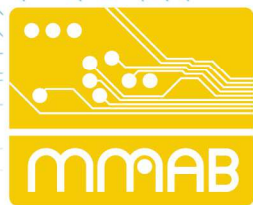


Capability – Malmö Mönsterkort factory, Sweden

| 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 | Maximum 210 μm |
| Antennas & domes | No | Yes | 3000 mm in length |
| Step plating | No | Yes | Step cu thickness for antenna |
| Semi-flex | No | Yes | Z-axis routing in STG FR-4 After confirmation |
| 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 UL94-V0* |
| Aluminum base material | Yes | Yes | 2-4 W/mK Single sided UL94-V0* |
| FR 408 Isola | No | Yes | High frequency UL94-V0* |
| IS 608 Isola | No | Yes | High frequency UL94-V0* |
| IS 400 Isola | No | Yes | UL MOT 130 |
| Astra MT 77 Isola | No | Yes | High frequency UL94-V0* |
| RO 4003 Rogers | No | Yes | High frequency UL94-V0* |
| RO 4350 Rogers | No | Yes | High frequency UL94-V0* |
| RO 4725 Rogers | No | Yes | High frequency UL94-V0* |
| RO 4730 Rogers | No | Yes | High frequency |
| RO 4835 Rogers | No | Yes | High frequency UL94-V0* |
| PTFE-material | No | Yes | High frequency Single sided |
| Mixed dielectric | No | Yes | High frequency material + FR-4 |
| UL CTI | Yes | Yes | CTI PLC 3 175-249 V |
| | | | *No UL-approval, only flammability |
| 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 | |
| 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 | |
| Dielectric minimum | 0,2 mm | 0,065 mm | UL-approved min. 0,05 mm |

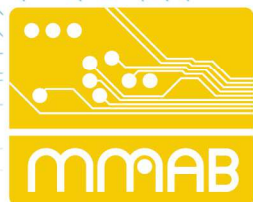
STG = Standard Tg MTG = Medium Tg HTG = High Tg

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| TRACK & GAP | Standard | Special | Comments |
|---|----------------|--------------|---|
| Track & gap outer layer 35 µm finished Cu | 0,127/0,127 mm | 0,1/0,1 mm | 0,1/0,1 mm possible 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 possible 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 possible 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 possible after confirmation. |
| Track & gap inner layer 18 µm cu foil | 0,12/0,12 mm | 0,12/0,12 mm | 0,1/0,1 mm possible after confirmation. |
| Track & gap inner layer 35 µm cu foil | 0,15/0,15 mm | 0,12/0,12 mm | 0,1/0,1 mm possible after confirmation. |
| Track & gap inner layer 70 µm cu foil | 0,25/0,25 mm | 0,2/0,2 mm | 0,15/0,15 mm possible 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 possible 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 possible 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 | Special | Comments |
| Copper thickness outer layer minimum | 35 µm min. | 35 µm min. | Tolerance +20/-5 µm |
| Copper thickness outer layer maximum | 140 µm | 210 µm | Tolerance +/-20 µm |
| Copper thickness inner layer minimum | 18 µm | 12 µm | Tolerance +/-5 µm |
| Copper thickness inner layer maximum | 105 µm | 160 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 |

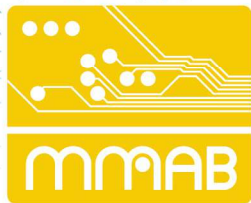


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| FINAL FINISH | Standard | Special | Comments |
|------------------|----------|---------|-------------------------------|
| HASL Lead-free | Yes | Yes | SN100C. Min. 0,8 mm thickness |
| HASL Sn-Pb | No | Yes | After confirmation |
| ENIG | Yes | Yes | 3-5 µm Ni + 0,05-0,1 µm Au |
| OSP | Yes | Yes | Uyemura Mecseal CL-5018 |
| ENEPIG | No | Yes | After confirmation |
| ISIG | No | Yes | After confirmation |
| Hard gold | Yes | Yes | After confirmation |
| Carbon print | No | Yes | SD 2841 IR, Peters Lackwerke |
| Immersion silver | No | Yes | After confirmation |
| Rhodium | No | Yes | After confirmation |
| Nickel | No | Yes | After confirmation |

| SOLDERMASK | Standard | Special | Comments |
|---------------------------------------|---------------------|-------------------------|---|
| Soldermask regular | Green, black, white | Red, blue, 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 8-15 µm at 35 µm cu |
| Soldermask bridge/dam 35 µm copper | 0,1 mm | 0,075 mm | Applies for Green soldermask. Increase +0,05 mm for White |
| Soldermask clearance | 0,075 mm | 0,05 mm | Clearance pad to soldermask |
| Soldermask bridge/dam 70 µm copper | 0,2 mm | 0,175 mm | Applies for Green soldermask. Increase +0,05 mm for White |
| Legend/ silk screen | White, black | Yellow | |
| Hole plugging | Yes | Yes | Partial soldermask plugging |
| Temporary masking | Yes | Yes | Peters SD-2955. Kapton tape |

| HOLE & ROUTING | Standard | Special | Comments |
|-----------------------------|------------|-------------|-------------------------------------|
| Hole diameter finished min. | 0,3 mm | 0,25 mm | 0,2 mm diam after confirmation |
| Hole aspect ratio | 5:1 | 5:1 | 8:1 after confirmation |
| Hole tolerance | +/-0,1 mm | +/-0,05 mm | Press-fit after confirmation |
| Blind via diameter min. | 0,3 mm | 0,2 mm | 0,15 mm diameter after confirm |
| Blind via aspect ratio | 0,5:1 | 1:1 | |
| Via pad diameter min. | 0,6 mm | 0,55 mm | BGA pad min. 0,25 mm |
| Annular ring min. | 0,15 mm | 0,1 mm | Finished annular ring after plating |
| Z-axis controlled drilling | Yes | Yes | +/-0,1 mm 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° | |



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| 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 |
| 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 | Get in touch with our sales |
| 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 |

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