

## Features

- Excellent thermal conductivity
- Excellent insulating ability
- Excellent Dimensional Stability
- Excellent Mechanical Strength
- Lower heat expansibility
- Lower operating temperature
- Increase power density
- Reduce the number of interconnects
- Extend the life of dies

# LuxeonZ-4UP-MCPCB



LuxeonZ-4UP-MCPCB  
ALUMINUM CLAD PRINTED  
CIRCUIT BOARD FOR LUXEON Z  
ALLOWS OPTIMUM HEAT  
DISSIPATION



*This is a custom MCPCB structure that further enhances heat dissipation thus enabling the LED to last according to its life time.*

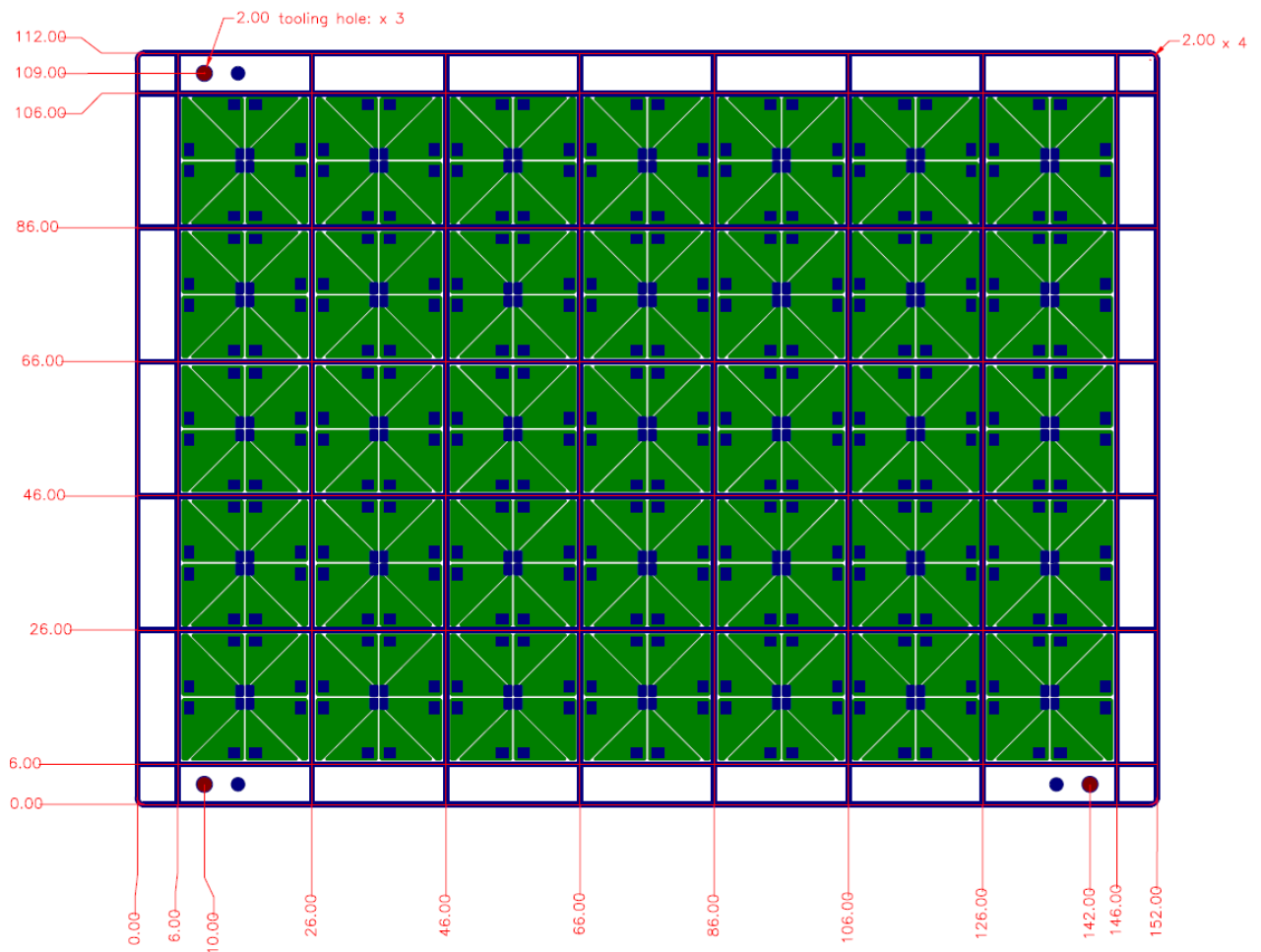
*Higher thermal conductive MCPCB is also available with our special enhanced capabilities.*

