

IPC-4103 /17 IPC-4101 /102 UL - File Number E41625

Tachyon 100G laminate materials are designed for very high-speed digital applications up to and beyond data rates of 100 Gb/s.

PRODUCT FEATURES

Industry Recognition

- UL File Number: E41625
- RoHS Compliant

Performance Attributes

- CAF resistant
- Low moisture absorption
- 0.8 mm pitch capable
- 6x 260°C reflow capable
- 6x 288°C solder float capable

Processing Advantages

- Multiple lamination cycles
- HDI technology compatible

PRODUCT AVAILABILITY

Standard Material Offering: Laminate

- 2 to 18 mil (0.05 to 0.46 mm)

Copper Foil Type

- HVLP (VLP2) ≤2.5 micron Rz JIS, 1 oz and below is standard
- RTF (Reverse Treat Foil)

Copper Weight

- ½, 1 oz (18 and 35 µm) available
- Thinner copper foil available

Standard Material Offering: Prepreg

- Moisture barrier packaging

Glass Fabric Availability

- Low Dk Glass -Asahi Japan, Asahi Taiwan, TGI Taiwan
- Square weave glass
- Mechanically spread glass

Tachyon 100G materials exhibit exceptional electrical properties that are very stable over a broad frequency and temperature range between -55°C and +125°C up to 100 GHz. These electrical properties provide designers a scalable solution for next generation designs of backplanes and daughter cards, enabling 10x improvements from 10 Gb/s data rates.

Isola has developed Tachyon 100G with the highest level of thermal performance for high layer count line cards. The very low Z-axis CTE makes it a perfect choice for fine pitch BGA applications of 0.8 mm or less. The material is optimized with the use of spread glass to mitigate skew, improve rise times, reduce jitter, and increase eye width/height and that use ultra smooth HVLP (VLP2) 2um Rz copper that significantly reduces conductor losses.

PRODUCT ATTRIBUTES



HIGH DENSITY
INTERCONNECT



HIGH SPEED
DIGITAL



HIGH THERMAL
RELIABILITY

TYPICAL MARKET APPLICATIONS



NETWORKING &
COMMUNICATIONS



AEROSPACE
& DEFENSE



COMPUTING, STORAGE
& PERIPHERALS

ORDERING INFORMATION:

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Typical Values Table

Property		Typical Value	Units	Test Method
			Metric (English)	IPC-TM-650 (or as noted)
Glass Transition Temperature (Tg) by DSC		200	°C	2.4.25C
Glass Transition Temperature (Tg) by DMA		220	°C	2.4.24.4
Glass Transition Temperature (Tg) by TMA		180	°C	2.4.24C
Decomposition Temperature (Td) by TGA @ 5% weight loss		360	°C	2.4.24.6
Time to Delaminate by TMA (Copper removed)	A. T260	>60	Minutes	2.4.24.1
	B. T288	>60		
	C. T300	>20		
Z-Axis CTE	A. Pre-Tg	45	ppm/°C	2.4.24C
	B. Post-Tg	250	ppm/°C	
	C. 50 to 260°C, (Total Expansion)	2.5	%	
X/Y-Axis CTE	Pre-Tg	15	ppm/°C	2.4.24C
Thermal Conductivity		0.42	W/m·K	ASTM E1952
Thermal Stress 10 sec @ 288°C (550.4°F)	A. Unetched	Pass	Pass Visual	2.4.13.1
	B. Etched			
Dk, Permittivity	A. @ 2 GHz	3.04	—	2.5.5.5
	B. @ 5 GHz	3.02		
	C. @ 10 GHz	3.02		
Df, Loss Tangent	A. @ 2 GHz	0.0021	—	2.5.5.5
	B. @ 5 GHz			
	C. @ 10 GHz			
Volume Resistivity	C-96/35/90	1.33x10 ⁷	MΩ-cm	2.5.17.1
Surface Resistivity	C-96/35/90	1.33x10 ⁵	MΩ	2.5.17.1
Dielectric Breakdown		60	kV	2.5.6B
Arc Resistance		125	Seconds	2.5.1B
Electric Strength (Laminate & laminated prepreg)		60 (1500)	kV/mm (V/mil)	2.5.6.2A
Comparative Tracking Index (CTI)		3	Class (Volts)	UL 746A ASTM D3638
Peel Strength	A. Low profile copper foil and very low profile copper foil all copper foil >17 µm [0.669 mil]	0.79 (4.5)	N/mm (lb/inch)	2.4.8C
	B. Standard profile copper 1. After thermal stress	0.96 (5.5)		2.4.8.2A
Flexural Strength	A. Length direction	44.0	ksi	2.4.4B
	B. Cross direction	41.0		
Tensile Strength	A. Length direction	30.0	ksi	ASTM D3039
	B. Cross direction	25.0		
Young's Modulus	A. Length direction	2,551	ksi	ASTM D790-15e2
	B. Cross direction	2,417		
Taylor's Modulus	A. Length direction	2,264	ksi	ASTM D790-15e2
	B. Cross direction	2,197		
Poisson's Ratio	A. Length direction	0.165	—	ASTM D3039
	B. Cross direction	0.156		
Moisture Absorption		0.1	%	2.6.2.1A
Flammability (Laminate & laminated prepreg)		V-0	Rating	UL 94
Relative Thermal Index (RTI)		130	°C	UL 796

NOTES

Visit our site <http://www.isola-group.com> for more details.

Revisions:

A: Initial release - 4/17

B: Corrected moisture uptake value 6/18

C: Corrected units for Flexural and Tensile Strength - 8/18

D: Change MOT to RTI - 5/19

E: Changed VLP2 to HVLP to aligned with common industry terms 4/21

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