IS410

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.

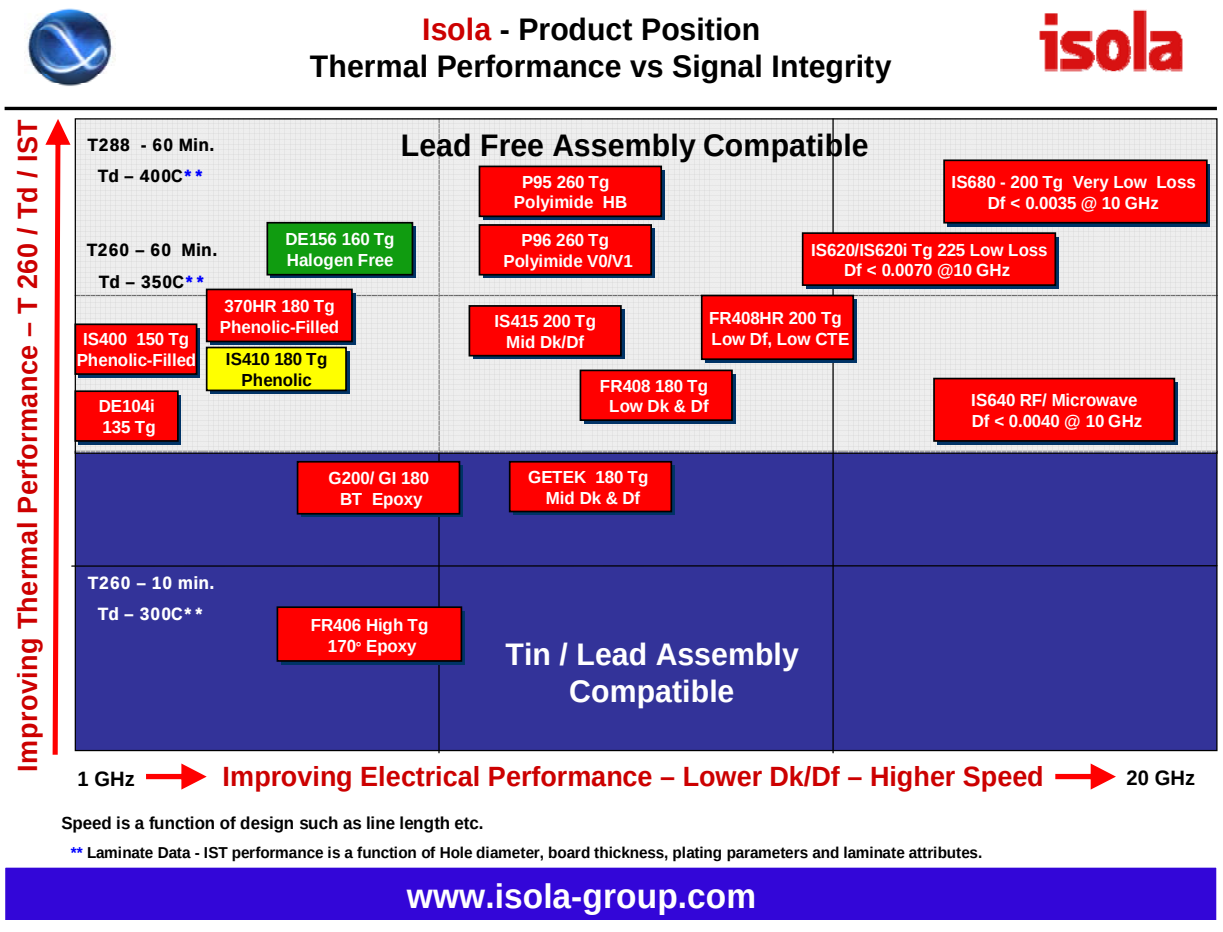
Industry Approvals
IPC-4101B /21 /24 /26 /28 /121 /124 /129
UL Recognized – FR-4, File Number E41625

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)

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



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.

IS410

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	170-200	°C	2.4.25
Decomposition Temperature (Td) @ 5% wt loss		350	—	°C	ASTM D3850
CTE, Z-axis	A. Pre-Tg	65	AABUS	ppm/°C	2.4.24
	B. Post-Tg	250	—		
CTE, X-, Y-axes	A. Pre-Tg	11	AABUS	ppm/°C	2.4.24
	B. Post-Tg	13	—		
% Z-Axis Expansion (50-260C)		3.5		%	2.4.24
Thermal Conductivity		0.5	—	W/mK	ASTM D5930
Thermal Stress 10 Sec	A. Unetched	pass	Pass Visual	Rating	2.4.13.1
@ 288°C (550.4°F), spec min	B. Etched	pass	Pass Visual		
Permittivity, spec maximum (Laminate & prepreg as laminated)	A. @ 100 MHz HP4285A	3.96	5.4	—	2.5.5.3
	B. @ 1 GHz HP4291A	3.90	—		2.5.5.9
	C. @ 2 GHz Bereskin Stripline	3.97	—		2.5.5.5
	D. @ 5 GHz Bereskin Stripline	3.87	—		2.5.5.5
	E. @ 10 GHz Bereskin Stripline	3.87	—		2.5.5.5
Loss Tangent, spec maximum (Laminate & prepreg as laminated)	A. @ 100 MHz HP4285A	0.0149	0.035	—	2.5.5.3
	B. @ 1 GHz HP4291A	0.0189	—		2.5.5.9
	C. @ 2 GHz Bereskin Stripline	0.0200	—		2.5.5.5
	D. @ 5 GHz Bereskin Stripline	0.0230	—		2.5.5.5
	E. @ 10 GHz Bereskin Stripline	0.0230	—		2.5.5.5
Volume Resistivity, spec minimum	A. 96/35/90		1.0×10^{6}	MΩ -cm	2.5.17.1
	B. After moisture resistance	5.0×10^{8}	—		
	C. At elevated temperature	3.6×10^{8}	1.0×10^{3}		
Surface Resistivity, spec minimum	A. 96/35/90		1.0×10^{4}	MΩ	2.5.17.1
	B. After moisture resistance	8×10^{6}	—		
	C. At elevated temperature	4.5×10^{8}	1.0×10^{3}		
Dielectric Breakdown, spec minimum		>50	—	kV	2.5.6
Arc Resistance, spec minimum		129	60	Seconds	2.5.1
Electric Strength, spec minimum (Laminate & prepreg as laminated)		44	30	kV/mm	2.5.6.2
		1100	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				2.4.8.2
	1. After thermal stress	7(1.225)	4.5(0.8)		2.4.8.3
	2. At 125°C (257°F)	6.5(1.14)	4.0(0.70)		
	3. After process solutions	5.1(0.9)	3.0(0.55)		
Flexular Strength, minimum	A. Lengthwise direction	79,000	—	$lb/inch^2$	
	B. Crosswise direction	68,000	—		
Moisture Absorption, spec maximum		0.20	—	%	2.6.2.1
Flammability (Laminate & prepreg as laminated), spec min		V0		Rating	UL-94
HWI		2			
Max Operating Temperature		130 (150)	UL Cert (tested)	Deg C	
DSR		yes			
TensileStrength, minimum	A. Lengthwise direction	52,000	—	$lb/inch^2$	
	B. Crosswise direction	38,000	—		
Poisson's Ratio	A. Lengthwise direction	0.13	—		
	B. Crosswise direction	0.11	—		
Youngs Modulus	A. Lengthwise direction	3.6	—		
	B. Crosswise direction	3.0	—		
Taylors Modulus	A. Lengthwise direction	3.3	—		
	B. Crosswise direction	3.0	—		

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