



Polyimide Laminate and Prepreg

Isola Group offers a product line of polyimide-based prepreg and copper clad laminates for high temperature printed circuit applications. These products consist of a flame resistance, polyimide resin system suitable for military, commercial or industrial electronic applications requiring superior performance and the utmost in thermal properties. They utilize a polyimide and thermoplastic blend resin, fully cured without the use of MDA (Methylene Dianiline). 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.

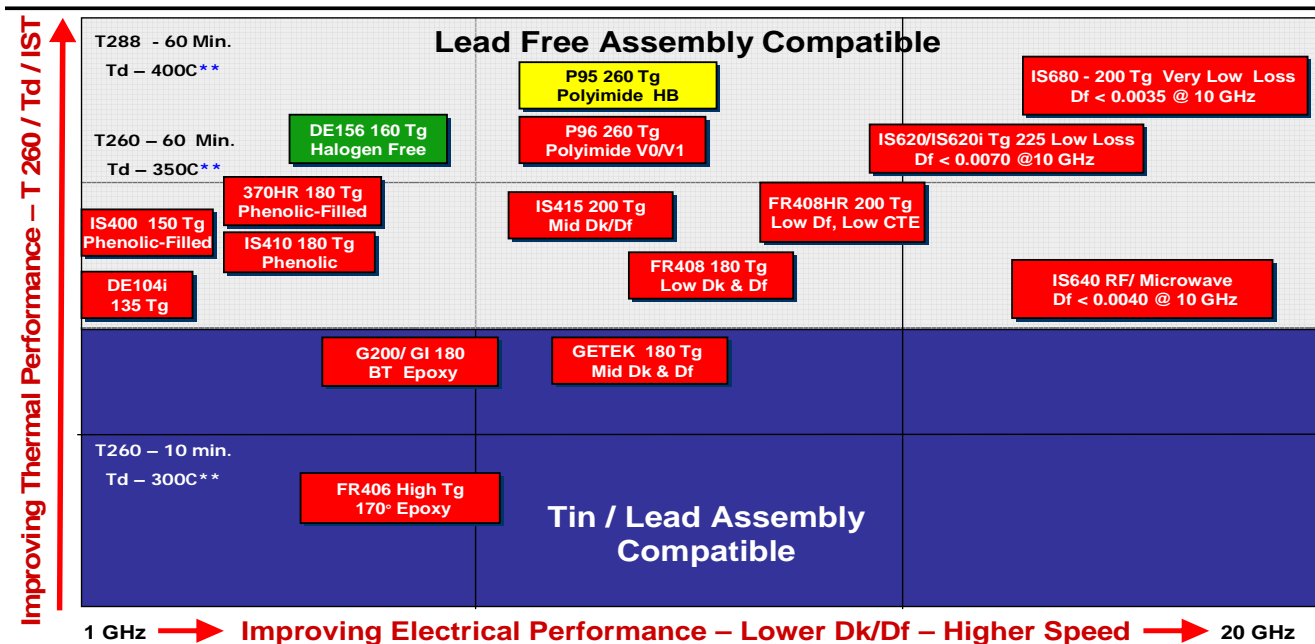
Industry Approvals

IPC-4101A /41 /40,/42
 UL Recognized – GPY, File Number E41625

- **High Tg - 260 °C (TMA)**
 Greater thermal performance over epoxy-bismaleimide Blends
- **Maintains Bond Strength at High Temperature**
- **Tough Resin System**
 Improved processing due to less brittleness
 Less delamination from machining
- **Non-brominated Chemistry, Thermally Stable Laminate System**
 Full benefits of 100% polyimide performance
- **Non-MDA (Methylene Dianiline) Chemistry**
 Meets all OSHA 1910.1050 requirements
- **Standard Availability**
Thickness: 0.0025" [.05 mm] to 0.125" [3.2 mm]
 Available in sheet or panel form
Copper Foil Cladding: Grade 3 (HTE), 1/2, 1 and 2 oz.
Foil Options: Double treat
Prepregs: Available in roll or panel form
Glass Styles: 106, 1080, 2113, 2116, and 7628



Isola - Product Position Thermal Performance vs Signal Integrity



Speed is a function of design such as line length etc.

