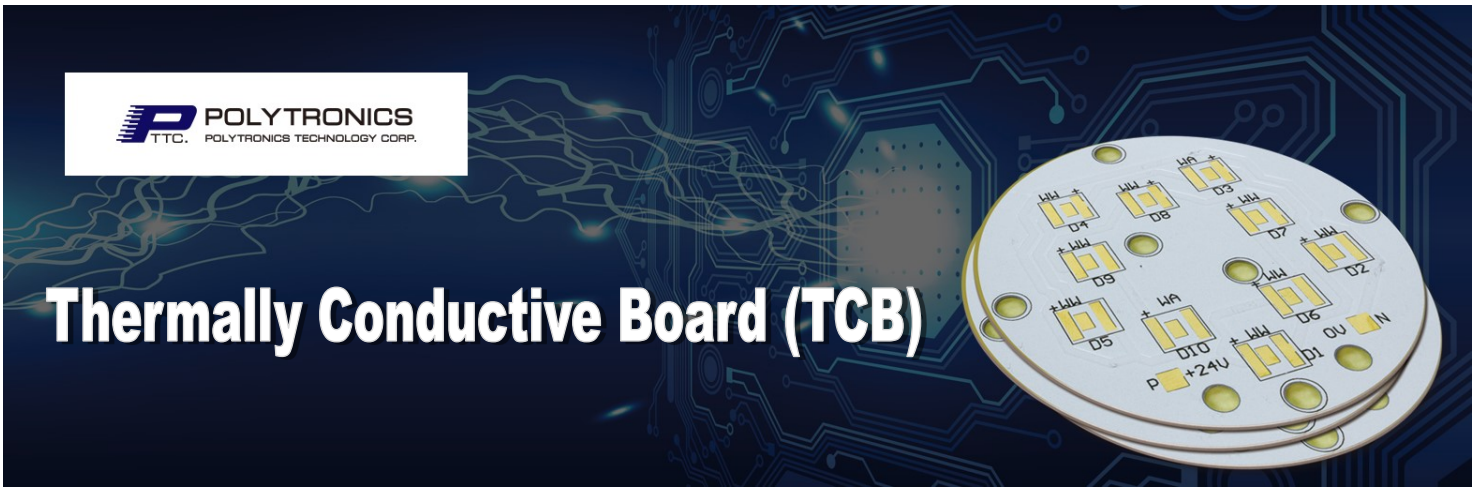

TCB-4

Thermally Conductive Board (TCB), an Insulated Metal Substrate, provides the advantages of high thermal conductivity, reliability, and solder heat endurance. The TCB substrate is a sandwich structure, which includes a layer of copper for conductors, an insulation layer and metal base for heat dissipation. Traditional circuit substrates made of epoxy, epoxy filled glass fiber, polyimide or other dielectric materials can compromise the durability of modern high-power electronic devices. The heat from these devices needs to be dissipated to improve life cycle and reliability of the end product.

Polytronics' TCB boards are processed into printed circuit boards that offer a superior heat transfer interface. TCB is made with a unique polymer composite that combines epoxy resin and high thermal conductivity filler, and the thermal conductivity is up to 20 times higher than traditional epoxy filled glass fiber system.

Applications:

- High brightness LEDs
- Power Modules
- Solar

Features:

- Excellent thermal conductivity
- Excellent Reliability
- Excellent solder heat endurance
- RoHS compliance
- Halogen free and Lead free processing
- UL Certification File No: E312082
- UL 94V-0 Certified
- UL 746E recognized

For more information, please contact:

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Polytronics Technology Corp.
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Polytronics' TCB Products	TCB-4	TEST METHOD
THERMAL PROPERTIES		
Product Thermal Conductivity w/M-K	4.2	TO-220
Thermal Resistance °C/W	<0.11	ASTM D5470
Max Operating Temperature °C	110	UL 746E
Max Soldering Temperature °C	300	UL 746E
Glass Transition Temperature °C	140	IPC-TM-650 2.4.25
ELECTRICAL PROPERTIES		
Permittivity/Dielectric Constant	4.9	IPC-TM-650-2.5.5.1
Dissipation Factor 1MHz	0.022	IPC-TM-650-2.5.5.1
Surface Resistance Ω	$>10^{15}$	IPC-TM-650 2.5.17.1
Volume Resistance Ω·cm	$>10^{13}$	IPC-TM-650 2.5.17.1
Breakdown Voltage kVAC	2.5	JIS C 2110
MECHANICAL PROPERTIES		
Color	Grey	Visual
Dielectric Thickness µm	100	Eddy Current
Thermal Expansion CTE in XY/Z Axis >Tg [PPM/°C]	25	IPC-TM-650 2.4.24.5
Thermal Expansion CTE in XY/Z Axis <Tg [PPM/°C]	16	IPC-TM-650 2.4.24.5
AGENCY RATINGS AND DURABILITY		
U.L. Maximum Operating Temp.	110	UL 746E
Solder Limit Rating	300°C/ 60sec	UL 746E