

IPC-4101 /98 /99 /101 /126 UL - File Number E41625

185HR laminate and prepreg materials are a proprietary, high-performance resin system with a Tg of 180°C for multilayer Printed Wiring Board (PWB) applications where maximum thermal performance and reliability are required.

PRODUCT FEATURES

Industry Recognition

- UL File Number: E41625
- Qualified to UL's MCIL Program
- RoHS Compliant

Performance Attributes

- CAF resistant
- Lead-free assembly compatible

Processing Advantages

- FR-4 process compatible
- UV blocking and AOI fluorescence

PRODUCT AVAILABILITY

Standard Material Offering: Laminate

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

185HR laminate and prepreg materials are manufactured using Isola's patented technology, reinforced with electrical grade (E-glass) glass fabric. This system delivers a 340°C decomposition temperature, a lower Z-axis expansion and offers lower loss compared to competitive products in this space. The 185HR system is also laser fluorescing and UV blocking for maximum compatibility with Automated Optical Inspection (AOI) systems, optical positioning systems and photoimageable solder mask imaging.

PRODUCT ATTRIBUTES



HIGH DENSITY INTERCONNECT



HIGH THERMAL RELIABILITY

TYPICAL MARKET APPLICATIONS



AUTOMOTIVE & TRANSPORTATION



NETWORKING & COMMUNICATIONS



AEROSPACE & DEFENSE



CONSUMER ELECTRONICS



MEDICAL, INDUSTRIAL & INSTRUMENTATION

ORDERING INFORMATION:

Contact your local sales representative or contact info@isola-group.com for further information.

Isola Group

6565 West Frye Road Chandler, AZ 85226
Phone: 480-893-6527
Fax: 480-893-1409

Isola Asia Pacific

(Hong Kong) Ltd. 12/F, Kin Sang Commercial Centre, 49 King Yip Street, Kwun Tong, Kowloon,
Hong Kong
Phone: 852-2418-1318
Fax: 852-2418-1533

Isola GmbH

Isola Strasse 2 D-52348 Düren, Germany
Phone: 49-2421-8080
Fax: 49-2421-808164

Typical Values Table

| Property | Typical Value | Units | | Test Method |
|--|---|--|-----------------------|---|
| | | Metric (English) | | IPC-TM-650 (or as noted) |
| Test data generated from rigid laminate | | 50 | % | 2.3.16.2 |
| Glass Transition Temperature (Tg) by DSC | | 180 | °C | 2.4.25C |
| Glass Transition Temperature (Tg) by DMA | | 185 | °C | 2.4.24.4 |
| Decomposition Temperature (Td) by TGA @ 5% weight loss | | 340 | °C | 2.4.24.6 |
| Time to Delaminate by TMA (Copper removed) | A. T260 B. T288 | 60 >15 | Minutes | 2.4.24.1 |
| Z-Axis CTE | A. Pre-Tg B. Post-Tg C. 50 to 260°C, (Total Expansion) | 40 220 2.7 | ppm/°C ppm/°C % | 2.4.24C |
| X/Y-Axis CTE | Pre-Tg | 13/14 | ppm/°C | 2.4.24C |
| Thermal Conductivity | | 0.4 | W/m-K | ASTM E1952 |
| Thermal Stress 10 sec @ 288°C (550.4°F) | A. Unetched B. Etched | Pass | Pass Visual | 2.4.13.1 |
| Dk, Permittivity | A. @ 100 MHz B. @ 1 GHz C. @ 2 GHz D. @ 5 GHz E. @ 10 GHz | 4.13 4.04 4.01 3.88 3.88 | — | 2.5.5.3 Bereskin Stripline Bereskin Stripline Bereskin Stripline Bereskin Stripline |
| Df, Loss Tangent | A. @ 100 MHz B. @ 1 GHz C. @ 2 GHz D. @ 5 GHz E. @ 10 GHz | 0.0158 0.0192 0.0200 0.0235 0.0236 | — | 2.5.5.3 Bereskin Stripline Bereskin Stripline Bereskin Stripline Bereskin Stripline |
| Volume Resistivity | A. C-96/35/90 B. After moisture resistance C. At elevated temperature | — 3.0×10^8 7.0×10^8 | MΩ-cm | 2.5.17.1 |
| Surface Resistivity | A. C-96/35/90 B. After moisture resistance C. At elevated temperature | — 3.0×10^6 2.0×10^8 | MΩ | 2.5.17.1 |
| Dielectric Breakdown | | >50 | kV | 2.5.6B |
| Arc Resistance | | 115 | Seconds | 2.5.1B |
| Electric Strength (Laminate & laminated prepreg) | | 54 (1350) | 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 125°C (257°F) 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 | 97.1 54.1 | ksi | 2.4.4B |
| Tensile Strength | A. Length direction B. Cross direction | 53.3 35.7 | ksi | ASTM D3039 |
| Young's Modulus | A. Length direction B. Cross direction | 3770 3337 | ksi | ASTM D790-15e2 |
| Poisson's Ratio | A. Length direction B. Cross direction | 0.172 0.155 | — | ASTM D3039 |
| Moisture Absorption | | 0.15 | % | 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 units for Flexural and Tensile Strength - 8/18

C: Change MOT to RTI 5/19

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