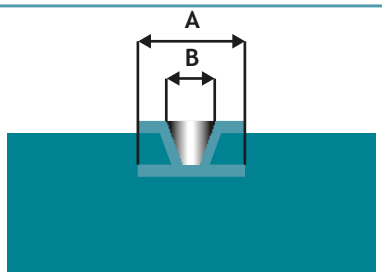


8 HDI (COMPLETE IF APPLICABLE)

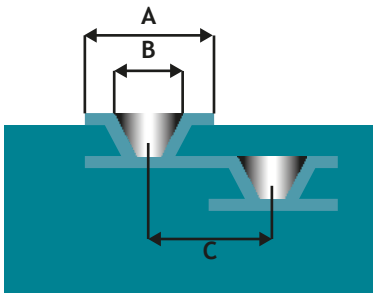
LASER DRILLED HOLE	Min. hole size	0.1 mm
	Max. hole size	0.7 mm
ASPECT RATIO	Normal	1:10 x
	Best	1:12 x
BUILD-UP MATERIAL USED	RCC	No (Y/N)
	RCC High Tg	No (Y/N)
	LD Prepreg	Yes (Y/N)
	LD Prepreg High Tg	Yes (Y/N)
	Aramid	No (Y/N)
	Polyimide	Yes (Y/N)
	No-Flow prepreg	Yes (Y/N)
	Speedboard C	No (Y/N)
	Others	No (Y/N)
TECHNIQUE TECHNIQUE (CONT.)	1+N+1	Yes (Y/N)
	2+N+2 (staggered µvia)	Yes (Y/N)
	3+N+3 (staggered µvia)	Yes (Y/N)
	4+N+4 (staggered µvia)	Yes (Y/N)
	2+N+2 (stacked µvia)	Yes (Y/N)
	3+N+3 (stacked µvia)	Yes (Y/N)
	4+N+4 (stacked µvia)	Yes (Y/N)
	1-2-3 (step down µvia	Yes (Y/N)
FILLING TECHNIQUE µVIA	Copper filled	Yes (Y/N)
	Resin filled (over plated)	Yes (Y/N)
	Copper pillar	No (Y/N)



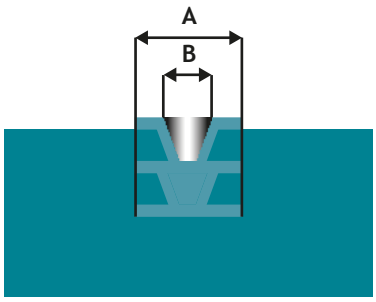
10.1 HDI Design Features



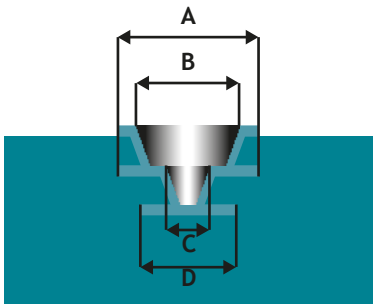
	POSITION	PREFERRED	MIN
ENTRY PAD	A	330 um	250 um
TARGET PAD L1	A	330	250
HOLE L1-L2	B	130	100



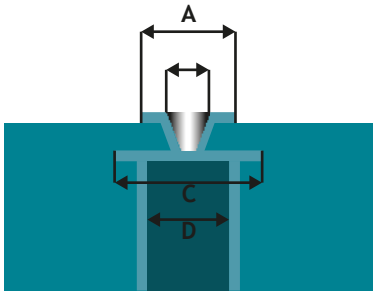
ENTRY PAD	A	330 um	250 um
TARGET PAD L2	A	330	250 um
ENTRY PAD L2	A	330	250 um
TARGET PAD L3	A	330	250 um
HOLE L1-L2	B	130	100
HOLE L2-L3	B	130	100
HOLE PITCH	C	280	250



