Light is OSRAM

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Our Brand
LED ENGIN

LZP Emitter on Connectorized MCPCB

Part numbers	Type of MCPCB	Dimension (mm)	MCPCB Thermal Resistance (°C/W)	Delivery Unit (pcs)
LZP-W0MD00-0000	4-channel Connectorized	49.0	0.1	96
LZP-W0MN00-0000				96

For emitter specification, please refer to the emitter datasheet LZx-0xxxxx-xxxx

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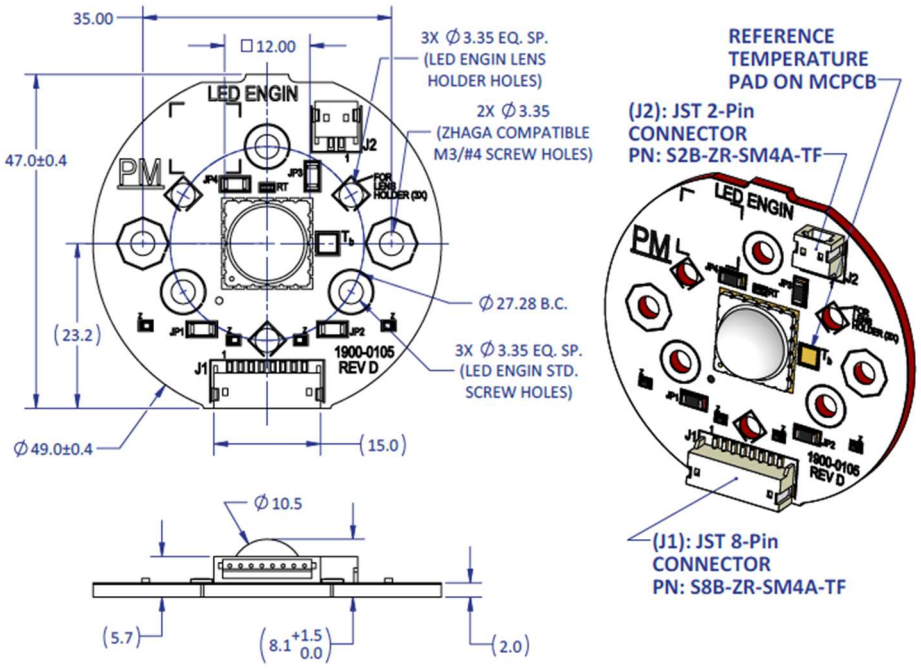
Mechanical Dimensions (mm)



Notes:

1. Unless otherwise noted, the tolerance = ± 0.2 mm.
2. Mating connector: ZHR-8 (JST) for the 8-pin connector and ZHR-2 (JST) for the 2-pin connector. It is recommended to strain relief the mating connector.
3. LED Engin standard screw refers to M3 or #4-40 screw.
4. LED Engin recommends plastic washers to electrically insulate screws from solder pads and electrical traces.
5. LED Engin recommends using thermal interface material when attaching the MCPCB to a heat sink.
6. The thermal resistance of the MCPCB is: $R\Theta_{C\text{-}B}$ 0.1°C/W

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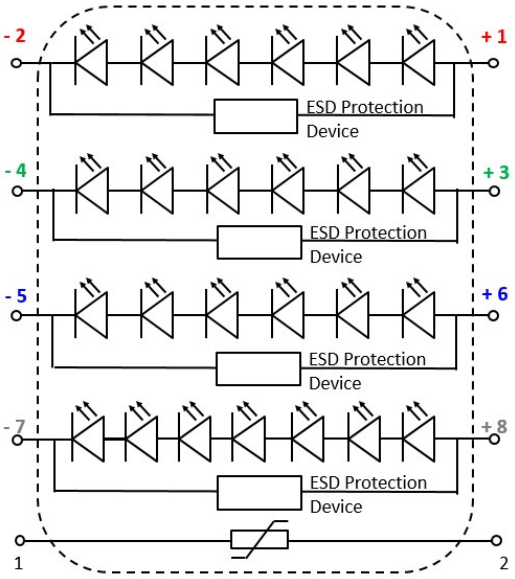
MCPCB Pin-Out (at J1 connector)			
Ch.	**Connector Pin**	**String/die**	**Function**
1 (Red)	1	1/ BIKRTU	Anode +
	2		Cathode -
2 (Green)	3	2/ EFHOQX	Anode +
	4		Cathode -
3 (Blue)	6	3/ ACJLSV	Anode +
	5		Cathode -
4 (White)	8	4/ DGMNPWY	Anode +
	7		Cathode -

MCPCB Pin-Out (at J2 connector)			
Ch.	**Connector Pin**	**String**	**Function**
NTC	1	10kohm NTC	NTCA
	2		NTCB



