

ISOLA LAMINATE SYSTEMS

Product and Solutions Offering

Isola Laminate Systems' broad range of laminate, prepreg and foil products and solutions includes:

- **PWB Substrates**
 - FR-4s
 - Composites
- **Advanced PWB Substrates**
 - BT/Epoxy
 - Polyimide
 - Specialty Prepregs
- **HDI Materials**
- **Signal Integrity Substrates**
- **Buried Passive Solutions**
 - FR406BC
- **Packaging Substrates**

FR406BC

High Performance Epoxy Laminate for Buried Capacitance

FR406BC is a high performance FR-4 laminate system engineered to meet the high reliability demands of high density, embedded capacitance applications. FR406BC provides the processing ease of an FR-4 material while offering outstanding dimensional consistency and thickness tolerance. The performance attributes of FR406BC makes it ideal for high density, high layer count and critical impedance applications.

Performance and Processing Advantages

- **High Tg - 160°C (DSC)**
 - Superior performance through multiple thermal excursions
 - Superior chemical and thermal resistance
 - Lower CTE from ambient to 288°C
- **Tight Thickness Tolerance**
 - Superior thickness tolerance capability for consistent controlled impedance
- **Consistent Dimensional Stability**
 - Repeatable and reliable movement for critical high layer count application

Purchasing Information

- **Industry Approvals**
 - IPC4101/24
 - UL Recognized - FR-4, File Number E41625
(Part of Isola's FR-4 Family)
 - CSA
- **Availability**
 - Thicknesses:** 0.002"
 - Available in sheet or panel form
 - Copper Foil Cladding:** Double Treat HTE
 - Glass Styles - 6060

Ordering Information

Contact your local sales representative or the Inside Sales Department in La Crosse, WI.

Phone: 1-800-845-2904 or
608-784-6070

Fax: 1-800-344-1825 or
608-791-2428

Isola Laminate Systems Corp.
230 North Front Street
La Crosse, WI 54601

For further information visit
www.isolalaminatesystems.com

FR406BC Typical Laminate Properties, 0.002"

| PROPERTY | UNITS | IPC 4101 | FR406BC VALUE | CONDITIONING |
|---------------------------------|--------------|------------------------|------------------------|----------------------|
| Thickness | inches | <.030 | 0.002 | — |
| | mm | [<.78] | — | — |
| Construction | — | — | 1-6060 | — |
| Retained Resin | — | — | 58% | — |
| Thermal | | | | |
| Tg, min. - (DSC) | °C | 150-200 | 160 | E-2/105 |
| CTE - x-axis | ppm/°C | — | 14 | Ambient to Tg |
| y-axis | ppm/°C | — | 13 | Ambient to Tg |
| z-axis | ppm/°C | — | 140 | Ambient to 288°C |
| Solder Float, 288°C | seconds | — | 120 | Condition A |
| Electrical | | | | |
| Permittivity (DK), max. @ | | | | |
| 1 MHz (2 Fluid Cell) | — | 5.4 | 4.4 | C-24/23/50 |
| 500 MHz (HP 4291) | — | — | 4.20 | C-24/23/50 |
| 1 GHz (HP4291) | — | — | 4.21 | C-24/23/50 |
| Loss Tangent (DF), max. @ | | | | |
| 1 MHz (2 Fluid Cell) | — | 0.035 | 0.023 | C-24/23/50 |
| 500 MHz (HP 4291) | — | — | 0.014 | C-24/23/50 |
| 1 GHz (HP4291) | — | — | 0.014 | C-24/23/50 |
| Surface Resistivity, min. | megohms | 1×10 ⁴ | 3×10 ⁶ | C-96/35/90 |
| | megohms | 1×10 ³ | 8×10 ⁶ | E-24/125 |
| Volume Resistivity, min. | megohm-cm | 1×10 ⁶ | 9×10 ⁶ | C-96/35/90 |
| | megohm-cm | 1×10 ³ | 2×10 ⁶ | E-24/125 |
| Electric Strength, min. | volts/mil | 736 | 1000 | D-48/50 |
| | [volts/mm] | [2.9×10 ⁴] | [3.9×10 ⁴] | — |
| Arc Resistance, min. | seconds | 60 | 90 | D-48/50 |
| Comparative Tracking Index (UL) | volts | — | 220 | ASTM D-36/38-85 |
| | PLC-UL | 3 | 3 | UL94 |
| Physical | | | | |
| Peel Strength, min. - 1 oz. | lb/in | — | 7.5 | Condition A |
| | [Kg/M] | — | [125] | Condition A |
| | lb/in | 4.5 | 6.0 | After Thermal Stress |
| | [Kg/M] | [80] | [105] | After Thermal Stress |
| | lb/in | 3.9 | 6.0 | E-1/125 |
| | [Kg/M] | [70] | [105] | E-1/125 |
| Flammability | — | V-0 | V-0 | UL94 |

"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."