



## BT/Epoxy Laminate and Prepreg

Isola Group's G200 is a fully proven laminate and prepreg system designed to meet today's high reliability printed circuit board requirements.

Blending bismaleimide/triazine and epoxy resin provides G200 with enhanced thermal, mechanical and electrical performance over most epoxy materials.

G200 possesses performance characteristics that make it an excellent selection for large panel size, high layer count printed wiring boards.

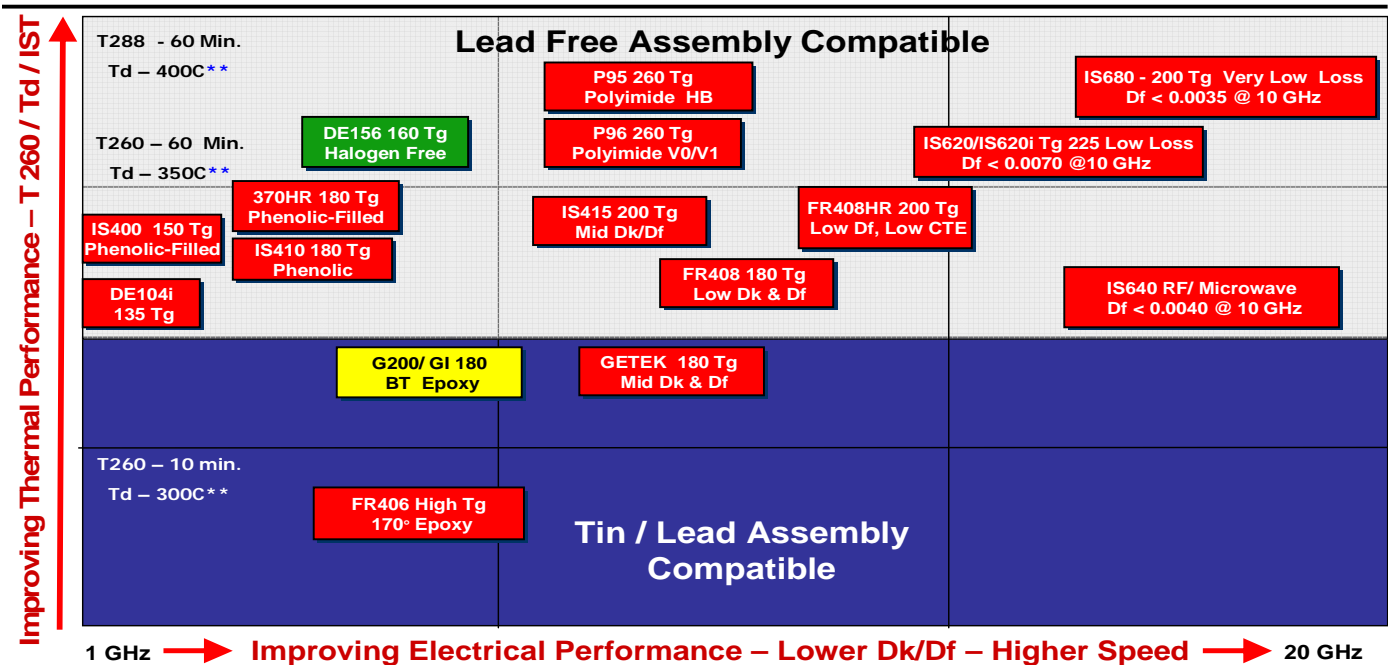
### Industry Approvals

- IPC-4101A /30
- UL Recognized – FR-4, File Number E41625

- High Tg - 180 °C (DSC)**  
Superior performance through multiple thermal excursions  
Superior chemical and thermal resistance
- Low CTE from Ambient to 288 °C**
- Excellent Electrical Insulation in High Humidity and High Temperatures (CAF Resistance)**
- Very Consistent Dimensional Stability**  
Excellent layer-to-layer registration
- Standard Availability**  
**Thickness:** 0.002" [.05 mm] to 0.125" [3.2 mm]  
Available in sheet or panel form
- Copper Foil Cladding:** Grade 3 (HTE), 1/8 to 3 oz.
- Foil Options:** Double treat
- Prepregs:** Available in roll or panel form
- Glass Styles:** 106, 1080, 2313, 2116, 1652 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.

# G200 Typical Laminate Properties

G 200					
Property	Typical Values				
			Units	Test Method	
	Typical Value	Specification	Metric (English)	IPC-TM-650 (or as noted)	
Glass Transition Temperature (Tg) by DSC, spec minimum	180	150-200	°C	2.4.25	
Decomposition Temperature (Td) @ 5% wt loss	325	—	°C	ASTM D3850	
CTE, Z-axis	A. Pre-Tg	AABUS	ppm/°C	2.4.24	
	B. Post-Tg	—			
CTE, X-, Y-axes	A. Pre-Tg	AABUS	ppm/°C	2.4.24	
	B. Post-Tg	—			
% Z-Axis Expansion (50-260C)	3.3	—	%	2.4.24	
Thermal Conductivity	0.35	—	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	3.80	—	2.5.5.3	
	B. @ 1 GHz HP4291A	3.70		2.5.5.9	
	C. @ 2 GHz Bereskin Stripline	3.70		2.5.5.5	
	D. @ 5 GHz Bereskin Stripline	3.65		2.5.5.5	
	E. @ 10 GHz Bereskin Stripline	3.65		2.5.5.5	
Loss Tangent, spec maximum (Laminate & prepreg as laminated)	A. @ 100 MHz HP4285A	0.0150	—	2.5.5.3	
	B. @ 1 GHz HP4291A	0.0150		2.5.5.9	
	C. @ 2 GHz Bereskin Stripline	0.0130		2.5.5.5	
	D. @ 5 GHz Bereskin Stripline	0.0150		2.5.5.5	
	E. @ 10 GHz Bereskin Stripline	0.0150		2.5.5.5	
Volume Resistivity, spec minimum	A. 96/35/90	—	MΩ -cm	2.5.17.1	
	B. After moisture resistance	8.9x10 <sup>8</sup>			
	C. At elevated temperature	6.5x10 <sup>8</sup>			
Surface Resistivity, spec minimum	A. 96/35/90	—	MΩ	2.5.17.1	
	B. After moisture resistance	2.21x10 <sup>6</sup>			
	C. At elevated temperature	4.4x10 <sup>8</sup>			
Dielectric Breakdown, spec minimum	>60	—	kV	2.5.6	
Arc Resistance, spec minimum	130	60	Seconds	2.5.1	
Electric Strength, spec minimum (Laminate & prepreg as laminated)	45	30	kV/mm	2.5.6.2	
	1175	750	(V/mil)		
Comparative Tracking Index (CTI)	3 (175-249)	—	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	—	—	lb/inch(N/mm)	2.4.8.2
	1. After thermal stress	5.5(0.96)	4.5(0.8)		2.4.8.3
	2. At 125°C (257°F)	—	4.0(0.70)		
	3. After process solutions	5.1(0.09)	3.0(0.55)		
Flexural Strength, minimum	A. Lengthwise direction	53,000	—	lb/inch <sup>2</sup>	2.4.4
	B. Crosswise direction	47,100	—		
Moisture Absorption, spec maximum	0.2	—	%	2.6.2.1	
Flammability (Laminate & prepreg as laminated), spec min	V0	—	Rating	UL-94	
HWI	0	—	—	—	
Max Operating Temperature	140(150)	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](http://www.isola-group.com)