## CONSTRUCTION OF MCPCB

The structure of the aluminum material includes copper layer, dielectric layer laminated together with aluminum base layer. Below appends summary of available range of material:

Aluminum Type	Aluminum Thickness	Copper Thickness	Dielectric Thickness
AL 5052	1.5 mm	1 oz	100um

## PANEL DRAWING



# MATERIAL DATASHEET

Material data sheet - OP-AL (OPT111g.01.AI5215.4.0018)					
Items	Method description	Treatment Condition	Specification	Typical Value	Unit
<b>Thermal Properties</b>					
Thermal Resistance (Dielectric layer)	Calculation from ASTM D5470	A <sup>[2]</sup>	≤ 0.62	0.56	°C-cm <sup>2</sup> /W
Thermal Conductivity (Dielectric layer)	Extended ASTM D5470	A <sup>[2]</sup>	≥ 1.62	1.8	W/m-k
Maximum Operating Temperature (MOT)	UL 746 E	—	-	125	°C
Glass Transition Temp (T <sub>g</sub> , DSC)	IPC-TM-650 2.4.25	A <sup>[2]</sup>	-	100	°C
Coefficient of Thermal Expansion (CTE)	IPC-TM-650 2.4.24	A <sup>[2]</sup>	-	37	x10 <sup>-6</sup> /°C
		30°C~260°C			
<b>Electrical Properties</b>					
Dielectric constant	IPC-TM-650 2.5.5.9	1MHz	-	5.2	—
Dissipation Factor	IPC-TM-650 2.5.5.9	1MHz	-	0.029	—
Volume Resistivity	IPC-TM-650 2.5.17.1	C-96/35/90 <sup>[1]</sup>	≥ 1×10 <sup>6</sup>	1×10 <sup>7</sup>	MΩ·cm
Surface Resistivity	IPC-TM-650 2.5.17.1	C-96/35/90 <sup>[1]</sup>	≥ 1×10 <sup>4</sup>	1×10 <sup>5</sup>	MΩ
Dielectric Breakdown Voltage	IPC-TM-650 2.5.6.2	-	-	≥ 30	kvAC/ mm
PCB high pot withstand	IPC-9252	A <sup>[2]</sup>	-	≥ 30 <sup>[4]</sup>	kvDC/ mm
<b>Mechanical Properties</b>					
Dielectric Thickness	Optical	A <sup>[2]</sup>	-	100	μm
Peel Strength	IPC-TM-650 2.4.8	A <sup>[2]</sup>	≥ 1.05	1.70	N/mm
		288°C.10S			
<b>Chemical Properties</b>					
Water absorption	IPC-TM-650 2.6.2.1	D-24/23 <sup>[3]</sup>	≤ 0.8	0.06	%
<b>Ratings and Durability</b>					
UL Flammability	UL94	-	-	94 V-0	—
Comparative Tracking Index (CTI)	IEC60112	-	-	≥ 600	V
Thermal stress	IPC-TM-650 2.4.13.1	288 °C	≥ 30S (No delamination, no blister)	≥ 30S (No delamination, no blister)	-

\* Non-mentioned PCB information based on: Aluminium thk 1.5mm, Al type 5052; Copper foil 1oz

\* 1 - Humidity conditioning (90%) at 35 deg C, duration 96H; 2 - As received

3 - Immersion conditioning in distilled water, at 23 deg C, duration 24H;

4 - The data is for material assurance only. Actual application test voltage is a function of not only material, but also circuit design.

