Technical Data Sheet

# BERGQUIST TCLAD TIC_TIP MP 06503

Known as BERGQUIST THERMAL CLAD MP-06503
March 2019

## PRODUCT DESCRIPTION

High Reliable IMS available in panel or circuit configurations.

| | |
|---|---|
| **Technology** | Epoxy |
| Appearance | White |
| Thickness | 0.003 inch (76 µm) |
| **Application** | Thermal management, Tclad |

## FEATURES AND BENEFITS

- Thermal resistance of 0.58°C-cm² /W
- Thermal Conductivity: 2.4 W/m-K
- Multi-Purpose applications
- Lead-free solder compatible
- Eutectic AuSn compatible
- RoHS compliant and environmentally green
- Available on all aluminum and copper metal substrates

Thermal Clad Metal Core PCB's (MCPCB's) minimize thermal impedance and conduct heat more effectively than standard printed wiring boards (PWB's). These substrates are more mechanically robust than thick-film ceramic and direct bond copper construction.

Thermal Clad is a cost-effective solution which can eliminate components, allow for simplified designs, smaller devices and an overall less complicated production process. Additional benefits of Thermal Clad include lower operating temperatures, resulting in longer component life and increased durability.

The technology of Thermal Clad resides in the dielectric. This datasheet highlights the performance characteristics of BERGQUIST TCLAD TIC_TIP MP 06503 (High Temperature) a dielectric resistant to degradation from high temperature exposure and features even higher dielectric breakdown characteristics than BERGQUIST TCLAD TIC_TIP HT 04503.

The technology of Thermal Clad resides in the dielectric. This datasheet highlights the performance characteristics of BERGQUIST TCLAD TIC_TIP MP 06503 (Multi-Purpose).

## TYPICAL APPLICATIONS

- High watt-density applications where achieving low thermal resistance is required
- Power conversion
- Heat-rails
- Solid state relays
- Motor drives
- High reliability LED applications

## TYPICAL PROPERTIES OF CURED MATERIAL

| | |
|---|---|
| **Physical Properties** | |
| Peel Strength@ 25°C, ASTM D2861, N/mm | 1.6 |
| Glass Transition, ASTM E1356, ºC | 90 |
| Coefficient of Thermal Expansion, ASTM D3386: | |
| XY/Z Axis Below Tg, µm/-mºC | 40 |
| XY/Z Axis Above Tg, µm/-mºC | 110 |
| Storage Modulus, ASTM D4065, GPa: | |
| @ 25ºC | 12 |
| @ 150ºC | 0.3 |
| **Electrical Properties** | |
| Dielectric Constant, ASTM D150 | 6 |
| Dissipation Factor, ASTM D150: | |
| 1 KHz | 0.003 |
| 1 MHz | 0.017 |
| Capacitance, ASTM D150, pF/cm² | 65 |
| Volume Resistivity, ASTM D257, ohm-meter | $1\times10^{15}$ |
| Surface Resistivity, ASTM D257, ohm/sq | $1\times10^{14}$ |
| Breakdown voltage, ASTM D149, kVAC | 8.5 |
| **Thermal Properties** | |
| Product Thermal Conductivity, MET 5.4-01-40000, W/(m-K) | 2.4 |
| Dielectric Thermal Conductivity, ASTM D5470, W/(m-K) | 1.3 |
| Thermal Resistance, ASTM D5470, ºC-cm² /W | 0.58 |
| Thermal Impedance MET 5.4-01-40000, ºC/W | 0.65 |
| **Chemical Properties** | |
| Water Vapor Retention, ASTM E595, wt % | 0.21 |
| Out-Gassing Total Mass Loss, ASTM E595, wt % | 0.29 |
| Collect Volatile Condensable Material, ASTM E595, wt % | 0.01 |
| **Agency Ratings** | |
| Maximum Operating Temperature, UL 746B, ºC | 130 |
| Flammability, UL 94 | V-0 |
| Comparative Tracking Index (CTI): | |
| ASTM D3638 | 0 |
| IEC60112 | 500 |
| Solder Limit Rating, UL 796, 60 seconds, ºC | 300 |

## GENERAL INFORMATION

**For safe handling information on this product, consult the Safety Data Sheet, (SDS).**

### Not for product specifications

The technical data contained herein are intended as reference only. Please contact your local quality department for assistance and recommendations on specifications for this product.

## CONFIGURATIONS AVAILABLE

BERGQUIST TCLAD TIC_TIP MP 06503 is available in the following configurations:

- Panels
- Circuits

(See Thermal Clad Selection Guide for configurations)

## STORAGE

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

Optimal Storage: 5 to 25ºC for a 12 months shelf life. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

### Conversions

(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
N x 0.225 = lb/F
N/mm x 5.71 = lb/in
psi x 145 = N/mm²
MPa = N/mm²
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = cP



Reference 1