

## REBEL STAR MODULE

Rebel Star Module construction consists of Aluminum Clad Printed Circuit Board which acts as a primary heat sink on which the Rebel LED is mounted .

## FEATURES

Our metal clad PCB (MCPCB), thermal conductivity ranges from 1.8w/mk to 2w/mk. With a higher thermal conductivity value, the heat dissipating properties becomes better thus enabling the LED to last according to it's life time.

The thermal conductive value selected for Rebel Star is 2Wm/k based on dielectric and on total construction, a value of 24W/mk

- 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.

## 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 H34	1.5 mm	1 oz	0.100mm

## TECHNICAL DATASHEET

	Treatment Condition	Values	Unit
		OPA-0.1	
<b>Maximum Operating Voltages</b>			
Continuous AC		500	V
Continuous DC		600	V
Peak Voltage value		700	V
<b>Thermal Properties</b>			
Thermal Conductivity		1.9	W/m-k
Construction Thermal Conductivity		24	W/m-k
Thermal Resistance		1.60	°C/W
Glass Transition Temperature	DSC	130	°C
Maximum Operating Temperature		130	°C
Maximum Soldering Limit	10 sec @ 288 °C	3	Cycle
<b>Electrical Properties</b>			
Dielectric constant	1k Hz / 1M Hz	4.5	—
Dissipation Factor	1k Hz / 1M Hz	.0018	—
Capacitance	1k Hz	210	Pf
Volume Resistivity	C-96/35/90	2.3×10 <sup>8</sup>	MΩ-cm
Surface Resistivity	C-96/35/90	1.2×10 <sup>7</sup>	MΩ
Dielectric Breakdown Voltage	A	30	KV/mm
Hi-pot Withstand	A	3000	VDC
<b>Mechanical Properties</b>			
Dielectric Thickness	A	100	μm
Peel Strength	A	1.05	N/mm
<b>Chemical Properties</b>			
Water absorption	D-24/23	0.15	%
Out-gassing (Total mass loss)		0.5	%
<b>Ratings and Durability</b>			
UL Continuous Operating Temperature	-	130	°C
UL Flammability		UL94 V-0	—
Comparative Tracking Index	IEC60112Method	175	V
Solder Float	10 sec @ 288 °C	Pass	—
Time to delamination	5min @ 260 °C	Pass	—

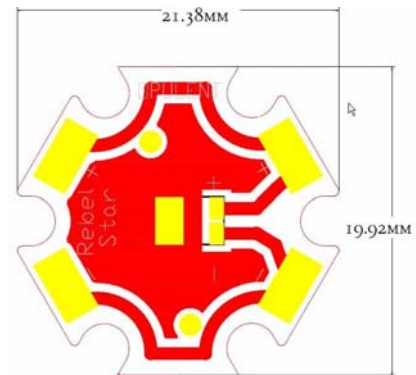
*P.s : other IMS material available up to thermal conductivity of 12W/m-k for dielectric.  
Also material for withstanding temperature of 350 deg C for 180sec.*

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## PRODUCTS SPECIFICATIONS

### REBEL STAR MCPCB

Aluminum Type:	AL5052
Aluminum Thickness:	1.5mm
Copper Thickness:	1oz
Dielectric Thickness:	0.1mm
Unit Size:	21.38mm x 19.92mm
Finishing:	Entek
Soldermask:	Black Matt



### SOLDER PASTE

Type :	Leadfree SAC 305 paste, grade 3 or above
Lumileds Internal :	Alpha metal OM325 grade 4
Alternative :	Alpha Metals OM338 grade 3 (world wide availability)

### PACKAGING

One carton consists of 10 internal white boxes. Each white box consists of 3 trays. Each tray consists of 48pcs.

Type of tray :	Individual slot for each Rebel Star
Cavity per tray :	48pcs
Dimension of tray :	44.3cm x 17.25cm x 2.3cm
Internal white box :	contains 3 trays with 1 cover tray (equivalent to 144pcs of Rebel Star)
Dimension of internal white box :	44.8cm x 17.7cm x 5.5cm
Carton box :	contains 10 white boxes (equivalent to 1440pcs of Rebel Star)
Dimension of carton :	45.5cm x 36.4cm x 28.5cm

## ABOUT OPULENT

### Opulent (Asia)

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

*Through innovation and R&D, Opulent created metal-clad PCBs (MCPCBs) 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.*