Circuit design is the most important consideration for determining safety agency compliance.

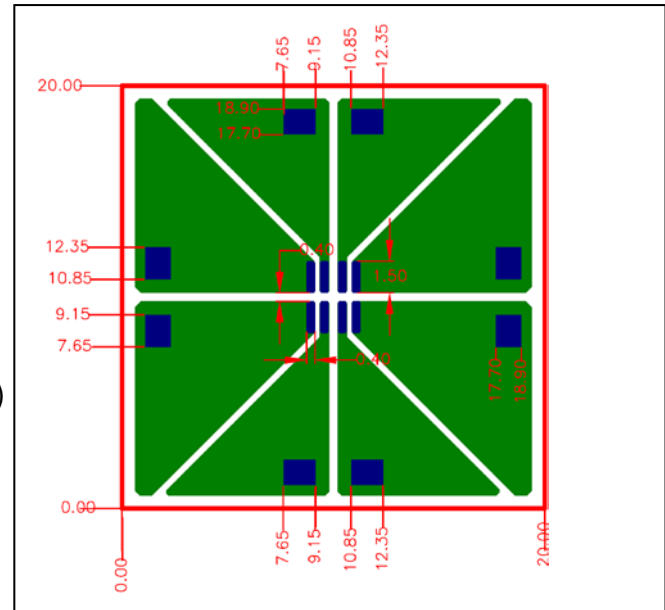
\* For applications with an expected voltage over 400VAC (or 500VDC), Opulent recommends a dielectric thickness not less than 0.004" (100μm).

\* Our company reserves the right to future changes. It is the responsibility of the user to ensure that the product complies with his requirements.

## PRODUCT SPECIFICATIONS

### LuxeonZ-4UP-MCPCB

Aluminum Type:	AL5052
Aluminum Thickness:	1.5mm
Copper Thickness:	1oz
Dielectric Thickness:	100um
Unit Size:	20mm x 20mm (±0.15mm)
Panel Size:	112mm x 152mm (35pcs/pnl)
Finishing:	OSP
Solder Mask:	Glossy Black



### SOLDER PASTE

Type:	Lead-free SAC 305 paste, grade 3 or above
Lumileds Internal:	Alpha Metal OM325 grade 4
Alternative:	Alpha Metal OM338 grade 3

### PACKAGING

One carton consists of 10 internal white boxes. Each white box consists of 4 trays. Each tray consists of 65 pieces.

Type of tray:	Individual slot for each LuxeonZ-4UP-MCPCB
Cavity per tray:	65 pcs
Dimension of tray:	44.3cm x 17.25cm x 1.85cm
Internal White Box:	contains 4 trays with 1 cover tray (equivalent to 260pcs of LuxeonZ-4UP-MCPCB)
Dimension of I.W.B:	44.5cm x 18cm x 5.5cm
Carton box:	contains 10 white boxes (equivalent to 2660pcs of LuxeonZ-4UP-MCPCB)
Dimension of carton:	47cm x 37.5cm x 31cm

## ABOUT OPULENT

**Opulent (Asia)**

Email: [sales@opulent-group.com](mailto:sales@opulent-group.com)

Singapore ☎: +65 67498188 (Head Office)

**H**eadquartered in Singapore, Opulent has more than 20 years experience in the manufacturing of conventional printed circuit boards (PCBs). Embarking for an international presence, Opulent has set up sales and marketing support in China, Hong Kong, Germany, Italy, United Kingdom and Malaysia.

Through innovation and R&D, Opulent created metal-clad PCBs (MCPCB) and is currently a leading designer and manufacturer of thermal solutions. Our products and works are guided by a customer centric approach that empowers us to provide value added solutions from design to assembly.

Our customers are well-known international brands whom have come to trust Opulent for our innovation, our knowledge and our commitment to attain customer satisfaction.

