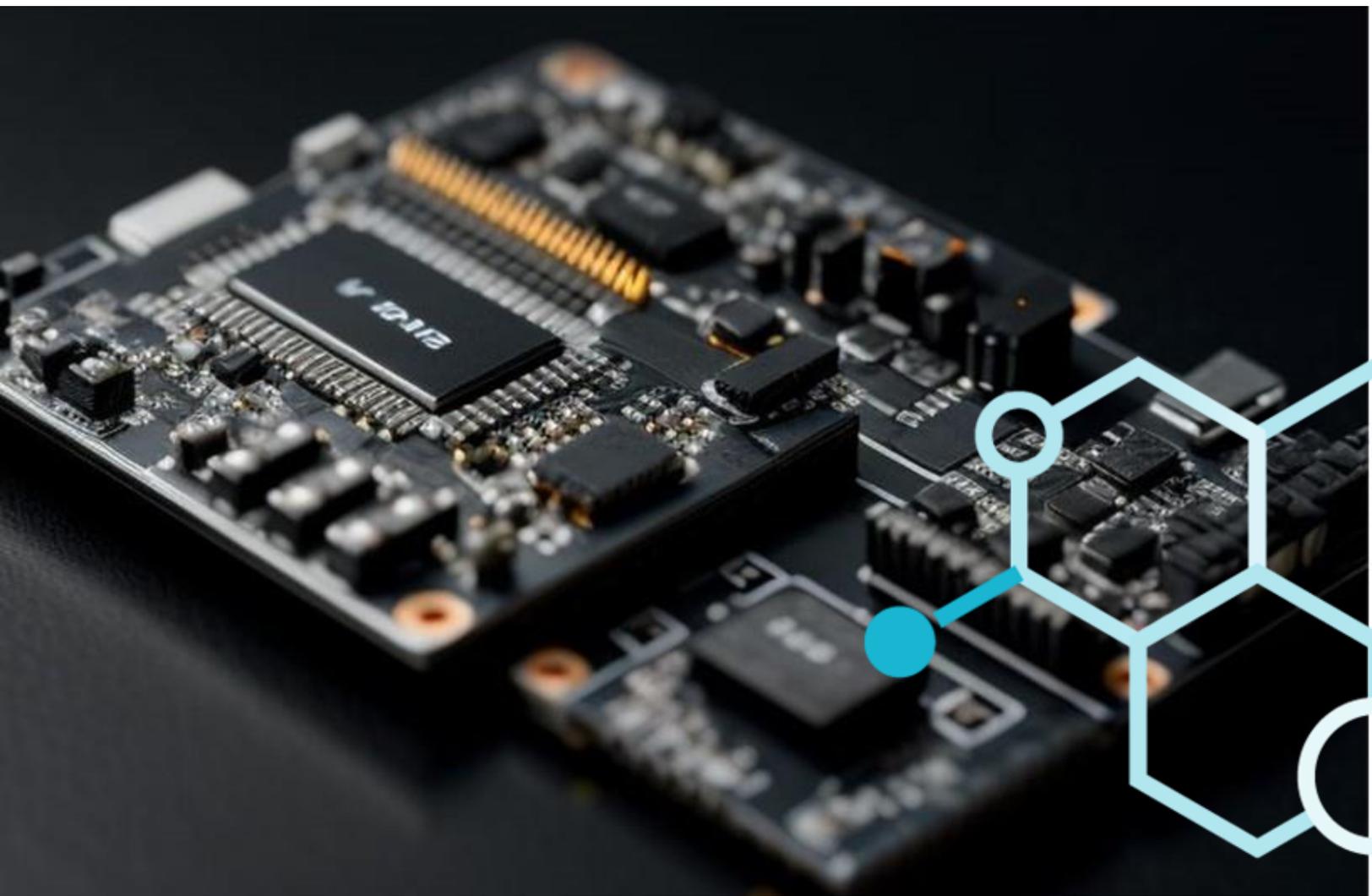


Transforming PCB Manufacturing: How Trilogy-Net Inc. Leverages C-Lite by Tethon 3D & Mechnano for Unparalleled efficiency



Transforming PCB Manufacturing: How Trilogy-Net Inc. Leverages C-Lite by Tethon 3D and Mechnano for Unparalleled Efficiency



INDUSTRY



TECHNOLOGY



MATERIAL

PCB Manufacturing

Vat Photopolymerization

C-Lite

Customer Profile

Trilogy-Net Inc. is a full-service electronics contract manufacturer. Trilogy-Net prioritizes manufacturing flexibility to enable groundbreaking designs while upholding superior quality standards. Company offers comprehensive range of services including inventory management, contract purchasing, through-hole assembly, conformal coating, X-ray inspection, cable assembly, product testing, mechanical assembly, customized packaging, and end-user shipping.

Challenge

Trilogy-Net often requires personalized carriers or pallets to securely hold non-standard printed wiring assemblies during the reflow process. Using traditional manufacturing techniques to fabricate these components can lead to slower production and higher costs. These carriers must effectively protect electronic components from electrostatic discharge and endure multiple cycles of high-temperature wave soldering, reaching up to 245°C. Moreover, these custom carriers need to meet several additional requirements. First, they must maintain dimensional and structural stability without warping, twisting, or bending. Second, their electrical properties must remain constant and comply with the ANSI/ESDA S20.20-2021 standard. Finally, the carriers must exhibit chemical compatibility with the fluxes used in wave soldering operations.



Sample carrier fabricated using C-Lite.



Solution

To meet customer requirements, Mechnano used C-Lite rigid static dissipative resin, which offers exceptional resistance to high temperatures, to create a sample carrier. This material was developed by Mechnano in partnership with Tethon3D, with the aim of ensuring its compatibility with an array of vat photopolymerization systems.

Impact

The fabricated carrier underwent vapor phase and standard reflow oven cycles without any changes in its dimensions or flatness in a single cycle. Subsequently, the carrier was subjected to a total of 50 reflow oven cycles, and Trilogy-Net verified that there were no signs of softening, cracking, shrinkage, or warping.



Successful flatness test on Reflow Test Part before (right) and after (left) 50 reflow passes.

The incorporation of C-Lite high-temperature ESD resin provided the ideal solution for Trilogy-Net's requests for low-volume and non-standard part requests, effortlessly overcoming the limitations of existing part fabrication techniques. C-Lite has demonstrated exceptional dimensional stability over 50 cycles in vapor phase reflow, convection reflow, and wave soldering processes. The use of materials like C-Lite for reflow fixtures and other tooling significantly reduces production cycle times, enabling the quick turnaround of products. By harnessing the power of additive manufacturing (AM) to fabricate ESD parts that support the reflow process, the electronics industry can become more flexible in accommodating bespoke customer demands.

Designed with the latest technology and extensive research, Mechnano's resins are perfect for customers who want superior electrostatic discharge protection. Don't settle for outdated solutions that could jeopardize your sensitive electronic components. With Mechnano's ESD resins, you can trust that your products will be shielded from static electricity, ensuring optimal performance and longevity. Contact Mechnano today and unlock the power of ESD resins. Your success story begins here.

MECHNANO, LLC
3850 Baseline Rd., Suite 125
Mesa, AZ 85206
(480) 648-9919
www.mechnano.com

