High Performance

GETEK®

Data Sheet

Tg 180, Td 345
Dk 3.60, Df 0.009
/25

GETEK® Low Dk/Df Laminate and Prepreg

GETEK® materials provide the low dielectric constant (Dk) and low dissipation factor (Df) performance demanded by high speed, low loss Printed Wiring Board (PWB) designs and applications, while providing superior thermal performance and high reliability based on the systems 180°C glass transition temperature (Tg). GETEK laminate and prepreg products are manufactured using a functionalized, Polyphenylene Oxide (PPO)/epoxy resin, reinforced with electrical grade (E-glass) glass fabric. In addition to this superior electrical and thermal performance, the mechanical, chemical and low moisture absorption properties all equal or exceed the performance of traditional FR-4 materials. The GETEK system is also UV blocking and fluorescing.

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Features

- High Thermal Performance
  - Tg: 180°C (DMA)
  - Low CTE for reliability
- T260: >30 Minutes
- T288: >10 Minutes
- RoHS Compliant
- Improved Dielectric Properties
  - Dk <3.8 (50 MHz to 1 GHz)
    Supports increased signal speeds
  - Df <0.010 (50 MHz to 1 GHz)
    Provides better signal integrity
- UV Blocking and AOI Fluorescence
  - High throughput and accuracy during PCB fabrication and assembly
- Superior Processing
  - Closest to conventional FR-4 processing of all high-speed materials
- Core Material Standard Availability
  - Thickness: 0.002″ (0.05 mm) to 0.125″ (3.2 mm)
  - Available in full size sheet or panel form
- Prepreg Standard Availability
  - Roll or panel form
  - Tooling of prepreg panels available
- Copper Foil Type Availability
  - Standard HTE Grade 3
  - RTF (Reverse Treat Foil)
- Copper Weights
  - ½, 1 and 2 oz (18, 38 and 70 μm) available
  - Heavier copper available upon request
  - Thinner copper foil available upon request
- Glass Fabric Availability
  - Standard E-glass
  - Square weave glass fabric available
- Industry Approvals
  - IPC-4101C /25
  - UL - File Number E41625
  - Qualified to UL's MCIL Program

ORDERING INFORMATION:

Contact your local sales representative or visit **www.isola-group.com** for further information.

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GETEK® Specifications

Property		Typical Values			
				Units	Test Method
		Typical Value	Specification	Metric (English)	IPC-TM-650 (or as noted)
Glass Transition Temperature (Tg) by DSC		180	170-200	ºC	2.4.25
Decomposition Temperature (Td) by TGA @ 5% weight loss		345	–	ºC	ASTM D3850
T260		>30	–	Minutes	ASTM D3850
T288		>10	–	Minutes	ASTM D3850
CTE, Z-axis	A. Pre-Tg B. Post-Tg	55 275	AABUS –	ppm/ºC	2.4.24
CTE, X-, Y-axes	A. Pre-Tg B. Post-Tg	13/14 14/17	AABUS –	ppm/ºC	2.4.24
Z-axis Expansion (50-260ºC)		3.01	–	%	2.4.24
Thermal Conductivity		0.4	–	W/mK	ASTM D5930
Thermal Stress 10 sec @ 288ºC (550.4ºF)	A. Unetched B. Etched	Pass	Pass Visual	Rating	2.4.13.1
Dk, Permittivity (Laminate & prepreg as laminated) Tested at 50% resin	A. @ 100 MHz (HP4285A) B. @ 1 GHz (HP4291A) C. @ 2 GHz (Bereskin Stripline) D. @ 5 GHz (Bereskin Stripline) E. @ 10 GHz (Bereskin Stripline)	3.81 3.78 3.60 3.50 3.50	5.4 – – – –	–	2.5.5.3 2.5.5.9 2.5.5.5 2.5.5.5 2.5.5.5
Df, Loss Tangent (Laminate & prepreg as laminated) Tested at 50% resin	A. @ 100 MHz (HP4285A) B. @ 1 GHz (HP4291A) C. @ 2 GHz (Bereskin Stripline) D. @ 5 GHz (Bereskin Stripline) E. @ 10 GHz (Bereskin Stripline)	0.0110 0.0100 0.0090 0.0090 0.0100	0.035 – – – –	–	2.5.5.3 2.5.5.9 2.5.5.5 2.5.5.5 2.5.5.5
Volume Resistivity	A. 96/35/90 B. After moisture resistance C. At elevated temperature	– 3.81×10^8 3.90×10^8	1.0×10^6 – 1.0×10^3	MΩ-cm	2.5.17.1
Surface Resistivity	A. 96/35/90 B. After moisture resistance C. At elevated temperature	– 2.81×10^6 2.64×10^8	1.0×10^4 – 1.0×10^3	MΩ	2.5.17.1
Dielectric Breakdown		>50	–	kV	2.5.6
Arc Resistance		120	60	Seconds	2.5.1
Electric Strength (Laminate & prepreg as laminated)		48 (1200)	30 (750)	kV/mm (V/mil)	2.5.6.2
Comparative Tracking Index (CTI)		3 (175-249)	–	Class (Volts)	UL-746A ASTM D3638
Peel Strength	A. Low profile copper foil and very low profile – all copper weights >17 microns B. Standard profile copper 1. After thermal stress 2. At 125ºC (257ºF) 3. After process solutions	1.14 (6.5) – 1.225 (7.0) 1.14 (6.5) 0.90 (5.1)	0.70 (4.0) – 0.80 (4.5) 0.70 (4.0) 0.55 (3.0)	N/mm (lb/inch)	2.4.8 2.4.8.2 2.4.8.3 – –
Flexural Strength	A. Lengthwise direction B. Crosswise direction	58,000 79,000	–	$lb/inch^2$	–
Tensile Strength	A. Lengthwise direction B. Crosswise direction	50,000 37,000	–	$lb/inch^2$	–
Young's Modulus	A. Grain direction B. Fill direction	3304 3083	–	ksi	ww
Poisson's Ratio	A. Grain direction B. Fill direction	0.192 0.150	–	–	xx
Moisture Absorption		0.15	–	%	2.6.2.1
Flammability (Laminate & prepreg as laminated)		V-0	–	Rating	UL 94
Max Operating Temperature		130	UL Cert	ºC	–

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.

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