



FLEXTHERM

COOLING ELECTRONICS

www.aismalibar.com

FLEXTHERM

Conformable substrate
Excellent for high temperature applications
Extremely low thermal impedance
V-0 / Halogen free / High MOT values
Produced with RA copper to grant conformable properties
Withstands Lead Free Soldering process



UL Approved QMTS2
File: E47820 IPC-4101



RoHS 3 / REACH
Last updated compliance directive

It is an ideal option to produce conformable MPCB's which can be bent without compromising the initial dielectric strength between conductive layers (Al & Cu).

FLEXTHERM is a high technology thermal insulated metal substrate for using in the production of conformable metal printed circuit boards.

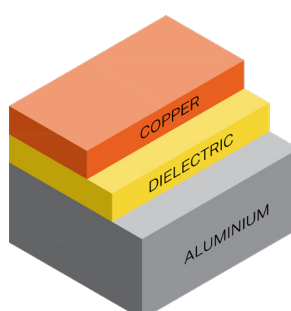
Its low thermal impedance allows the dissipation of temperature from the heating elements of a PCB into FLEXTHERM's metal core at an extremely efficient rate.

The dielectric layer is a polyamide resin combined with a high thermal conductivity filler with an overall thickness of over 25 or 35 microns capable of standing with 2,000 V or 4,000 V dielectric strength respectively.



Main features

Insulated Metal Substrate (IMS), based aluminum clad with RA copper foil on one or both sides. It is designed for a reliable thermal dissipation of circuitry.



RA copper thickness μm (in)
35 (1oz) / 70 (2oz)

Insulation thickness μm (in)
25 (0,98 mils) / 35 (1,37 mils)

Dielectric thickness tolerance
+ 10 μm (+/- 0,3 mils)

Aluminium thickness μm (in)
600 (0,024) / 800 (0,032) /
1000 (0,039) / 1500 (0,059)

Alloy/Treat
5754

Why to use FLEXTHERM?

FLEXTHERM allows to assemble electronic components to a flexible PCB substrate rather than the generic rigid PCB. Flexible circuits are used where the space limits the use of rigid circuit boards or when electronic designs require movable parts. It can be delivered on single side or double side metal printed circuit board construction.

Product configuration & applications

FLEXTHERM	STANDARD CONSTRUCTION (μ) Al/Dielectric/Cu	DIELECTRICAL BREAKDOWN Voltage AC	ORIENTATIVE APPLICATIONS
FLEXTHERM -25	1.500 / 25 / 35 or 70	2.000 V	Hi-Power LEDs > 4W Medium Power applications. Max. cost-effectiveness
FLEXTHERM -35	1.500 / 35 / 35 or 70	4.000 V	High Power applications, DC Power converters

PROPERTIES	TEST METHOD	UNITS	TYPICAL VALUES	GUARANTEED VALUES
Time to blister at 288°C, floating solder bath	IEC-61189	sec	>60	>30
Copper Peel strength, after heat shock 20 sec/288°C	IPC-TM 650-2.4.8	N/mm (Lb/inch)	1,5 (16,0)	≥ 1,0 (≥10,3)
Dielectric breakdown voltage, AC (1) Flextherm 25μm	IPC-TM 650-2.5.6.3	kV	2	2
Dielectric breakdown voltage, AC (1) Flextherm 35μm	IPC-TM 650-2.5.6.3	kV	4	4
Thermal conductivity (dielectric layer)	ASTM-D 5470	W/mK (W/in-K)	0,7 (0,018)**	0,6 (0,015)**
Flammability, according UL-94, class	UL-94	Class	V-0	V-0
Thermal Impedance °C-m2/watt Flextherm 25 μm	Calculated	Kcm²/W (K in²/W)	0,36 (0,055)	0,42 (0,065)
Thermal Impedance °C-m2/watt Flextherm 35 μm	Calculated	Kcm²/W (K in²/W)	0,50 (0,078)	0,58 (0,090)
Maximum Operational Temperature		°C	140	130
Aluminium Thermal Conductivity	ASTM-D 5470	W/mK	135	130
Copper Thermal Conductivity	ASTM-D 5470	W/mK	375	380

Thermal conductivity & Thermal impedance

THERMAL CONDUCTIVITY AND THERMAL IMPEDANCE							
Composition		Dielectric Layer	IMS (Aluminium + dielectric + copper)				
Al	Cu	Thickness	Conductivity		Thermal impedance		
(mm)	(mic)	(mic)	W/m-K	W/inch-K	Kcm2/W	Kinch2/W	°C/W
1.0	35	25	24.5	0.623	0.432	0.067	0.144
1.0	70		25.3	0.642	0.433	0.067	0.144
1.5	35		33.3	0.845	0.469	0.073	0.156
1.5	70		33.9	0.862	0.470	0.073	0.157
1.0	35	35	18.6	0.473	0.575	0.089	0.192
1.0	70		192	0.487	0.576	0.089	0.192
1.5	35		25.7	0.652	0.612	0.095	0.204
1.5	70		26.2	0.665	0.613	0.095	0.204

Bending Test 1KV DC for 3 seconds

FLEXTHERM's flexible properties enable it to conform to both the negative and positive radius allowing the product to adapt to the ever-changing demands of the industry. Typical applications are high power LED, power supply modules and the automotive industry.

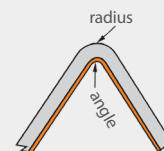
NEGATIVE BENDING

Al 0,8mm / Cu 35mic

ANGLE	RADIUS	TEST
45°	4.9mm 2.9mm 1.8mm	OK OK OK
60°	<1mm	OK
180°	1.5mm	OK

Al 1,5mm / Cu 70mic

ANGLE	RADIUS	TEST
45°	4.9 mm 2.9 mm	OK OK



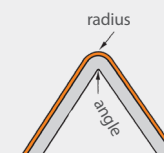
POSITIVE BENDING

Al 0,8mm / Cu 35mic

ANGLE	RADIUS	TEST
45°	4.9mm 2.9mm 1.8mm	OK OK OK

Al 1,5mm / Cu 70mic

ANGLE	RADIUS	TEST
45°	4.9 mm 2.9 mm	OK OK



Application Fields



Automotive Lighting

FRONT LIGHTS

REAR & INTERIOR LIGHTS



Lighting-LED

POWER LED PACKAGES

STREET LIGHTING

STADIUMS & ARENAS

ARCHITECTURAL

DECORATIVE

INDUSTRIAL
& HORTICULTURE



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