

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

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				
T _g , min. - (DSC)	°C	150-200	160	E-2/105
CTE - x-axis	ppm/°C	—	14	Ambient to T _g
y-axis	ppm/°C	—	13	Ambient to T _g
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	volts	—	220	ASTM D-36/38-85
(UL)	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."