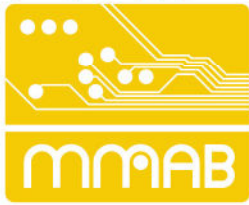


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BASIC INFORMATION	Standard	Prototype	Comments
Layer count	1-8	10-12	
Blind via	No	Yes	After confirmation
High frequency	Yes	Yes	Multilayer & mixed dielectric
Metal based boards	Yes	Yes	Aluminum single sided
Impedance control	Yes +/-10%	Yes +/-10%	+/-10% after adjust. 40-120 Ω
Heavy copper	Yes	Yes	210-405 μm
Antennas & domes	No	Yes	Up to 2500 mm in length
Step plating	No	Yes	Step cu two different thickness
Semi-flex	No	Yes	Z-axis routing in STG FR-4
BASE MATERIAL	Standard	Prototype	Comments
FR-4 STG Tg 130°C	Yes	Yes	UL MOT 120 (Isola DE104)
FR-4 MTG Tg 150°C	Yes	Yes	UL MOT 130 (Shengyi S1000H)
FR-4 HTG Tg 170°C	Yes	Yes	UL MOT 130 (Isola 370HR)
FR-4 Halogen free Tg 150°C	No	Yes	UL MOT 120 (Shengyi S1151)
CEM 3	Yes	Yes	Thermal conductive *
Aluminum base material	Yes	Yes	2-4 W/mK Single sided*
FR 408 Isola	Yes	Yes	High frequency *
IS 608 Isola	No	Yes	High frequency*
IS 400 Isola	Yes	Yes	UL MOT 130
Astra MT 77 Isola	Yes	Yes	High frequency*
RO 4003 Rogers	Yes	Yes	High frequency*
RO 4350 Rogers	Yes	Yes	High frequency*
RO 4725 Rogers	Yes	Yes	High frequency*
RO 4730 Rogers	Yes	Yes	High frequency*
RO 4835 Rogers	Yes	Yes	High frequency*
AD255 PTFE	No	Yes	High frequency*
GF255 Shengyi	No	Yes	High frequency*
Aerowave 255 Shengyi	No	Yes	High frequency*
Mixed dielectric	No	Yes	High frequency material + FR-4
<i>STG = Standard Tg</i>	<i>MTG = Medium Tg</i>	<i>HTG = High Tg</i>	<i>*Only flammability UL94V-0</i>
DIMENSIONS	Standard	Prototype	Comments
Thickness tolerance	+/-10%	+/-10%	Single & double sided ref IPC4101
Board size max	433x570 mm	433x570 mm	Double sided
Board size max	427x570 mm	427x570 mm	Multilayer
Routing tolerance	+/-0,15 mm	+/-0,1 mm	Special details +/-0,05 mm
Board thickness min. 1-2 lay	0,3 mm	0,1 mm	UL-approved for min. 0,56 mm
Board thickness max.	3,2 mm	3,2 mm	Special stack up for >3,2 mm
Board thickness 4 layer	0,8 mm	0,56 mm	UL-approved for min. 0,56 mm
Board thickness 6 layer	1,0 mm	0,8 mm	
Board thickness 8 layer	1,6 mm	1,2 mm	
Board thickness 10 layer	1,6 mm	1,4 mm	
Board thickness 12 layer	1,6 mm	1,6 mm	
Dielectric minimum	0,2 mm	0,065 mm	UL-approved min. 0,05 mm

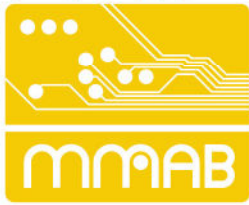


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TRACK & GAP	Standard	Prototype	Comments
Track & gap outer layer 35 µm finished Cu	0,12/0,12 mm	0,1/0,1 mm	Limited traces down to 0,075 mm after confirmation
Track & gap outer layer 70 µm finished Cu	0,25/0,25 mm	0,2/0,2 mm	0,15/0,15 mm only after confirmation.
Track & gap outer layer 105 µm finished Cu	0,3/0,3 mm	0,25/0,25 mm	0,2/0,2 mm only after confirmation.
Track & gap outer layer 140 µm finished Cu	0,4/0,4 mm	0,3/0,3 mm	0,25/0,25 mm only after confirmation.
Track & gap inner layer 18 µm cu foil	0,1/0,1 mm	0,1/0,1 mm	Limited traces down to 0,075 mm after confirmation
Track & gap inner layer 35 µm cu foil	0,127/0,127 mm	0,1/0,1 mm	
Track & gap inner layer 70 µm cu foil	0,25/0,25 mm	0,2/0,2 mm	0,15/0,15 mm only after confirmation.
Track & gap inner layer 105 µm cu foil	0,3/0,3 mm	0,25/0,25 mm	0,2/0,2 mm only after confirmation.
Track & gap inner layer 140 µm cu foil	0,4/0,4 mm	0,3/0,3 mm	0,25/0,25 mm only after confirmation.
Etch tolerance	+/-50 µm	+/-25 µm	Depends on copper thickness
Under etch	10-30 µm	10-30 µm	Depends on copper thickness
UL-approval min. track	0,075 mm	0,075 mm	Applies to 18/35 µm cu
COPPER THICKNESS	Standard	Prototype	Comments
Copper thickness outer layer minimum	35 µm min.	35 µm min.	Tolerance +20/-5 µm
Copper thickness outer layer maximum	140 µm	210-405 µm	Tolerance +/-20 µm
Copper thickness inner layer minimum	18 µm	12 µm	Tolerance +/-5 µm
Copper thickness inner layer maximum	105 µm	210 µm	Tolerance +/-15 µm
UL-approval inner layer	99 µm (105 µm)	99 µm	Maximum copper foil
UL-approval outer layer	105 µm	105 µm	Maximum base copper ex. plating

All copper thicknesses refer to finished copper thickness outer layer and copper foil inner layer.

