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GigaSync™ Low Loss, Low Skew Laminate and Prepreg

GigaSync™ is a proprietary high-performance, 180°C glass transition temperature (Tg) FR-4 system for multilayer Printed Wiring Board (PWB) applications where maximum thermal performance and reliability are required. GigaSync laminate and prepreg products are manufactured with Isola's patent-pending, high-performance multifunctional resin system.

This system has been engineered to mitigate/eliminate skew issues in high-speed designs that have differential pairs. GigaSync offers a huge advantage over competitive products in this space, as it eliminates the need to make skew compensation. It also delivers the necessary thermal robustness for lead-free applications and electrical bandwidth (low loss) for applications that require more stringent signal integrity. It also has PCB designer-friendly advantages due to the fact that all cores and prepregs have the same Dk (4.13) and Df (0.006) for the entire product line.

www.isola-group.com/products/GigaSync

High Performance

GigaSync™

PRELIMINARY

Data Sheet

Tg 180, Td 360
Dk 4.13, Df 0.006
/21 /24 /121 /124 /129

Features

- High Thermal Performance
  - Tg: 180°C (DSC), (Base Laminate)
  - Td: 360°C (TGA @ 5% wt loss)
  - Low CTE for reliability
- T260: >60 minutes
- T288: >60 minutes
- Lead-free Compatible and RoHS Compliant
- 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 digital materials
- Core Material Standard Availability
  - Thickness: 0.002″ (0.05 mm) to 0.060″/0.062″ (1.5 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
  - VLP-2 (2 micron)
  - RTF (Reverse Treat Foil)
  - Standard HTE Grade 3
- Copper Weights
  - ½, 1 and 2 oz (18, 35 and 70 µm) available
  - Heavier copper available upon request
  - Thinner copper foil available upon request
- Glass Fabric Availability
  - Low Dk glass fabric available
  - Square weave glass fabric available
  - Spread glass fabric available
- Industry Approvals
  - IPC-4101C /21 /24 /121 /124 /129
  - 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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GigaSync™ 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		360	–	ºC	ASTM D3850
T260		>60	–	Minutes	ASTM D3850
T288		>60	–	Minutes	ASTM D3850
CTE, Z-axis	A. Pre-Tg B. Post-Tg	60 230	AABUS –	ppm/ºC	2.4.24
CTE, X-, Y-axes	A. Pre-Tg B. Post-Tg	16 18	AABUS –	ppm/ºC	2.4.24
Z-axis Expansion (50-260ºC)		2.7	–	%	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 56% resin	A. @ 100 MHz B. @ 1 GHz C. @ 2 GHz D. @ 5 GHz E. @ 10 GHz	4.15 4.14 4.13 4.13 4.13	– – – – –	–	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 56% resin	A. @ 100 MHz B. @ 1 GHz C. @ 2 GHz D. @ 5 GHz E. @ 10 GHz	0.0042 0.0052 0.0053 0.0060 0.0066	– – – – –	–	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	– $4.4x10^7$ $9.4x10^7$	$1.0x10^6$ – $1.0x10^3$	MΩ-cm	2.5.17.1
Surface Resistivity	A. 96/35/90 B. After moisture resistance C. At elevated temperature	– $2.6x10^6$ $2.1x10^8$	$1.0x10^4$ – $1.0x10^3$	MΩ	2.5.17.1
Dielectric Breakdown		>50	–	kV	2.5.6
Arc Resistance		137	60	Seconds	2.5.1
Electric Strength (Laminate & prepreg as laminated)		70 (1741)	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) – 0.96 (5.5) – 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	67.00 62.00	–	$lb/inch^2$	2.4.4
Tensile Strength	A. Lengthwise direction B. Crosswise direction	TBD TBD	–	$lb/inch^2$	–
Young's Modulus	A. Grain direction B. Fill direction	TBD TBD	–	ksi	ww
Poisson's Ratio	A. Grain direction B. Fill direction	TBD TBD	–	–	xx
Moisture Absorption		0.061	–	%	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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