



PROCESSING GUIDELINES

Laminate: ST115G

Prepreg: ST115GB

High Thermal Conductivity Multilayer Material



This product process guideline uses IPC-4101 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 ST115G / ST115GB product use.

1. Storage condition

1.1 Laminate

1.1.1 Storage condition

- Pack with original forms on the platform or on the appropriate frame, avoiding stress, prevent sheet deformation caused by inappropriate storage which may impact the subsequent PCB processes.

1.1.2 Storage environment

- Sheets should be stored in ventilated, dry, at room temperature under environment control, avoiding direct sunlight, rain and avoid erosion of corrosive gas (stored environment directly affect the quality of material).
- For double-sided copper-clad laminates (cores), to minimize shifting as to avoid scratching the surface of the product, with a suitable environment and condition for storage, the shelf life can be up to two years.
- For single-sided copper clad laminates, with a suitable environment and condition for storage, the shelf life can be up to 1 year.

1.1.3 Operation manual

- Wear clean gloves and carefully operate the cores. Copper foil collisions, 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.

1.2 Prepreg

1.2.1 Storage method

- Levels stored in original packaging form, avoiding stress, prevent sheet deformation caused by inappropriate storage condition.
- Leftover or cut Prepregs should pack and seal with vacuum foil packaging and put it back in the original packaging tray.

1.2.2 Storage environment

- Prepreg sealed packaging should be stored in free of UV irradiation environment, specific storage conditions and the storage period as follows:
 - Condition 1: 3 months when stored at <23°C and <50% RH.
 - Condition 2: 6 months when stored at <5°C.
- Note: Relative humidity affect prepreg quality the most, pay special attention on weather (conduct dehumidification process is necessary for wet weather).

1.2.3 Cutting guideline



- Cutting the best way is left to professional staff wear clean gloves during operation, prevent the pollution of prepreg surface; operation must be careful to prevent prepreg wrinkle or crack, to avoid affect prepregs.

1.2.4 Prepregs use uecommendations

- If moving from a low temperature storage space to a higher temperature or ambient temperature storage space, it must go through the temperature settle process, (8 - 24 hours, settle time is varies depending on temperature variation in between two storage conditions). Open package after temperature settle process is completed as to avoid affecting the quality and adhesion of prepregs.
- For PP package stored in above conditions 1 or 2, after open is required to complete the use as soon as possible, for packages opened more than 3 day, it must re-inspect and insure quality before use. Leftover or cut prepregs should pack and seal with vacuum foil packaging and put it back in the above stated storage condition 1 or 2.

2、 PWB Processing

2.1 Panel cutting

- Sawing (preferred) method is recommended. Be careful of potential edge cracks caused by roller cutter method.

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/4-8h, be sure to avoid contact directly with heat supply.

2.3 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.

2.4 Press process

- Vacuum press
- Multilayer pressing is recommended as follows:
 - Heat up 2.5-4.0°C/min (material temp. 80~140°C., with inner layer copper \geq 3oz)
 - Heat up 2.0-3.0°C/min (material temp. 80~140°C., with inner layer copper \geq 2oz)
- Full pressure setting is recommended at the range of 300 – 420 PSI (oil heated), specified value should be determined by multilayer feature (lay-up construction and resin filled area).
- Apply full pressure when the temperature of top layer ranges 80-100 °C.
- Curing condition: 185-195°C, >60min.
- Maximum 8-10 layers of every open is recommended.
- When adopted singe sided or dummy panel for multilayer, be sure to roughen the unclad surface before

use, otherwise poor bonding might happen due to smooth surface. Etching double sided board for that purpose is one of optional measures.

2.5 Drilling

- Material property is comparatively harder with lower drilling efficiency.
 - Decrease hit count, better 100-200 hits.
 - Reduce chip load 5-10% compared to that of high-Tg FR-4.
 - Coated drill bit (best for diamond coated drill bit) to improve hole wall quality is recommended, due to higher filler content.

2.6 Desmear

- ST115G contains inorganic fillers, smear is comparatively harder to be removed.
 - Strengthen desmearing effect and ultrasonic rinse are recommended.
 - Bake after drilling would help to improve desmearing effect, customer can adopt depends on actual need. Baking condition: 150°C/4H.

2.7 Solder mask

- Be careful of panel distortion or warpage due to improper stack-up at post baking process.

2.8 HAL

- Suitable for lead free HAL process.
- If measling detected, recommend baking at 150°C/2-4h before HAL, and processing within 4 hours.

2.9 Punching/Routing

- Not suitable for punching process.
- Routing speed and distance is recommended reduction due to rout bit abrasion.

2.10 Packaging

- To prevent moisture effect on the heat resistance of base material, suggest baking finished boards at 125°C /4~6h before packaging. For a long time storage, it's advised to wrap by aluminum pack.

3. PWB Soldering

3.1 Shelf life of PWB

- 3 months with packaging protection.
- Bake at 125°C/4~6h before assembly is recommended, especially when stored more than 3 months.

3.1 Reflow

- Suitable for lead free reflow process

3.2 Manual soldering

- For separated or connected pad, manual soldering temperature should range 350-380°C and hold less than 3s for single point.



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.