N7000-3F

Toughened, Filled Polyimide Laminate and Prepreg

Benefits

- Polyimide Resin Chemistry
- Robust Thermal Stability and Reliability
- High Temp Tolerance and Chemical Resistance
- Designed for Use in Severe Conditions

Applications

- Backplanes
- Fine-Line, Surface-Mount and BGA Multilayers
- Avionics
- Down-well Petroleum
- Burn-in Boards

N7000-3F is a next-generation high-Tg polyimide using a toughened, filled resin chemistry. The product meets UL 94-V1 designation. N7000-3F is designed to prevent cracking when filling etched areas in polyimide multilayers that contain heavy copper. This advanced material is designed for use in a wide variety of applications that include fine geometry multilayer constructions and extreme reliability. This polyimide also meets NASA requirements for no visible bromine.

Polyimide Resin Chemistry

- Robust thermal stability and reliability
- Toughened resin system
- High temperature tolerance

Excellent Reliability and Performance

- Withstands multiple thermal excursions
- Tg 260°C by DSC
- T-260 >120 minutes
- Low Z-Axis CTE

Reliable Plated-through Holes

• Low Z-Axis CTE and toughened polyimide chemistry providing good dimensional stability

Reliable Processing

- Improved fracture resistance compared with traditional polyimide systems
- Filled material reduces potential cracking in resin rich areas
- Reduced cure time compared to other traditional polyimide systems

Meets UL 94V-1 and IPC-4101/40, /41 and /42 Specifications Complies with the old GIJ and GIL specifications UL file number: E36295







| Properties | Conditions | Typical Value | Unit | Test Method |
|---------------------------------------|--|----------------------------|-----------------------------------|---------------------|
| Electrical Properties | | | | |
| Dielectric Constant | @ 10 GHz | 4.0 | | IPC-TM-650.2.5.5.9 |
| Dissipation Factor | @ 10 GHz | 0.014 | | IPC-TM-650.2.5.5.5 |
| Volume Resistivity | C - 96 / 35 / 90 | 10 ⁷ | MΩ - cm | IPC-TM-650.2.5.17.1 |
| | E – 24 / 125 | 10 ⁷ | | |
| Surface Resistivity | C - 96 / 35 / 90 | 10 ⁷ | MΩ | IPC-TM-650.2.5.17.1 |
| | E - 24 / 125 | 107 | | |
| Electric Strength | | 4.7x10 ⁴ (1200) | V/mm (V/mil) | IPC-TM-650.2.5.6.2 |
| Thermal Properties | | | | |
| *Glass Transition Temperature (Tg) | DSC(°C) | 260 | °C | IPC-TM-650.2.4.25c |
| Degradation Temperature (TGA) | Degradation Temp (TGA) (5% wt. loss) | 376 | °C | IPC-TM-650.2.4.24.6 |
| T-260 | Time to delamination @ 260°C | 120+ | minutes | IPC-TM-650.2.4.24.1 |
| Thermal Conductivity | | 0.45 | W/mK | ASTM E1461 |
| Mechanical Properties | | | | |
| Peel Strength | 1 oz (35μ) Cu After Solder Float | 1.09 (6.2) | N/mm (lbf/inch) | IPC-TM-650.2.4.8 |
| X / Y CTE | -40°C to + 125°C | 14 / 16 | ppm/°C | IPC-TM-650.2.4.41 |
| Z Axis Expansion (63% RC) | 50°C to 260°C | < 1.2 | % | IPC-TM-650.2.4.24 |
| Young's Modulus (X / Y) | | 21.1 / 22.2 (3.1 / 3.3) | GN/m² (psi x 10 ⁶) | ASTM D3039 |
| Poisson's Ratios (X / Y) | | 0.146 / 0.153 | | |
| Chemical / Physical Properties | | | | |
| Moisture Absorption | | 0.35 | wt. % | IPC-TM-650.2.6.2.1 |

* DMA is the preferred method for measuring Tg - other methods may be less accurate.

• All test data provided are typical values and not intended to be specification values. For review of critical specification tolerances, please contact a company representative directly

• N7000-3F is available in most common thicknesses, copper types and panel sizes.

• Please contact AGC for availability of any other constructions, copper weights and glass styles including very low profile copper and RTFOIL®

