



PROCESSING GUIDELINES

Laminate: LNB33C

High Frequency CH Material for 5G Antenna



This product process guideline uses IPC-4103 Standard as a reference, and Shengyi make some changes according to the product characteristics of the actual situation as to making it more suitable for the Shengyi LNB33C product use.

1. Storage condition

1.1 Laminate

1.1.1 Storage condition

- Stored in platform or shelf in original packages, avoid improper outside force and any deformation.

1.1.2 Storage environment

- Laminate sheets should be stored in ventilated, dry at room temperature under environment control, avoiding direct sunlight, rain and corrosive gas (storage condition has direct and important effect to the quality of material).
- The shelf life of laminate maintains two years for double sided and one year for single sided at above proper storage conditions. All internal properties within shelf life meet IPC 4103 specification sheet.

1.1.3 Operation

- Wear clean gloves and carefully move the cores. Collisions and sliding will cause damage of the cores. Bare hands action will cause contamination to copper foil surface. These defects are likely to cause adverse effects.

2. PWB Processing

2.1 Panel cutting

- Sawing (preferred) and shearing method is recommended. Be careful of potential edge cracks when using roller cutter.

2.2 Thin core baking

- Thin core baking depends on actual need. If bake after cutting, it's recommended to rinse cutting panels first, to remove resin powder brought by cutting and avoid etching problem.
- Baking condition: 150°C/1-3h, be sure to avoid contact directly with heater.

2.3 Brown oxide

- Recommend to use brown oxide for inner layer treatment. To avoid absorption of moisture, it is advised to bake on the shelf after brown oxide process. Baking condition: 120°C/1h. After baking, pressing process should be done within 4 hours.

2.4 Lay-up

- Ensure prepreg direction of warp and fill at lay-up process. Avoid prepreg reversal or overturn in case of



multilayer board distortion after press.

2.5 Press process

- Pressing process depends on the type of the bonding sheet.

2.6 Drilling

- New drill bit is recommended with max 4 panels/stack. Use new drill and reduce the max hit count to ensure better hole wall quality. Melamine back-up board is recommended and clean holes with high pressure air after drill. The drilling parameters as follows are for reference.

LNB33C Drilling parameters

Drill dia. mm	Max Hit	Speed KRPM	Feed IPM	Return IPM
0.250	1200	108	21	300
0.350	1000	98	40.6	500
0.500	1000	95	50.4	800
0.600	1000	90	47.6	800
0.750	1000	75	50.4	800
0.850	1000	68	52.5	800
0.950	1000	62	52.5	800
1.000	800	60	52.5	800
1.200	800	55	68	800
1.400	800	50	68	800
1.600	800	45	80	800
2.000	500	38	70	800
3.000	100	28	52	500
3.175	100	28	45	300
4.000	100	25	25	300
5.000	100	22	25	300
6.000	200	20	10	300

LNB33C Hybrid PCB drilling parameters

Drill dia. mm	Max Hit	Speed KRPM	Feed IPM	Return IPM
0.250	1200	108	24	300
0.350	1000	98	46.4	500
0.351	1000	98	44	500
0.500	1000	95	57.6	800
0.600	1000	90	54.4	800
0.750	1000	75	57.6	800
0.850	1000	68	60	800
0.950	1000	62	60	800
1.000	800	60	60.5	800



1.001	800	60	56	800
1.200	800	55	68	800
1.600	800	45	80	800
2.000	500	38	70	800
3.000	100	28	52	500
3.175	100	28	45	300
4.000	100	25	25	300
5.000	100	22	25	300
6.000	200	20	10	300

- For dense holes or hole size < 0.6mm, it is recommended to use LE aluminum cover sheets.
- The fixing and cushioning effects of entry and back-up boards should be taken into account in drilling process, so as to reduce burrs caused by chip removal.
- Mechanical deburr by brushing after drilling is not recommended. If have to brush, the parameters with the least effect on the damage of laminate/copper surface should be selected, in case of reduction of the bonding strength of copper foil.

2.7 Bake after drilling

- Baking after drilling is not necessary, and based on actual needs for application.
- Baking condition: 150°C/1-3h, be sure to avoid contact directly with heater.

2.8 Desmear

- The chemical resistance of the material is good due to its composition and structure. It's recommended to go through 1x plasma or 1x plasma + 1x fast chemical desmear, with appropriate weight loss of 0.3g/cm³. The specific parameters should be set according to the actual PCB structure (thickness, hole size and so on).
- The plating copper adhesive of slot holes should be kept attention when horizontal desmear.

2.9 PTH

- Horizontal PTH process is preferred for through hole structure, please select the best way according to PCB structure.
- For vertical PTH, the vibration of the equipment and the moving speed of hanging shelf may cause internal stress and warpage onto base material, which is a comprehensive effect and corresponds to the PCB structure.

2.10 Solder mask

- To reach good bonding performance, mechanical brushing on material surface is not necessary before solder mask
- Solder mask wetting time should be double compared to FR-4, so as to increase solder mask adhesive.
- Solder mask rework should be avoided, in case of copper adhesive reduction or material surface damage.



2.11 Rework

- Process reworks like chemical Tin, solder mask would reduce the bonding strength between base material and copper foil, which may result in delamination or material surface damage. Therefore, process rework should be avoided.

2.12 HAL

- Suitable for lead free HAL.

2.13 Punching/Routing

- Routing is advised and not suitable for punching process.

2.14 Packaging

- Baking before packaging is advised, with condition 125-135°C/1-3H, in case of the heat resistance reduction due to moisture.
- Note: the base material color will deepen after baking, which is a normal phenomenon.
- Aluminum packing is advised.

3. PWB Soldering

3.1 Shelf life of PWB

- 3 months with Aluminum film package.
- Bake at 125°C/1~3h before assembly is recommended, especially when stored more than 3 months.
- Note: the base material color will deepen after baking, which is a normal phenomenon.

3.1 Reflow

- Suitable for lead free reflow process

This process guide is for reference only! Should you have any questions, please feel free to contact us. ShengYi will support you with prompt and effective service.