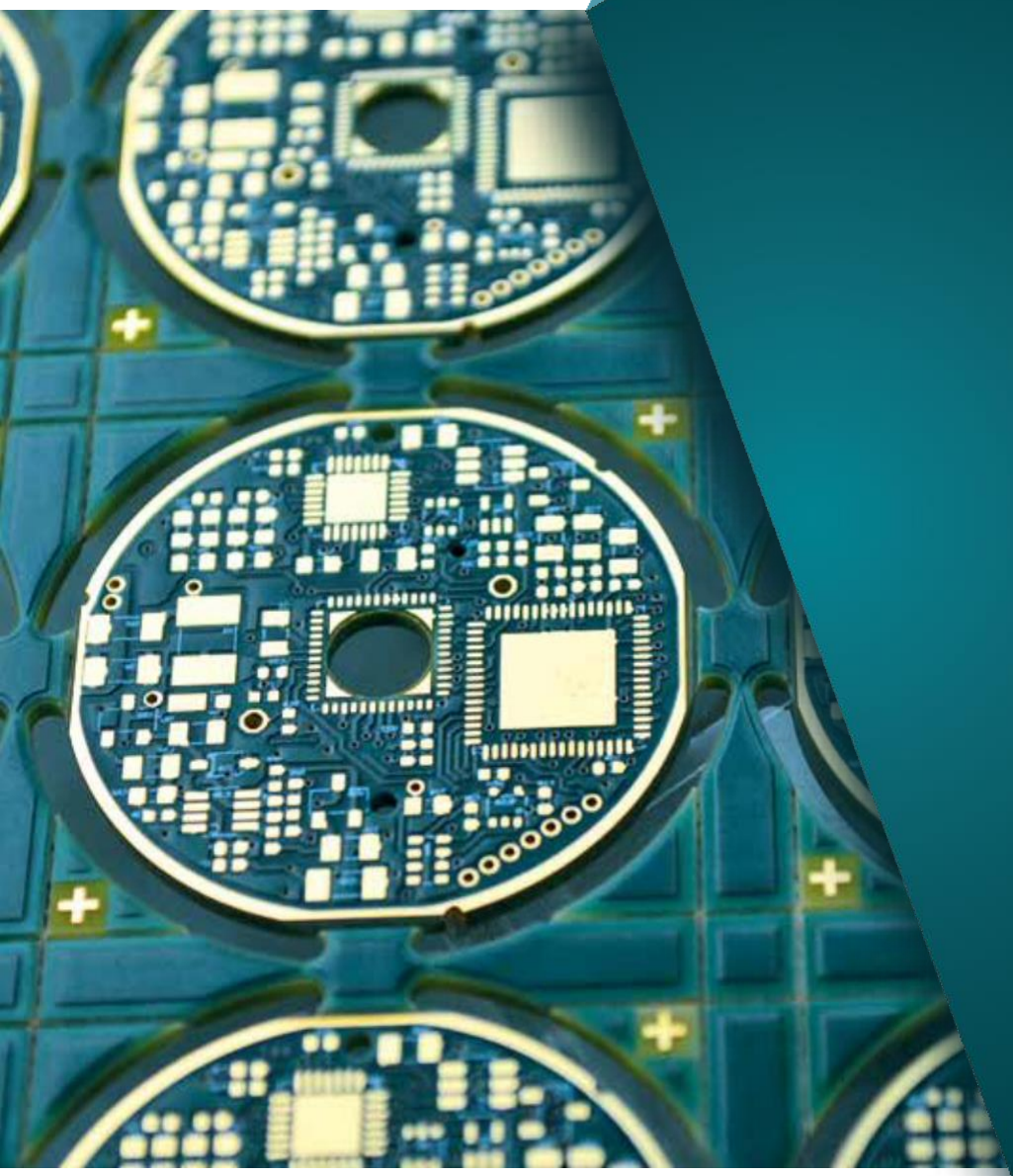
ENTRY PAD	A	330 um	250 um
TARGET PAD L2	A	330 um	250 um
TARGET PAD L3	A	330 um	250 um
HOLE L1-L2	B	130	100
HOLE L2-L3	B	130	100



ENTRY PAD	A	600	500
TARGET PAD L2	A	600	500
TARGET PAD L3	D	330	250
HOLE L1-L2	B	300	250
HOLE L2-L3	C	130	100



ENTRY PAD	A	330	250
TARGET PAD L1	C	500	350
µVIA HOLE L1-L2	B	130	100
BURIED HOLE	D	200	150



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