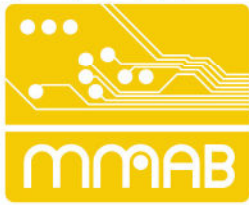
Finished copper thickness 35 µm = 18 µm base copper. Finished copper thickness 70 µm = 35 µm base copper.



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FINAL FINISH	Standard	Special	Comments
HASL Lead-free	Yes	Yes	SN100C. Min. 0,8 mm thickness
HASL Sn-Pb	No	Yes	After confirmation
ENIG (Immersion Nickel-Gold)	Yes	Yes	3-5 µm Ni + 0,05-0,1 µm Au
OSP (Organic Preservative)	Yes	Yes	Uyemura Mecseal CL-5018
ENEPIG (Imm Ni Pd Gold)	No	Yes	After confirmation
EPIG (Imm Palladium Gold)	No	Yes	After confirmation
DIG (Direct Immersion Gold)	No	Yes	After confirmation
ISIG	---	---	---
Hard gold	Yes	Yes	After confirmation
Carbon print	No	Yes	SD 2841 IR, Peters Lackwerke
Immersion silver	No	Yes	After confirmation
Rhodium selective electroplate	No	Yes	After confirmation
Nickel up to 50 µm	No	Yes	After confirmation
Silver selective electroplated	No	Yes	After confirmation

SOLDERMASK	Standard	Prototype	Comments
Soldermask regular	Green, black, white	Red, blue, transp matte/glossy	Glossy green standard. Taiyo PSR-4000 GP01EU DI
Soldermask custom color		Pink, sky blue	After confirmation
Soldermask white	White LED	White LED	Taiyo PSR-4000 LEW1
Soldermask thickness	8-40 µm	8-40 µm	Average 15 µm at 35 µm cu
Soldermask bridge/dam 35 µm copper	0,1 mm	0,075 mm 0,05 mm MDI	Applies for Green soldermask. Increase +0,05 mm for White
Soldermask clearance	0,075 mm	0,05 mm 0,025 mm MDI	Clearance pad to soldermask
Soldermask bridge/dam 70 µm copper	0,2 mm	0,175 mm 0,1 mm MDI	Applies for Green soldermask. Increase +0,05 mm for White
Legend/ silk screen	White, black	Yellow	High resolution
Hole plugging	Yes	Yes	Partial soldermask plugging
Temporary masking	Yes	Yes	Peters SD-2955. Kapton tape



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HOLE & ROUTING	Standard	Prototype	Comments
Hole diameter finished min.	0,3 mm	0,2 mm	0,15 mm diam after confirmation
Hole aspect ratio	6:1	8:1	10:1 after confirmation
Hole tolerance	+/-0,1 mm	+/-0,05 mm	Press-fit after confirmation
Blind via diameter min.	0,25 mm	0,2 mm	0,15 mm diameter after confirm
Blind via aspect ratio	0,5:1	0,8:1	
Via pad diameter min.	0,6 mm	0,5 mm	0,45 mm after confirmation
Annular ring min.	0,15 mm	0,1 mm	Finished annular ring after plating
Z-axis controlled drilling	No	Yes	+/-0,1 mm after confirmation
Backdrilling of vias	No	Yes	After confirmation
Countersunked holes	Yes	Yes	After confirmation
Edge plating	Yes	Yes	
Half plated holes	Yes	Yes	
Z-axis cavity ENIG plating	No	Yes	After confirmation
Bevelled edges	No	Yes	30-45 deg bevel angle
Routing tolerance	+/-0,15 mm	+/-0,1 mm	Special details +/-0,05 mm
Routed slot width	2,4 mm	0,8 mm min.	
Routing radius	1,2 mm	0,4 mm	
Scoring V-cut angle	30°	30°	
Plug & overplate via type VII	No	Yes	After confirmation

TEST & APPROVAL	Standard	Special	Comments
Electrical test	Yes	Yes	100%
AOI	Yes	Yes	Inner- and outer layer
UL-approval	Yes	Yes	UL-796 and UL94-V0 (E102144)
UL Canada and USA	Yes	Yes	ULus ULc
UL CTI	Yes	Yes	CTI PLC 3 175-249 V
Solderability test	No	Yes	IPC-J-STD 003 solder float, reflow
Dyne soldermask wetting	No	Yes	Conformal coating Dyne
EX-, ATEX-products	Yes	Yes	After confirmation
PPAP	No	Yes	After confirmation – limited PPAP
IPC	Class 2	Class 3	Full class 3 with 2 microsections
Quality management	Yes	Yes	ISO 9001:2015
Medical products	Yes	Yes	Control plan for medtech
Defence & aerospace	No	Yes	Strategic products registrated
GHz, radar, Gigabit	Yes	Yes	Get in touch with our sales
Impedance measurement	Yes	Yes	Measurement result as additional
Low resistance MilliOhm	No	Yes	Measurement as additional
High voltage test	No	Yes	Up to 12 kV after confirmation

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