

POLYTHERM TC-Lam 1.3



Product description

The POLYTHERM product is an isolated metal substrate (IMS) from MSC Polymer AG. An Aluminium base plate and electrodeposited copper foil is bonded together with a special dielectric. This guarantees as well enhanced thermal conductivity as electrical isolation. It is the ideal product for all applications which require higher thermal conductivity like LED substrates or power converters. The dielectric is specially formulated and guarantees excellent thermal conductivity, high dielectric breakdown and high thermal stability. Processing and assembly can be done with well known processes. The Aluminium base plate is covered with a protective film. The film usually protects the Aluminium side in wet processes. Protective film HT (high temperature) is even usable during solder mask cure and HAL process. POLYTHERM products fulfill the ROHS Directive 2002/95/EC and are UL qualified.

STANDARD BUILD UP

Thickness Aluminium in μm	500 - 1000 - 1500 - 2000 - 3000	Aluminium alloy	5052 - 1100
Copper foil (ED) thickness in μm	18 - 35 - 70 - 100 - 137 - 206	Protective Film N (normal)	$\leq 160\text{ }^\circ\text{C}$
Thickness dielectric in μm	50, 75, 100, 125, 150	Protective Film HT (high temperature)	$\leq 280\text{ }^\circ\text{C}$

Material properties (1500 μm Al / 100 μm Dielectric / 35 μm Cu)	Test method / Treating condition	Unit	Specification	Typical values
Thermal stress 288 $^\circ\text{C}$, dipping, no delamination	TM 650-2.4.13.1	sec	≥ 10	90
Copper peel strength	TM 650-2.4.8 / A 288 $^\circ\text{C}$, 10 s	N/mm	≥ 1.05	1.85
		N/mm	≥ 1.05	1.87
Dielectric breakdown	TM 650-2.5.6.2 / A	kV	≥ 2.5	≥ 3
Electrical strength	TM-650 / A	kV/mm	30	≥ 30
Thermal conductivity dielectric	A	W/m $^\circ\text{K}$	1.3	1.3
Thermal resistance dielectric	SJ20780 / A	K/W	≤ 1.50	1.20
Surface resistivity	TM-650-2.5.17.1 / E24/125 C96/35/90	M Ω	10^3	10^7
		M Ω	10^4	10^7
Volume resistivity	TM-650-2.5.17.1 / E24/125 C96/35/90	M Ω -cm	$6 \cdot 10^4$	10^5
		M Ω -cm	$6 \cdot 10^4$	10^7
Flammability	UL-94	class	V-0	V-0
Comparative tracking index CTI	UL746A	V	PLC 0	PLC 0
Water absorption	TM 650-2.6.2.1 / D-24/23	%	≤ 0.5	0.1
Glass transition temperature Tg	A	$^\circ\text{C}$	---	100

Availability and Tolerances

Standard size in mm	480 x 580, 480 x 600 (further sizes available on request)
Dimensions tolerance in mm	± 5
Dielectric thickness tolerance	IPC-4101B grade B/L
Max. bow and twist in %	0.5

The data is based on typical values of standard production and should be considered as general information. It is the responsibility of the user to ensure that the product complies with his requirements.

