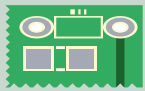
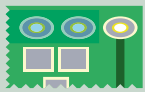
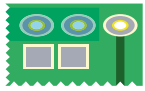
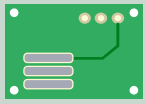


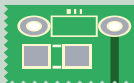
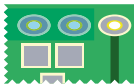
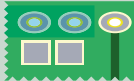
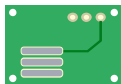
CAPABILITIES

ITEM		STANDARD	HDI	SPECIAL	TOLERANCE
TYPE OF CIRCUIT	-	Double sided, multilayer (4 to 12 layers)	Double sided, multilayer (4 to 32 layers)	Double side, multilayer, more options: Multilayer with blind / buried vias. Controlled impedance. IMS double sided + isolated and plated holes	NA
MATERIALS	-	FR4	FR4	FR4: High and medium Tg, High CTI, halogen free, high frequency, etc.	NA
SOLDERMASK	-	Green, White, Black	Green, White, Black	Red, Blue & other colours available upon request.	NA
SILKSCREEN	-	White, Black	White, Black	Yellow & other colours available upon request.	NA
BASE COPPER THICKNESS (INNER & OUTER)	-	18 – 35 – 70 µm	18 – 35 – 70 µm	105 – 140 – 210 – 400 µm	NA
FINISHING	Immersion tin	1.0 – 1.3 µm	1.0 – 1.3 µm	Other thickness upon request	-
	Immersion silver	0.15 – 0.50 µm	0.15 – 0.50 µm		
	HAL Sn/Pb	1.5 – 10 µm	1.5 – 10 µm		
	HAL Pb free	1.5 – 10 µm	1.5 – 10 µm		
	OSP	√	√		
	ENIG	Ni 4-7 µm, Au 0.05 - 0.12 µm	Ni 4-7 µm, Au 0.05 - 0.12 µm		
	Plated Au	Ni 4-7 µm, Au 0.5-1 µm	Ni 4-7 µm, Au 0.5-1 µm		
THICKNESS		0.6 - 3.2 mm	0.25 - 6 mm	0.25 - 6 mm	± 10%
MINIMUM HOLE DRILLED DIAMETER (PTH)		0.25 mm	0.10 mm	0.15 mm	± 0.05 mm or - 0.0 / + 0.1 mm
(PTH) MINIMUM HOLE FINISHED DIAMETER	-	0.15 mm	0.05 mm	0.05 mm	NA
MINIMUM NPTH		0.6 mm	0.25 mm	0.35 mm	± 0.05 mm
LAYER ALIGNMENT	-	± 0.1 mm	± 0.075 mm	± 0.08 mm	± 0.1 mm
HOLE-PAD ALIGNMENT	-	± 0.15 mm	± 0.10 mm	± 0.10 mm	± 0.05 mm
MINIMUM ANULAR RING (OUTER LAYER)		0.18 mm	0.15 mm	0.15 mm	± 15 % (18 µm)
MINIMUM ANULAR RING (INNER LAYERS)		0.3 mm	0.20 mm	0.20 mm	± 15 % (18 µm)
MINIMUM LINE/SPACE (OUTER LAYERS) – DEPENDING ON BASE Cu THICKNESS		18 µm – 0.12 mm	18 µm – 0.075 mm	105 µm – 0.4 mm	± 15 % (18 µm)
		35 µm – 0.15 mm	35 µm – 0.10 mm	210 µm – 0.6 mm	± 20 % (35 µm)
		70 µm – 0.19 mm	70 µm – 0.15 mm	400 µm – 0.8 mm	± 25 % (70 µm)

