



# **PROCESSING GUIDELINES**

**Laminate: LNB33**

**High Frequency CH Material**



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 LNB33 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).
- Double-sided copper clad laminate (cores) can be stored in such proper condition for 2 years.

#### **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, which is able to remove resin powder brought by cutting and avoid etching problem.
- Baking condition: 150°C/3-5h, be sure to avoid contact directly with heat generator.
- Note: the base material color will deepen after baking, which is a normal phenomenon.

### **2.3 Brown oxide**

- Brown oxide is recommended.
- In order to avoid excessive moisture absorption, baking after brown oxide is recommended at the condition of 120°C/1h and press within 4 hours.

### **2.4 Lay-up**

- Since glass cloth has different types and varies in woven density, the stack-up of multilayer board is also



required to be symmetrical.

## 2.5 Press process

- Press program depends on prepreg combined and select the one suitable for prepreg properties.

## 2.6 Drilling

- New drill bit is recommended with max 3 panels/stack or total stack thickness  $\leq 2.17$ mm. Use new drill and reduce the max hit count to ensure better hole quality. Melamine cushion board is recommended for drilling and use sand paper for burnish after drilling and clean with high presser air.

LNB33 Drilling parameters

Drill dia. mm	Max Hit	Speed KRPM	Feed IPM	Return IPM
0.253	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	800	75	50.4	800
0.850	800	68	52.5	800
0.950	800	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

LNB33 Hybrid PCB drilling parameters

Drill dia. mm	Max Hit	Speed KRPM	Feed IPM	Return IPM
0.253	1200	108	24	300
0.350	1000	98	46.4	500
0.500	1000	95	57.6	800
0.600	1000	90	54.4	800
0.750	800	75	57.6	800
0.850	800	68	60	800
0.950	800	62	60	800
1.000	800	60	60.5	800
1.200	800	55	68	800



1.400	800	50	73	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 holes smaller than 0.6mm, it is recommended to use LE aluminum sheets for cover.
- The fixing and cushioning effects of entry and back-up boards should be taken into account in drilling process, so as to reduce burrs on hole 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/3h, be sure to avoid contact directly with heat generator.
- Note: the base material color will deepen after baking, which is a normal phenomenon.

### 2.8 Desmear

- For double side board, in order to remove drilling smear, chemical desmear (Permanganate method) or Plasma method can be selected according to the actual situation.
- If chemical desmear (Permanganate method) is used, it is suggested that the processing time of sweller and permanganate should be appropriately reduced.

### 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 Punching/Routing**

- Routing is advised and not suitable for punching process.

### **2.13 Packaging**

- Baking before packaging is advised, with condition 125-135°C/3-5h, 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/3~5h before assembly is recommended, especially when stored more than 3 months.

### **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.