IS410 is a high-performance FR-4 epoxy laminate and prepreg system designed to support the printed circuit board industry’s requirements for higher levels of reliability and the trend to use lead-free solder. Isola’s IS410 has a glass transition temperature (Tg) of 180°C and is specially formulated for superior performance through multiple thermal excursions, passing 6x solder tests at 288°C. IS410 is optimized for enhanced drilling performance allowing high aspect ratio holes of ≤10 mils. Its unique resin chemistry provides CAF resistance with the benefit of long-term reliability of boards built with small feature designs.

**Features**

- **High Thermal Performance**
  - Tg: 180°C (DSC)
  - Td: 350°C (TGA @ 5% wt loss)

- **Superior Performance through Multiple Thermal Excursions**
  - 6x solder tests at 288°C

- **Enhanced Drilling Performance for High Aspect PTH**
  - Greater than 10 to 1 aspect ratio
  - Optimized for drilling small holes (≤10 mils)

- **Core Material Standard Availability**
  - Available in full size sheet or panel form

- **Prepreg Standard Availability**
  - Roll or panel form

- **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
  - Heaver copper available upon request
  - Thinner copper roll available upon request

- **Glass Fabric Availability**
  - Standard E-glass
  - Square weave glass fabric available

- **Industry Approvals**
  - IPC-4101D WAM1/21/24/26/121/124/129
  - UL - File Number E41625
  - RoHS Compliant

**Data Sheet**

Tg 180, Td 350
DK 3.97, Df 0.02
1/2, 1 and 2 oz (18, 35 and 70 µm) available

High Performance

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## IS410 Typical Values

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Units</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass Transition Temperature (Tg) by DSC</td>
<td>180</td>
<td>ºC</td>
<td>IPC-TM-650 (or as noted)</td>
</tr>
<tr>
<td>Decomposition Temperature (Td) by TGA @ 5% weight loss</td>
<td>350</td>
<td>ºC</td>
<td>ASTM D3850</td>
</tr>
<tr>
<td>T260</td>
<td>50</td>
<td>Minutes</td>
<td>ASTM D3850</td>
</tr>
<tr>
<td>T288</td>
<td>10</td>
<td>Minutes</td>
<td>ASTM D3850</td>
</tr>
<tr>
<td>CTE, Z-axis</td>
<td>55</td>
<td>ppm/ºC</td>
<td>2.4.24</td>
</tr>
<tr>
<td>CTE, X-, Y-axes</td>
<td>11</td>
<td>ppm/ºC</td>
<td>2.4.24</td>
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<tr>
<td>Z-axis Expansion (50-260ºC)</td>
<td>3.5</td>
<td>%</td>
<td>2.4.24</td>
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<tr>
<td>Thermal Conductivity</td>
<td>0.5</td>
<td>W/mK</td>
<td>ASTM D5930</td>
</tr>
<tr>
<td>Thermal Stress 10 sec @ 288ºC (550.4ºF)</td>
<td></td>
<td></td>
<td>2.4.13.1</td>
</tr>
<tr>
<td>Dk, Permittivity (Laminate &amp; prepreg as laminated) Tested at 50% resin</td>
<td>3.96</td>
<td></td>
<td>2.5.5.3</td>
</tr>
<tr>
<td>Df, Loss Tangent (Laminate &amp; prepreg as laminated) Tested at 50% resin</td>
<td>0.0149</td>
<td></td>
<td>2.5.5.3</td>
</tr>
<tr>
<td>Volume Resistivity</td>
<td>5.0x10⁸</td>
<td>MΩ-cm</td>
<td>2.5.17.1</td>
</tr>
<tr>
<td>Surface Resistivity</td>
<td>8.0x10⁶</td>
<td>MΩ</td>
<td>2.5.17.1</td>
</tr>
<tr>
<td>Electric Strength (Laminate &amp; prepreg as laminated)</td>
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<td>kW/mm (V/mil)</td>
<td>2.5.6.2</td>
</tr>
<tr>
<td>Comparative Tracking Index (CTI)</td>
<td>3 (175-249)</td>
<td>Class (Volts)</td>
<td>UL-746A ASTM D3638</td>
</tr>
<tr>
<td>Peel Strength</td>
<td>1.14 (6.5)</td>
<td>N/mm (lb/inch)</td>
<td>2.4.8.2</td>
</tr>
<tr>
<td>Flexural Strength</td>
<td>82,600</td>
<td>lb/inch²</td>
<td>–</td>
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<tr>
<td>Tensile Strength</td>
<td>60,890</td>
<td>lb/inch²</td>
<td>–</td>
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<tr>
<td>Young's Modulus</td>
<td>3677</td>
<td>ksi</td>
<td>ASTM D790-15e2</td>
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<td>Poisson's Ratio</td>
<td>0.175</td>
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<td>ASTM D3039-95a</td>
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<td>Moisture Absorption</td>
<td>0.20</td>
<td>%</td>
<td>2.6.2.1</td>
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<tr>
<td>Flammability (Laminate &amp; prepreg as laminated)</td>
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<td>Rating</td>
<td>UL 94</td>
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<tr>
<td>Max Operating Temperature</td>
<td>130</td>
<td>ºC</td>
<td>–</td>
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</table>

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/IS410

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