**PRINTED CIRCUIT FABRICATION SPECIFICATIONS**

**PCB :SWARMUS**.zip

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CAD System Altium Designer 20/21

Laminate type FR-4 TG 150-160

Board final thickness 62 mils

Board size 300mmx155mm

Quantity Required 10 pannels

File : SWARMUS.zip

| **Aspect** | **Requirement** | **Standard** | |
| --- | --- | --- | --- |
| Laminate type | FR-4 TG 150-160 | |  |
| Number of layer(s) | 8 | |  |
| Gerber files | *Copper*   |  |  |  |  | | --- | --- | --- | --- | | **Description** | **File name** | **File polarity** | **Controlled Impedance** | | Top layer | .GTL | Positive | No | | Int. layer 02 (GND\_1) | .GP1 | Negative | No | | Int. layer 03 (SIG\_1) | .G1 | Positive | No | | Int. layer 04 (GND\_2) | .GP2 | Negative | No | | Int. layer 05 (PWR) | .GP3 | Negative | No | | Int. layer 06 (SIG\_2) | .G2 | Positive | No | | Int. layer 07 (GND\_3) | .GP4 | Negative | No | | Bottom layer | .GBL | Positive | No |   *Mask and silkscreen*   |  |  | | --- | --- | | **Description** | **File name** | | Top solder mask | .GTS | | Top silkscreen | .GTO | | Bottom solder mask | .GBS | | Bottom silkscreen | .GBO |   *Mechanical and drill*   |  |  | | --- | --- | | **Description** | **File name** | | Drill drawing | .GD1 | | Drill Guide | .GG1 | | Board Outlines | .GM5 | | Pannel Outlines | .GM6 | | Route tool path | .GM7 | | V-Groove | .GM8 | | Manufacturing Notes | .GM9 | | NC drill | .TXT |   *Pannel information*   |  |  | | --- | --- | | **Description** | **File name** | | Top Paste mask | .GTP | | Pannel Outlines | .GM6 | | Route tool path | .GM7 | | V-Groove | .GM8 | | |  |

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| --- | --- | --- |
| Stackup | For complete stackup, see “HIVE\_BOARD\_PANNEL.xls” | * Core and Prepreg to be in accordance with IPC-4101/24 or IPC-4101/26;   Material must meet UL 94V-0 flammability rating; |
| Drilling | * Refer to NC Drill for finish hole size; * Diameter tolerance should be better than ±3 mils; * Total error including layer-to-layer registration, drill size and drill position must be within 5 mils for all layers. |  |
| Surface finish process | * Apply liquid photo imageable solder mask SMOBC BLACK MATTE (Solder-mask-over-bare-copper) to both sides of the board; * If BLACK MATTE is not possible, use standard GREEN * Soldermask image must NOT be enlarged. | per IPC-SM-840, class H |

| **Aspect** | **Requirement** |
| --- | --- |
| Plating | * All exposed conductive pattern areas not covered with solder mask shall be plated with *ENIG (Electroless Nickel Immersion Gold);* * Plating MUST be done after Solder Mask application; * Surface mount pad plating must be flat to a maximum of 3 mils above board surface; |
| Via | Full Stack via from Top to Bottom |
| Silkscreen on top and bottom layer | * White, permanent, organic, non-conductive ink; * There shall be no silkscreen on any solderable component pad; * If silkscreen is smaller than the machine tolerance, try to print it anyways.   **Do not delay production for silkscreen too small to read.** |
| Manufacturer's id and date code | Manufacturer's identification and date code letter shall be rendered in silkscreen on the bottom side of the board; |
| Mechanical behavior | Warp or twist of board shall not exceed 1%; |
| Electrical testing | 100% netlist electrical verification for opens and shorts; |
| Panelization | See panels files. |