



IS400 High Performance Laminate and Prepreg

IS400 is a temperature-resistant base material with low Z-axis expansion. This product is based on a proprietary filled epoxy-system with a nominal glass transition temperature of approximately 150°C and a delamination time at 260°C of about 60 minutes. The Coefficient of Thermal Expansion (CTE) in the Z-axis lies between room temperature and 150°C at 40 ppm/K compared to unfilled systems at 60-70 ppm/K.

www.isola-group.com/products/IS400

ORDERING INFORMATION:

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

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High Performance

IS400 Data Sheet

Tg 150, Td 330
Dk 3.90, Df 0.022
/21 /24 /97 /99 /101

Features

- High Thermal Performance
 - ▶ Tg: 150°C (DSC)
 - ▶ Td: 330°C (TGA @ 5% wt loss)
- T260: >60 minutes
- T288: >10 minutes
- RoHS Compliant
- CAF Resistant
- CTE 40 ppm/K, Room temperature to 150°C
- Core Material Standard Availability
 - ▶ Thickness: 0.002" (0.05 mm) to 0.093" (2.4 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
 - ▶ Square weave glass fabric available
- Industry Approvals
 - ▶ IPC-4101D WAM1 /21 /24 /97 /99 /101
 - ▶ UL – File Number E41625

IS400 Specifications

| Property | | Typical Values | | | |
|---|--|--|--|----------------------|--------------------------|
| | | Typical Value | Specification | Units | Test Method |
| | | | | Metric (English) | IPC-TM-650 (or as noted) |
| Glass Transition Temperature (Tg) by DSC | | 150 | 110-150 | °C | 2.4.25 |
| Decomposition Temperature (Td) by TGA @ 5% weight loss | | 330 | – | °C | ASTM D3850 |
| T260 | | >60 | – | Minutes | 2.4.25 |
| T288 | | >10 | – | Minutes | 2.4.25 |
| CTE, Z-axis | A. Pre-Tg | 40 | AABUS | ppm/°C | 2.4.24 |
| | B. Post-Tg | 230 | – | | |
| CTE, X-, Y-axes | A. Pre-Tg | 13 | AABUS | ppm/°C | 2.4.24 |
| | B. Post-Tg | 14 | – | | |
| Z-axis Expansion (50-260°C) | | 3.30 | AABUS | % | 2.4.24 |
| Thermal Conductivity | | 0.36 | – | 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 50% resin | A. @ 1 MHz (Fluid cell) | 4.00 | 5.40 | – | 2.5.5.3 |
| | B. @ 500 MHz (HP4291) | 3.90 | – | | 2.5.5.9 |
| | C. @ 1 GHz (HP4291) | – | – | | 2.5.5.5 |
| Df, Loss Tangent (Laminate & prepreg as laminated) Tested at 50% resin | A. @ 1 MHz (Fluid cell) | 0.020 | 0.035 | – | 2.5.5.3 |
| | B. @ 500 MHz (HP4291) | 0.022 | – | | 2.5.5.9 |
| | C. @ 1 GHz (HP4291) | – | – | | 2.5.5.5 |
| Volume Resistivity | A. 96/35/90 | 4.0x10 ⁸ | 1.0x10 ⁴ | MΩ-cm | 2.5.17.1 |
| | B. After moisture resistance | – | – | | |
| | C. At elevated temperature | 7.0x10 ⁷ | 1.0x10 ³ | | |
| Surface Resistivity | A. 96/35/90 | 3.0x10 ⁶ | 1.0x10 ⁴ | MΩ | 2.5.17.1 |
| | B. After moisture resistance | – | – | | |
| | C. At elevated temperature | 5.4x10 ⁶ | 1.0x10 ³ | | |
| Dielectric Breakdown | | >50 | – | kV | 2.5.6 |
| Arc Resistance | | 120 | 60 | Seconds | 2.5.1 |
| Electric Strength (Laminate & prepreg as laminated) | | 48 (1100) | 29 (736) | kV/mm V/mil | 2.5.6.2 |
| Comparative Tracking Index (CTI) | | 3 (175-249) | – | Class (Volts) | – |
| Peel Strength | A. Low profile copper foil and very low profile – all copper weights >17 microns | 1.05 (6.0) | 0.70 (4.0) | N/mm (lb/inch) | 2.4.8 |
| | B. Standard profile copper | 1.45 (9.0) 1.25 (8.0) 1.45 (9.0) | 1.05 (6.0) 0.70 (4.0) 0.80 (4.5) | | 2.4.8.2 |
| | 1. After thermal stress | | | | 2.4.8.3 |
| | 2. At 125°C (257°F) | | | | – |
| 3. After process solutions | – | | | | |
| Flexural Strength | A. Lengthwise direction | 82,000 | – | lb/inch ² | 2.4.4 |
| | B. Crosswise direction | 66,600 | | | |
| Tensile Strength | A. Lengthwise direction | 51,213 | – | lb/inch ² | – |
| | B. Crosswise direction | 41,675 | | | |
| Young's Modulus | A. Grain direction | 3663 | – | ksi | ww |
| | B. Fill direction | 3328 | | | |
| Poisson's Ratio | A. Grain direction | 0.183 | – | – | xx |
| | B. Fill direction | 0.151 | | | |
| Moisture Absorption | | 0.18 | 0.8 | % | 2.6.2.1 |
| Flammability (Laminate & prepreg as laminated) | | V-0 | V-0 | Rating | UL 94 |
| Max Operating Temperature | | 130 | – | °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.

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