High Thermal Reliability

Data Sheet

Tg 150°C
Td 330°C
Dk 4.20
Df 0.016

IPC-4101/97 /98 /99 /101

UL - File Number E41625

Last Updated December 8, 2017
Revision No: 7

IS400HR

High Performance Laminate and Prepreg

IS400HR is a proprietary, temperature resistant resin system with a Tg of 150°C.

It is intended for multilayer Printed Wiring Board (PWB) applications where demanding thermal performance and high reliability are requried. IS400HR laminate prepreg products are manufactured using Isola's patented technology, reinforced with electrical grade (E-glass) glass fabric. This system delivers a 300°C decomposition temperature and a low Z-axis expansion.

Product Attributes

High Thermal Reliability

Typical Market Applications

Computing, Storage & Peripherals

ORDERING INFORMATION:

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

Isola Group
3100 West Ray Road
Suite 301
Chandler, AZ 85226
Phone: 480-893-6527
Fax: 480-893-1409
info@isola-group.com

Isola Asia Pacific (Hong Kong) Ltd.
Unit 3512 - 3522, 35/F
No. 1 Hung To Road, Kwun Tong,
Kowloon, Hong Kong
Phone: 852-2418-1318
Fax: 852-2418-1533
info.hkg@isola-group.com

Isola GmbH
Isola Strasse 2
D-52348 Düren,
Germany
Phone: 49-2421-8080
Fax: 49-2421-808164
info-dur@isola-group.com

Product Features

- Industry Recognition
  - UL File Number: E41625
  - RoHS Compliant
- Performance Attributes
  - CAF resistant
- Processing Advantages

Product Availability

- Standard Material Offering: Laminate
  - Available in full size sheet or panel form
- Copper Foil Type
  - HTE Grade 3
  - RTF (Reverse Treat Foil)
- Copper Weight
  - ½ to 2 oz (18 to 70 µm) available
  - Heavier copper available
  - Thinner copper foil available
- Standard Material Offering: Prepreg
  - Roll or panel form
  - Tooling of prepreg panels
- Glass Fabric Availability
  - E-glass
  - Square weave glass

IS400HR Typical Values

Last Updated Dec 8, 2017

Property		Typical Value	Units	Test Method
			Metric (English)	IPC-TM-650 (or as noted)
Glass Transition Temperature (Tg) by DSC		150	°C	2.4.25C
Decomposition Temperature (Td) by TGA @ 5% weight loss		330	°C	2.4.24.6
Time to Delaminate by TMA (Copper removed)	A. T260 B. T288	>60 >10	Minutes	2.4.24.1
Z-Axis CTE	A. Pre-Tg B. Post-Tg C. 50 to 260°C, (Total Expansion)	40 230 3.0	ppm/°C ppm/°C %	2.4.24C
X/Y-Axis CTE	Pre-Tg	13	ppm/°C	2.4.24C
Thermal Conductivity		0.36	W/mK	ASTM E1952
Thermal Stress 10 sec @ 288ºC (550.4ºF)	A. Unetched B. Etched	Pass	Pass Visual	2.4.13.1
Dk, Permittivity	A. @ 100 MHz B. @ 500 MHz C. @ 1 GHz	4.3 4.2 4.2	—	2.5.5.9
Df, Loss Tangent	A. @ 100 MHz B. @ 500 MHz C. @ 1 GHz	0.014 0.015 0.016	—	2.5.5.9
Volume Resistivity	A. C-96/35/90 B. At elevated temperature	4.0×10^8 7.0×10^7	MΩ-cm	2.5.17.1
Surface Resistivity	A. C-96/35/90 B. At elevated temperature	3.0×10^6 5.4×10^6	MΩ	2.5.17.1
Dielectric Breakdown		>50	kV	2.5.6B
Arc Resistance		120	Seconds	2.5.1B
Electric Strength (Laminate & laminated prepreg)		48 (1100)	kV/mm (V/mil)	2.5.6.2A
Comparative Tracking Index (CTI)		3 (175-249)	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 2. At 125ºC (257ºF) 3. After process solutions	0.969 (5.5) 1.06 (5.9) 1.06 (5.9) 0.969 (5.5)	N/mm (lb/inch)	2.4.8C 2.4.8.2A 2.4.8.3 2.4.8.3
Flexural Strength	A. Length direction B. Cross direction	83,000 67,600	ksi	2.4.4B
Tensile Strength	A. Length direction B. Cross direction	50,021 34,983	ksi	ASTM D3039
Young's Modulus	A. Length direction B. Cross direction	4086 3476	ksi	ASTM D790-15e2
Poisson's Ratio	A. Length direction B. Cross direction	0.145 0.124	—	ASTM D3039
Moisture Absorption		0.18	%	2.6.2.1A
Flammability (Laminate & laminated prepreg)		V-0	Rating	UL 94
Max Operating Temperature		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.

www.isola-group.com/products/all-printed-circuit-materials/is400hr/

The Isola name and logo are registered trademarks of Isola Corp. USA in the USA and other countries. IS400HR is a registered trademark of Isola USA Corp. in the USA. All other trademarks mentioned herein are property of their respective owners.

© 2016, Isola Group, All rights reserved.