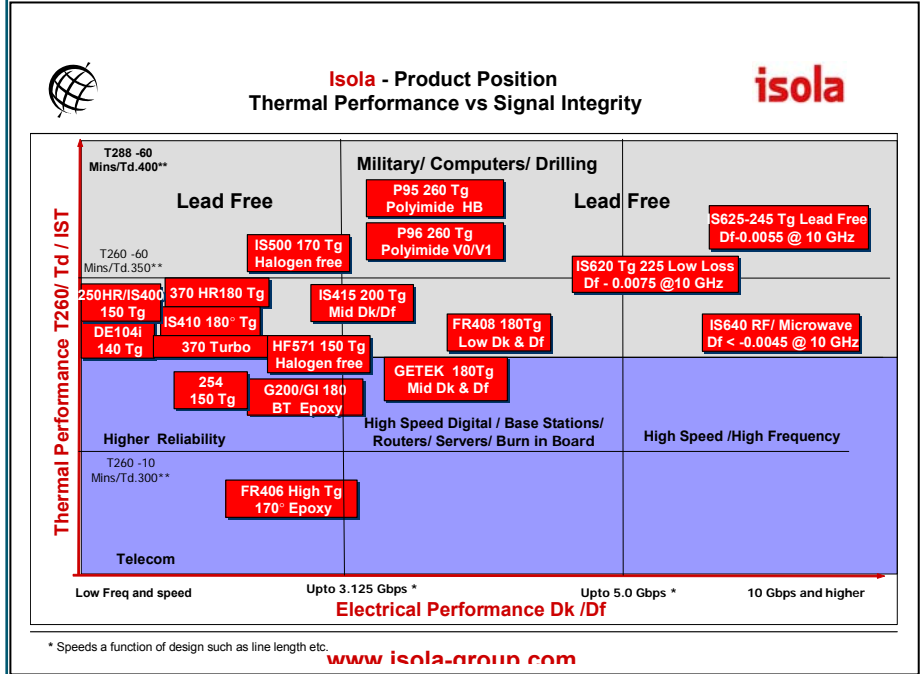




Epoxy Laminate and Prepreg

High Thermal Reliability
CAF Resistance /Lead-free

IS410 is a high-performance FR-4 epoxy laminate & prepreg system designed to support the printed circuit board industry's requirements for higher levels of reliability and the trend to lead-free solder. Isola's IS410 has a 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.



Performance and Processing Advantages

- **High Thermal Performance**
Tg of 180°C (DSC)
Superior performance through multiple thermal excursions – Passes 6X @ 288°C
- **CAF Resistant**
Supports small feature size pcb designs Improves long-term circuit board reliability in the field
- **Enhanced Drilling Performance for High Aspect PTH**
Greater than 10 to 1 aspect ratio
Optimized for drilling small holes (≤10 mils)

Purchasing Information


- **Industry Approvals**
IPC-4101B /21 /24 /26 /28 /121 /124 /129
UL Recognized – FR-4, File Number E41625
- **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. Heavyweight copper foils available on request (i.e. 4 oz., 5 oz. copper)
Foil Options: Double treat, reverse treat
Prepregs: Available in roll or panel form
Glass Styles: available on most standard glass styles

IS410 Typical Laminate Properties

		English			Metric			Test Method	
		Value	Specification	Units	Value	Specification	Units	IPC-TM-650 (or as noted)	
Glass Transition Temperature (Tg) by DSC, spec minimum		180	110 C min	°C	180	110 C min	°C	2.4.25	
Decomposition Temperature (Td) by TGA		350	—	°C	350	—	°C	ASTM D3850	
T260	@ 5% weight loss	60		min	60		min	2.4.25	
T288	Minutes	>20		min	>20		min		
CTE, Z-axis		65	AABUS	ppm/°C	65	AABUS	ppm/°C	2.4.24	
Pre-Tg		250	—		250	—			
CTE, X-, Y-axes		11	AABUS	ppm/°C	11	AABUS	ppm/°C	2.4.24	
Post-Tg		13	—		13	—			
Z-Axis Expansion (50 – 260C) %		3.5	AABUS	%	3.5	AABUS	%	2.4.24	
Thermal Stress 10 Sec		Pass	Pass Visual	Rating	Pass	Pass Visual	Rating	2.4.13.1	
@ 288°C (550.4°F), spec minimum		Pass	Pass Visual		Pass	Pass Visual			
Dk (Permittivity, Laminate & prepreg as laminated) Berskin Strip line Method	2 Ghz	3.76	5.4	—	3.76	5.4	—	2.5.5.3	
	5 Ghz	3.69	—		3.69	—		2.5.5.9	
	10 Ghz	3.69	—		3.69	—		2.5.5.5	
Df, Loss Tangent, spec maximum (Laminate & prepreg as laminated) Berskin Stripline Method	2 Ghz	0.021	0.035	—	0.021	0.035	—	2.5.5.3	
	5 Ghz	0.025	—		0.025	—		2.5.5.9	
	10 Ghz	0.025	—		0.025	—		2.5.5.5	
Volume Resistivity, spec minimum	96/35/90	—	—	Mξ -cm	—	—	Mξ -cm	2.5.17.1	
	After moisture resistance	5.00E+04	e4		5.00E+04	e4			
	At elevated temperature	3.0E+07	e3		3.0E+07	e3			
Surface Resistivity, spec minimum	96/35/90	—	—	Mξ	—	—	Mξ	2.5.17.1	
	After moisture resistance	8.00E+04	e4		8.00E+04	e4			
	At elevated temperature	4.50E+07	e3		4.50E+07	e3			
Thermal Conductivity		.4-.6	—	W/mK	.4-.6	—	W/mK	ASTM D5930	
Dielectric Breakdown, spec minimum		>50	40	kV	>50	40	kV	2.5.6	
Arc Resistance, spec minimum		129	60	Seconds	129	60	Seconds	2.5.1	
Electric Strength, spec minimum (Laminate & prepreg as laminated)		1100	736	V/mil	44000	29000	V/mm	2.5.6.2	
Peel Strength, spec minimum	profile – all copper weights >17 microns	>5.5	4	(lb/inch)	>110	70	N/mm	2.4.8	
								2.4.8.2	
	Standard profile copper							2.4.8.3	
	-----1. After thermal stress								
	2. At 125°C (257°F)		9		6	158		105	
	3. After process solutions		7		4	123		70	
		9	4.5	158	80				
Moisture Absorption, spec maximum		0.45	0.8	%	0.45	0.8	%	2.6.2.1	
CTI			3						
HWI			0						
HAI			2						
Max Operating Temp			130						
DSR			YES						
		Grain		Fill					
Flexural Strength (ksi)		79		68					
Tensile Strength (Ksi)		52		38					
Poisson's Ratio		0.13		0.11					
Youngs Modulus (million psi)		3.6		3					
Taylors Modulus (million psi)		3.3		3					

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



Data Shee
 REV 12/1/06