

# isola

## Tachyon<sup>®</sup> 100G

### Ultra Low Loss Laminate Material

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

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 VLP2 (2um Rz) copper that significantly reduces conductor losses.

### Product Attributes

High Speed Digital , High Thermal Reliability , High Density Interconnect

### Typical Market Applications

Aerospace & Defense , Computing, Storage & Peripherals , Networking & Communication Systems

#### ORDERING INFORMATION:

Contact your local sales representative or visit [www.isola-group.com](http://www.isola-group.com) for further information.

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High Speed Digital

## Data Sheet

Tg 200°C

Td 360°C

Dk 3.02

Df 0.0021

IPC-4103 - / 17

IPC-4101 - / 102

UL - File Number E41625

Last Updated January 17, 2020  
Revision No: D

### Product Features

- Industry Recognition
  - UL File Number: E41625
  - RoHS Compliant
- Performance Attributes
  - CAF resistant
  - 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
  - VLP-2 (2 micron), 1 oz and below
  - RTF (Reverse Treat Foil)
- Copper Weight
  - ½ to 2 oz (18 to 70 µm) available
  - Thinner copper foil available
- Standard Material Offering: Prepreg
  - Moisture barrier packaging
- Glass Fabric Availability
  - Low Dk glass
  - Square weave glass
  - Mechanically spread glass

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 B. T288 C. T300	>60 >60 >20	Minutes	2.4.24.1
Z-Axis CTE	A. Pre-Tg B. Post-Tg C. 50 to 260°C, (Total Expansion)	45 250 2.5	ppm/°C ppm/°C	2.4.24C 2.4.24C
X/Y-Axis CTE	Pre-Tg	15	ppm/°C	2.4.24C
Thermal Conductivity		0.42	W/mK	ASTM E1952
Thermal Stress 10 sec @ 288°C (550.4°F)	A. Etched B. Unetched	Pass	Pass Visual	2.4.13.1
Dk, Permittivity	A. @ 2 GHz B. @ 5 GHz C. @ 10 GHz	3.04 3.02 3.02	—	Bereskin Stripline
Df, Loss Tangent	A. @ 2 GHz B. @ 5 GHz C. @ 10 GHz	0.0021	—	Bereskin Stripline
Volume Resistivity	C-96/35/90	1.33x10 <sup>7</sup>	MΩ-cm	2.5.17.1
Surface Resistivity	C-96/35/90	1.33x10 <sup>5</sup>	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] B. Standard profile copper 1. After thermal stress	0.79 (4.5) 0.96 (5.5)	N/mm (lb/inch)	2.4.8C 2.4.8.2A
Flexural Strength	A. Length direction B. Cross direction	44.0 41.0	ksi	2.4.4B
Tensile Strength	A. Length direction B. Cross direction	30.0 25.0	ksi	ASTM D3039
Young's Modulus	A. Length direction B. Cross direction	2,551 2,417	ksi	ASTM D790-15e2
Taylor's Modulus	A. Length direction B. Cross direction	2,264 2,197	ksi	ASTM D790-15e2
Poisson's Ratio	A. Length direction B. Cross direction	0.165 0.156	—	ASTM D3039
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

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.

<https://www.isola-group.com/products/all-printed-circuit-materials/tachyon-100g/>

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## NOTE

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