



P96/P26 Polyimide-based Prepreg and Laminate

Isola offers a product line of polyimide-based prepreg (**P26**) and core material (**P96**) for high temperature printed circuit applications. These products consist of a flame resistant, polyimide resin system suitable for military, commercial or industrial electronic applications requiring superior performance and the utmost in thermal properties. These products utilize a polyimide and thermoplastic blend resin, fully cured without the use of MDA (Methylenedianiline). This results in a polymer with a high Tg without the characteristic difficulties of brittleness and low initial bond strength associated with traditional thermoset polyimides.

www.isola-group.com/products/P96

ORDERING INFORMATION:

Contact your local sales representative or visit www.isola-group.com for further information.

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High Performance

P96/P26 Data Sheet

Tg 260, Td 396
Dk 3.76, Df 0.017
/40 /41 /42

Features

- High Thermal Performance
 - ▶ Tg: 260°C (TMA)
 - ▶ Greater thermal performance over epoxy-bismaleimide blends
- T260: 60 minutes
- T288: 60 minutes
- RoHS Compliant
- Maintains Bond Strength at High Temperature
- Tough Resin System
 - ▶ Improved processing due to less brittleness
 - ▶ Less delamination from machining
- Brominated Chemistry, Thermally Stable Laminate System
 - ▶ Full benefits of 100% polyimide performance
- Non-MDA (Methylenedianiline) Chemistry
 - ▶ Meets all OSHA 1910.1050 requirements
- Core Material Standard Availability
 - ▶ Thickness: 0.002" (0.05 mm) to 0.125" (3.2 mm)
 - ▶ Available in full size sheet or panel form
- Prepreg Standard Availability
 - ▶ Roll or panel form
 - ▶ Tooling of prepreg panels available
- Copper Foil Type Availability
 - ▶ Standard HTE Grade 3
 - ▶ RTF (Reverse Treat Foil)
- Copper Weights
 - ▶ ½, 1 and 2 oz (18, 35 and 70 µm) available
 - ▶ Heavier copper available upon request
 - ▶ Thinner copper foil available upon request
- Glass Fabric Availability
 - ▶ Standard E-glass
- Industry Approvals
 - ▶ IPC-4101D WAM1 /40 /41 /42
 - ▶ UL - File Number E41625

P96/P26 Specifications

| Property | | Typical Values | | | |
|---|--|---------------------|---------------------|----------------------|--------------------------|
| | | | | Units | Test Method |
| | | Typical Value | Specification | Metric (English) | IPC-TM-650 (or as noted) |
| Glass Transition Temperature (Tg) by DSC | | 260 | 250 | °C | 2.4.25 |
| Decomposition Temperature (Td) by TGA @ 5% weight loss | | 396 | – | °C | ASTM D3850 |
| T260 | | 60 | – | Minutes | ASTM D3850 |
| T288 | | 60 | – | Minutes | ASTM D3850 |
| CTE, Z-axis | A. Pre-Tg | 55 | AABUS – | ppm/°C | 2.4.24 |
| | B. Post-Tg | | | | |
| CTE, X-, Y-axes | A. Pre-Tg | 13/14 14/17 | AABUS – | ppm/°C | 2.4.24 |
| | B. Post-Tg | | | | |
| Z-axis Expansion (50-260°C) | | 1.5 | – | % | 2.4.24 |
| Thermal Conductivity | | 0.4 | – | W/mK | ASTM D5930 |
| Thermal Stress 10 sec @ 288°C (550.4°F) | A. Unetched | Pass | Pass Visual | Rating | 2.4.13.1 |
| | B. Etched | | | | |
| Dk, Permittivity (Laminate & prepreg as laminated) Tested at 56% resin | A. @ 100 MHz | 3.83 | 5.4 | – | 2.5.5.9 |
| | B. @ 500 MHz | 3.80 | – | | 2.5.5.9 |
| | C. @ 1 GHz | 3.78 | – | | 2.5.5.9 |
| | D. @ 2 GHz | 3.76 | – | | Bereskin Stripline |
| | E. @ 5 GHz | 3.73 | – | | Bereskin Stripline |
| | F. @ 10 GHz | 3.73 | – | | Bereskin Stripline |
| Df, Loss Tangent (Laminate & prepreg as laminated) Tested at 56% resin | A. @ 100 MHz | 0.0135 | 0.035 | – | 2.5.5.9 |
| | B. @ 500 MHz | 0.0151 | – | | 2.5.5.9 |
| | C. @ 1 GHz | 0.0172 | – | | 2.5.5.9 |
| | D. @ 2 GHz | 0.0179 | – | | Bereskin Stripline |
| | E. @ 5 GHz | 0.0188 | – | | Bereskin Stripline |
| | F. @ 10 GHz | 0.021 | – | | Bereskin Stripline |
| Volume Resistivity | A. 96/35/90 | – | 1.0x10 ⁶ | MΩ-cm | 2.5.17.1 |
| | B. After moisture resistance | 3.0x10 ⁸ | – | | |
| | C. At elevated temperature | 7.0x10 ⁸ | 1.0x10 ³ | | |
| Surface Resistivity | A. 96/35/90 | – | 1.0x10 ⁴ | MΩ | 2.5.17.1 |
| | B. After moisture resistance | 3.0x10 ⁶ | – | | |
| | C. At elevated temperature | 2.0x10 ⁸ | 1.0x10 ³ | | |
| Dielectric Breakdown | | >55 | – | kV | 2.5.6 |
| Arc Resistance | | 130 | 60 | Seconds | 2.5.1 |
| Electric Strength (Laminate & prepreg as laminated) | | 44 (1100) | 30 (750) | kV/mm (V/mil) | 2.5.6.2 |
| Comparative Tracking Index (CTI) | | 4 (100-174) | – | Class (Volts) | UL-746A ASTM D3638 |
| Peel Strength | A. Low profile copper foil and very low profile – all copper weights >17 microns | 1.14 (6.5) | 0.70 (4.0) | N/mm (lb/inch) | 2.4.8 |
| | B. Standard profile copper | – | – | | 2.4.8.2 |
| | 1. After thermal stress | 1.25 (7.0) | 0.80 (4.5) | | 2.4.8.3 |
| | 2. At 125°C (257°F) | 1.25 (7.0) | 0.70 (4.0) | | – |
| | 3. After process solutions | 1.14 (6.5) | 0.55 (3.0) | – | |
| Flexural Strength | A. Lengthwise direction | 83,600 | – | lb/inch ² | 2.4.4 |
| | B. Crosswise direction | 55,500 | | | |
| Tensile Strength | A. Lengthwise direction | 55,000 | – | lb/inch ² | – |
| | B. Crosswise direction | 35,370 | | | |
| Young's Modulus | A. Grain direction | 3958 | – | ksi | ww |
| | B. Fill direction | 3530 | | | |
| Poisson's Ratio | A. Grain direction | 0.189 | – | – | xx |
| | B. Fill direction | 0.154 | | | |
| Moisture Absorption | | 0.5 | – | % | 2.6.2.1 |
| Flammability (Laminate & prepreg as laminated) | | V-0 | – | Rating | UL 94 |
| Max Operating Temperature | | 140 | UL Cert | °C | – |

The data, while believed to be accurate and based on analytical methods considered to be reliable, is for information purposes only. Any sales of these products will be governed by the terms and conditions of the agreement under which they are sold.

www.isola-group.com/products/P96

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