** Laminate Data - IST performance is a function of Hole diameter, board thickness, plating parameters and laminate attributes.

P95 / P25 Typical Laminate Properties

P95					
Property	Typical Values				
	Typical Value	Specification	Units	Test Method	
			Metric (English)	IPC-TM-650 (or as noted)	
Glass Transition Temperature (Tg) by DSC, spec minimum	260	250 min	°C	2.4.25	
Decomposition Temperature (Td) @ 5% wt loss	416	—	°C	ASTM D3850	
CTE, Z-axis	A. Pre-Tg	AABUS	ppm/°C	2.4.24	
	B. Post-Tg	—			
CTE, X-, Y-axis	A. Pre-Tg	AABUS	ppm/°C	2.4.24	
	B. Post-Tg	—			
% Z-Axis Expansion (50-260C)			%	2.4.24	
Thermal Conductivity	0.4	—	W/mK	ASTM D5930	
Thermal Stress 10 Sec @ 288°C (550.4°F), spec min	A. Unetched	pass	Rating	2.4.13.1	
	B. Etched	pass			
Permittivity, spec maximum (Laminate & prepreg as laminated)	A. @ 100 MHz HP4285A	3.90	—	2.5.5.3	
	B. @ 1 GHz HP4291A	3.95		2.5.5.9	
	C. @ 2 GHz Bereskin Stripline	3.76		2.5.5.5	
	D. @ 5 GHz Bereskin Stripline	3.74		2.5.5.5	
	E. @ 10 GHz Bereskin Stripline	3.74		2.5.5.5	
Loss Tangent, spec maximum (Laminate & prepreg as laminated)	A. @ 100 MHz HP4285A	0.0180	—	2.5.5.3	
	B. @ 1 GHz HP4291A	0.0180		2.5.5.9	
	C. @ 2 GHz Bereskin Stripline	0.0170		2.5.5.5	
	D. @ 5 GHz Bereskin Stripline	0.0190		2.5.5.5	
	E. @ 8 GHz Bereskin Stripline	0.0210		2.5.5.5	
Volume Resistivity, spec minimum	A. 96/35/90		1.0 x 10 ⁶	MΩ -cm	
	B. After moisture resistance	3x10 ⁸	—		
	C. At elevated temperature	7x10 ⁸	1.0 x 10 ³		
Surface Resistivity, spec minimum	A. 96/35/90		1.0 x 10 ⁴	MΩ	
	B. After moisture resistance	3x10 ⁶	—		
	C. At elevated temperature	2x10 ⁸	1.0 x 10 ³		
Dielectric Breakdown, spec minimum	>55	—	kV	2.5.6	
Arc Resistance, spec minimum	130	60	Seconds	2.5.1	
Electric Strength, spec minimum (Laminate & prepreg as laminated)		44	30	kV/mm	
		1100	750	(V/mil)	2.5.6.2
Comparative Tracking Index (CTI)	2 (250-399)	-	Class (volts)	UL-746A ASTM D3638	
Peel Strength, Spec Minimum	A. Low profile copper foil and very low profile – all copper weights >17 microns	6.5(1.14)	4.0(0.70)	lb/inch(N/mm)	2.4.8
	B. Standard profile copper				2.4.8.2
	1. After thermal stress	7.0(1.25)	4.5(0.8)	lb/inch(N/mm)	2.4.8.3
	2. At 125°C (257°F)	7.0(1.25)	4.0(0.70)		
3. After process solutions	6.5(1.14)	3.0(0.55)			
Flexural Strength, minimum	A. Lengthwise direction	90,000	—	lb/inch ²	2.4.4
	B. Crosswise direction	72,000	—		
Moisture Absorption, spec maximum	0.5	—	%	2.6.2.1	
Flammability (Laminate & prepreg as laminated), spec min	HB		Rating	UL-94	
HWI	0				
Max Operating Temperature	140 (210)	UL Cert (tested)	Deg C		
DSR	yes				

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.

ORDERING INFORMATION:

Contact your local sales representative or the Customer Service Department in Chandler, AZ
 Isola Group 3100 W Ray Road, Chandler, AZ 85226
 Phone: 480-893-6527
 For further information visit www.isola-group.com

Rev 5-15-08

