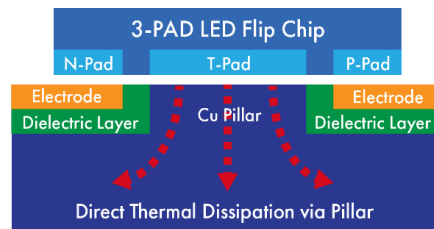


Precautions for Operating Violumas 3-PAD LEDs

Introduction

Violumas 3-PAD LEDs utilize a unique patented structure in both the flip chip and MCPCB architecture. To enhance the thermal dissipation capabilities of the LED, the chip is manufactured with an additional pad (the T-Pad or Thermal Pad) which connects to a copper path on the MCPCB (the Copper Pillar).



While this direct thermal path allows for Violumas LEDs to have very low thermal resistance values, careful precautions must be taken to avoid LED failures. Due to the unique structure of the 3-PAD LED, please ensure the following guidelines are strictly followed during the assembly and operation of Violumas 3-PAD LEDs.

Precaution 1: Any contact between the electrical wires and the copper substrate must be avoided.

Electrical contact between the electrode wires and the exposed copper of the MCPCB, can cause arcing, significantly damaging the dielectric layer due to charges propagating through the copper substrate of the LED, thus causing an open circuit failure. Please ensure that all electrical wires have insulation protection (jacket) to avoid any contact between the exposed wire and the copper substrate. For additional protection, dielectric tape may be applied at the edges of the MCPCB to avoid any contact with the copper substrate.

Precaution 2: Copper substrate of the LED unit should not be grounded.

Transient charges can propagate from the ground to the heatsink and finally to the copper substrate of the LED unit and damage the dielectric layer from ground charges. An insulator must be placed between the heatsink and the benchtop to avoid transient charge propagation from the ground.

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Precaution 3: When wiring multiple LEDs together, circuitry that results in a voltage input greater than 90V must be avoided.

When multiple LEDs are connected in a way that results in a total voltage input greater than 90V, the dielectric layer can become damaged and result in creating an electrical path from the p-layer to the copper substrate. The circuit connections must be made keeping this in mind. Please consult the Violumas team for circuit design.

Precaution 4: Ensure that the power supply unit (PSU) is equipped with circuit protection inside the output terminal circuit to avoid over-voltage issues and open circuit failures.

Surge voltages can exceed 600VDC and so when the PSU is not equipped with a transient voltage limiter, charges can become over-accumulated, and the dielectric layer of the copper substrate can be easily damaged, resulting in over-voltage or in-rush current failures. Use of over-voltage protectors, transient voltage protectors and over-current protection for the PSU is highly recommended.

Disclaimer: These instructions are intended for product developers using Violumas LED products. Product designers are solely responsible for (1) selecting the appropriate Violumas products, (2) validating and testing the products/power supplies depending on the application, and (3) ensuring that the applicable standards and safety requirements are met. Violumas cannot be held responsible for any damages caused by not following these precautions or by following the precautions incorrectly. Thermal issues arising due to improper heat management are not covered in this document.

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