Components used

MCPCB:	MHE-301 copper	(Rayben)
Connectors[1]:	S8B-ZR-SM4A-TF	(JST)
	S2B-ZR-SM4A-TF	(JST)
Jumper:	RC1206JR-070RL	(Yageo)
ESD/TVS diode:	SPHV36-01ETG	(Littelfuse)
Thermistor:	NCP15XH103F03RC	(Murata)

Note:

1. Max connector temp is 105°C.

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Application Guidelines

MCPCB Assembly Recommendations

A good thermal design requires an efficient heat transfer from the MCPCB to the heat sink. In order to minimize air gaps in between the MCPCB and the heat sink, it is common practice to use thermal interface materials such as thermal pastes, thermal pads, phase change materials and thermal epoxies. Each material has its pros and cons depending on the design. Thermal interface materials are most efficient when the mating surfaces of the MCPCB and the heat sink are flat and smooth. Rough and uneven surfaces may cause gaps with higher thermal resistances, increasing the overall thermal resistance of this interface. It is critical that the thermal resistance of the interface is low, allowing for an efficient heat transfer to the heat sink and keeping MCPCB temperatures low.
When optimizing the thermal performance, attention must also be paid to the amount of stress that is applied on the MCPCB. Too much stress can cause the ceramic emitter to crack. To relax some of the stress, it is advisable to use plastic washers between the screw head and the MCPCB and to follow the torque range listed below. For applications where the heat sink temperature can be above 50°C, it is recommended to use high temperature and rigid plastic washers, such as polycarbonate or glass-filled nylon.

LED Engin recommends the use of the following thermal interface materials:

1. Bergquist's Gap Pad 5000S35, 0.020in thick
   - Part Number: Gap Pad® 5000S35 0.020in/0.508mm
   - Thickness: 0.020in/0.508mm
   - Thermal conductivity: 5 W/m-K
   - Continuous use max temperature: 200°C
   - Using M3 Screw (or #4 screw), with polycarbonate or glass-filled nylon washer (#4) the recommended torque range is: 20 to 25 oz-in (1.25 to 1.56 lbf-in or 0.14 to 0.18 N-m)

2. 3M's Acrylic Interface Pad 5590H
   - Part number: 5590H @ 0.5mm
   - Thickness: 0.020in/0.508mm
   - Thermal conductivity: 3 W/m-K
   - Continuous use max temperature: 100°C
   - Using M3 Screw (or #4 screw), with polycarbonate or glass-filled nylon washer (#4) the recommended torque range is: 20 to 25 oz-in (1.25 to 1.56 lbf-in or 0.14 to 0.18 N-m)

Mechanical Mounting Considerations

The mounting of MCPCB assembly is a critical process step. Excessive mechanical stress build up in the MCPCB can cause the MCPCB to warp which can lead to emitter substrate cracking and subsequent cracking of the LED dies

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LED Engin recommends the following steps to avoid mechanical stress build up in the MCPCB:

- Inspect MCPCB and heat sink for flatness and smoothness.
- Select appropriate torque for mounting screws. Screw torque depends on the MCPCB mounting method (thermal interface materials, screws, and washer).
- Always use three M3 or #4-40 screws with #4 washers.
- When fastening the three screws, it is recommended to tighten the screws in multiple small steps. This method avoids building stress by tilting the MCPCB when one screw is tightened in a single step.
- Always use plastic washers in combinations with the three screws. This avoids high point contact stress on the screw head to MCPCB interface, in case the screw is not seated perpendicular.
- In designs with non-tapped holes using self-tapping screws, it is common practice to follow a method of three turns tapping a hole clockwise, followed by half a turn anti-clockwise, until the appropriate torque is reached.

Wire Soldering

- To ease soldering wire to MCPCB process, it is advised to preheat the MCPCB on a hot plate of 125-150°C. Subsequently, apply the solder and additional heat from the solder iron will initiate a good solder reflow. It is recommended to use a solder iron of more than 60W.
- It is advised to use lead-free, no-clean solder. For example: SN-96.5 AG-3.0 CU 0.5 #58/275 from Kester (pn: 24-7068-7601)

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About LED Engin

LED Engin, an OSRAM brand based in California's Silicon Valley, develops, manufactures, and sells advanced LED emitters, optics and light engines to create uncompromised lighting experiences for a wide range of entertainment, architectural, general lighting and specialty applications. LuxiGen™ multi-die emitter and secondary lens combinations reliably deliver industry-**leading** flux density, upwards of 5000 quality lumens to a target, in a wide spectrum of colors including whites, tunable whites, multi-color and UV LEDs in a unique patented compact ceramic package. Our LuxiTune™ series of tunable white lighting modules leverage our LuxiGen emitters and lenses to deliver quality, control, freedom and high density tunable white light solutions for a broad range of new recessed and downlighting applications. The small size, yet remarkably powerful beam output and superior in-source color mixing, allows for a previously unobtainable freedom of design wherever high-flux density, directional light is required. LED Engin is committed to providing products that conserve natural resources and reduce greenhouse emissions; and reserves the right to make changes to improve performance without notice.

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