

LED PCBs have unique requirements that a PCB fabricator must understand completely. At J-CUBE TECHNOLOGIES, we have a comprehensive understanding of LED PCB principles, especially with regard to spillover light and heat (thermal) management.

Spillover light is an issue because LEDs ‘spill’ some light to the side and rear. You choose a white mask to reflect this light “back out of the box”, but some “white-reflective” masks change when heated; they become dull and grow thin during the reflow process and no longer fully reflect the LED’s light.

Our partner lays down a reflective mask that even after heating holds its luster and won’t grow thin and show any copper color from underneath. We found the best mask on the market to be Taiyo’s LEW1, because it holds its brilliance and doesn’t change color, even after the harsh heat of the reflow process.

Heat management for high power LEDs is also an issue, and heat dissipating metal core (MCPCBs) go a long way towards solving this problem. The metal core substrates from Thermagon, Bergquist, Arlon or Univaco help dissipate the excess heat from the LEDs, but getting the heat from the LED, through the prepreg, to the metal core, can sometimes be a challenge.

The prepreg’s thickness and how well it’s bonded to the metal core is crucial. The manufacturer bonds prepreg that’s thin enough to transfer the heat, yet thick enough to electrically insulate the copper conductors.

Even the bonding process of this dielectric is important. Our partners use a process that doesn’t leave insulating air bubbles between the metal of the substrate and the prepreg, because these bubbles could otherwise inhibit heat transfer.

Contact J-CUBE TECHNOLOGIES for more information. we have the know-how to assist you with your LED product planning and design.