

VT-47

UL Approval: E214381 Version: B3 /97 /98 /99 /101 /126

Laminate/Prepreg

General Information

- > High Tg FR4
- > Phenolic Cure System & Lead Free Compatible
- > Excellent Thermal Reliability
- > CAF Resistance
- > UV Blocking
- > Low Z-CTE

Application

Computer, Communication Equipment, Instrumentation, Precise Apparatus & Instrument, Server, Router, Automotive, Medical, etc

Availability

- > Core Thickness: 0.002" (0.05mm) to 0.200" (5mm), available in sheet or panel form.
- > Copper Foil: 1/4oz to 12oz
- > Prepregs are available in roll or panel form
- > E-Glass styles: 7628, 1506, 1500, 2113, 2313, 3313, 2116, 1080, 1086, 1078, 106 & 1067, etc.

Note: For cores $\leq 0.005"$, it is recommended to use the reverse treated copper due to the low profile. The peel strength for RT foil is $\approx 1-2\text{lbs/in}$ (0.35Kg/m) less than Standard foil.

| Properties | | Prepreg | | Laminate |
|-------------------|-------------------|-------------------|------------------|----------------------|
| Storage Condition | Temperature | Below 23°C (73°F) | Below 5°C (41°F) | Room |
| | Relative humidity | Below 55% RH | / | / |
| Shelf Life | | 3 months | 6 months | 24 months (airproof) |

The prepreg exceeding shelf life should be retested.

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Properties Sheet IPC-4101D-WAM1 /97 /98 /99 /101 /126

| Properties | Test Method | Units | Specification | Typical Value | |
|----------------------------------|----------------------------|---------------------|------------------|------------------|-------------------|
| Thermal Properties | | | | | |
| Tg | DSC | IPC-TM-650 2.4.25 | °C | 170 minimum | 180 |
| | TMA | IPC-TM-650 2.4.24 | °C | – | 180 |
| Td | | ASTM D3850 | °C | – | 355 |
| T260 | | IPC-TM-650 2.4.24.1 | Minute | – | >60 |
| T288 | | IPC-TM-650 2.4.24.1 | Minute | – | >30 |
| Thermal Stress @ 288°C | | IPC-TM-650 2.4.13.1 | Second | Pass 10s | >600 |
| Z-axis CTE | Before Tg | IPC-TM-650 2.4.24 | ppm/°C | – | 45 |
| | After Tg | IPC-TM-650 2.4.24 | ppm/°C | – | 190 |
| | Total Expansion (50~260°C) | IPC-TM-650 2.4.24 | % | – | 2.3 |
| MOT | | UL 94 | °C | – | 130 |
| Electrical Properties | | | | | |
| DK @ 1GHz RC 50% | | IPC-TM-650 2.5.5.9 | – | 5.4 maximum | 4.27 |
| DF @ 1GHz RC 50% | | IPC-TM-650 2.5.5.9 | – | 0.035 minimum | 0.016 |
| Volume Resistivity | After Moisture Resistance | IPC-TM-650 2.5.17.1 | MΩ-cm | 1.0E+6 minimum | 5.0E+8 |
| | E-24/125 | IPC-TM-650 2.5.17.1 | MΩ-cm | 1.0E+3 minimum | 5.0E+6 |
| Surface Resistivity | After Moisture Resistance | IPC-TM-650 2.5.17.1 | MΩ | 1.0E+4 minimum | 5.0E+7 |
| | E-24/125 | IPC-TM-650 2.5.17.1 | MΩ | 1.0E+3 minimum | 5.0E+6 |
| Electrical Strength | | IPC-TM-650 2.5.6.2 | Volt/mil (KV/mm) | 762 (30) minimum | 1200~1400 (54) |
| Dielectric Breakdown | | IPC-TM-650 2.5.6 | KV | 40 minimum | 60 |
| Comparative Tracking Index (CTI) | | ASTM D3638 | Rating (Volt) | – | Grade 3 (175~250) |
| Arc Resistance | | IPC-TM-650 2.5.1 | Second | 60 minimum | 147 |
| Mechanical Properties | | | | | |
| Peel Strength (1oz) | As received | IPC-TM-650 2.4.8 | lb/in (N/mm) | – | 7.5~10 (1.3~1.75) |
| | After thermal stress | IPC-TM-650 2.4.8 | lb/in (N/mm) | 6 (1.05) minimum | 7.5~10 (1.3~1.75) |
| Flexural Strength | Warp | IPC-TM-650 2.4.4 | Kpsi (MPa) | 60 (415) minimum | 72 (500) |
| | Fill | IPC-TM-650 2.4.4 | Kpsi (MPa) | 50 (345) minimum | 61 (420) |
| Physical Properties | | | | | |
| Moisture Absorption | | IPC-TM-650 2.6.2.1 | % | 0.80 maximum | 0.12 |
| Thermal Conductivity | | ISO22007-2 | W/M-K | – | 0.5 |
| Flammability | | UL-94 | Rating | V0 minimum | V0 |

Note: All test data provided are typical values and are not intended to be specification values.

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