CAPABILITIES

ITEM		STANDARD	HDI	SPECIAL	TOLERANCE
MINIMUM LINE/SPACE (INNER LAYERS) – DEPENDING ON BASE Cu THICKNESS		18 μ m – 0.10 mm	18 μ m – 0.075 mm	105 μ m – 0.4 mm	$\pm$ 15 % (18 μ m)
		35 μ m – 0.12 mm	35 μ m – 0.10 mm	210 μ m – 0.6 mm	$\pm$ 20 % (35 μ m)
		70 μ m – 0.16 mm	70 μ m – 0.15 mm	400 μ m – 0.8 mm	$\pm$ 25 % (70 μ m)
ASPECT RATIO	-	8	12	12	NA
SOLDER MASK THICKNESS	-	> 20 μ m	> 20 μ m	> 40 μ m	NA
SOLDER MASK DAMM		0.2 mm	0.15 mm	0.18 mm	NA
PLUGGED VIAS	-	-	-	Yes	NA
MINIMUM SILKSCREEN LINE		0.2 mm	0.1 mm	0.1 mm	NA
CARBON – MINIMUM LINE/SPACE		0.45 mm	0.40 mm	0.40 mm	NA
MAXIMUM DIAMETER COVERED BY PEELABLE MASK		$\varnothing$: 2.5 mm	$\varnothing$: 2.5 mm	2.5 – 5 mm	NA
DISTANCE FROM PEELABLE TO OTHER PADS		1 mm	0.8 mm	0.8 mm	NA
MINIMUM CORE THICKNESS (SCORING)		0.5 mm	0.3 mm	0.3 mm	$\pm$ 0.1 mm
TOLERANCE POSITION SCORING	-	$\pm$ 0.5 mm			
TOLERANCE FOR ROUTING		$\leq$ 50 mm $\pm$ 0.1 > 50 mm / < 200 mm $\pm$ 0.15 $\geq$ 200 mm $\pm$ 0.2	$\pm$ 0.1 mm	$\pm$ 0.1 mm	-
WARPAGE	-	< 0.75 %	< 0.5 %	< 0.5 %	NA

CAPABILITIES

ITEM		STANDARD		TOLERANCE
TYPE OF CIRCUIT	-	Single sided	Single sided	NA
MATERIALS	-	FR4, CEM1, CEM3	IMS aluminium	NA
SOLDERMASK	-	Green, White, Black	Green, White, Black	NA
SILKSCREEN	-	White, Black	White, Black	NA
BASE COPPER THICKNESS	-	18 - 35 - 70 - 105 µm	35 - 70 - 105 µm	NA
FINISHINGS	Immersion tin	1.0 - 1.3 µm	NA	-
	Immersion silver	0.15 - 0.5 µm	0.15 - 0.5 µm	
	HAL Pb free	1.5 - 10 µm	1.5 - 10 µm	
	OSP	✓	✓	
	ENiG	Ni 4-7 µm, Au 0.05 - 0.12 µm	Ni 4-7 µm, Au 0.05 - 0.12 µm	
	Plated Gold	Ni 4-7 µm, Au 0.5 - 1 µm	NA	
PCB THICKNESS		0.3 – 3.2 mm	0.5 – 2.5 mm	± 10%
MINIMUM DIAMETER NPTH		0.6 mm	1 mm	± 0.05 mm
MINIMUM ANULAR RING		0.18 mm	NA	± 15% (18 µm)
MINIMUM WITH/SPACE OF TRACK – DEPENDING UPON BASE Cu T.		18 µm - 0.12 mm	-	± 15% (18 µm)
		35 µm - 0.15 mm	35 µm - 0.18 mm	± 20% (35 µm)
		70 µm - 0.19 mm	70 µm - 0.21 mm	± 25% (70 µm)
SOLDERMASK THICKNESS	-	> 10 µm	> 10 µm	NA
MINIMUM SOLDERMASK DAM		0.2 mm	0.2 mm	NA
MINIMUM SILKSCREEN LINE		0.2 mm	0.2 mm	NA
MAXIMUM DIAMETER COVERED BY PEELABLE MASK		Ø : 2.5 mm	NA	NA
DISTANCE FROM PEELABLE TO OTHER PADS		1 mm	NA	NA
MINIMUM CORE THICKNESS (SCORING)		0.5 mm	0.35 mm (asymmetric)	± 0.1 mm
TOLERANCE POSITION SCORING	-	± 0.5 mm		
TOLERANCE ROUTING		≤ 50 mm ± 0.1 > 50 mm / < 200 mm ± 0.15 ≥ 200 mm ± 0.2		
WARPAGE	-	< 0.75%	< 0.75%	NA