The real cost of counterfeiting

Minimize the risk of counterfeited PCBs with track and trace labels

For printed circuit board assembly (PCBA) manufacturers, counterfeiting goes beyond someone selling fake and knockoff products. If they malfunction or break, counterfeit printed circuit boards (PCBs) and other electronic components can endanger the health and safety of consumers. These risks make counterfeiting expensive for PCBA companies in terms of lost revenue, product recalls and warranty claims – but even more so in terms of damage to their reputation.

While government agencies do their part to combat counterfeiters, brand owners must protect the integrity of their products by reinforcing quality and assuring authenticity. PCBA manufacturers can achieve that protection in part through track and trace technologies that authenticate PCBs and their components throughout the assembly process.

Why track and trace for PCBs

Tracking PCBs through the entire assembly process helps guard against counterfeiting by giving manufacturers critical visibility into PCBA production details.

Placing a basic label on a fully assembled PCBA and saying it complies with manufacturer specifications is a way for companies to cut corners and save time and money. But without technology to capture data during the assembly process, that PCBA can't be traced back to confirm the authenticity of each component.

For example, a PCBA might include counterfeit capacitors not built according to product specifications. Without traceability, even the best quality control systems will fail to match the specific components with their individual boards, and identifying which PCBAs were affected by counterfeit components will be like searching for a needle in a haystack.

The solution is for PCBA manufacturers to affix a barcode label to each raw PCB board before assembly. The track and trace label uniquely identifies the board with a serial number, and with a quick scan, that number can be linked to information about the manufacturers, part numbers, soldering program and lot codes of each electronic component added to the PCB during assembly. Manufacturers can access this database by scanning the barcode, which provides assurance that only approved components were used to make the PCBA for their product.

Durable label considerations

Paper labels added after assembly don't have to withstand the harsh conditions of a PCBA environment, whereas track and trace labels must be able to maintain adhesion and legibility when boards are soldered, treated with aggressive fluxes, heated to extreme temperatures and cleaned with harsh chemicals blasted at high pressure. Highly engineered, high-temperature polyimide (PI) labels can deliver this performance but are usually higher in price for these reasons.

Some PCBA manufacturers, in an attempt to cut costs, may decide to skip the PI tracking label in favor of a cheaper paper label affixed after assembly. But lost in this shortcut is the ability to trace which specific components were added to which PCB to ensure authenticity. The warranty claims, lawsuits and widespread recalls that can result from defective PCBA components can quickly surpass any dollars saved by forgoing the use of track and trace labels.

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Cost-effective solutions to counterfeiting

Counterfeit goods cost the global economy as much as $250 billion each year, according to the Organization for Economic Co-operation and Development (OECD). Compared to the potential costs of counterfeiting, the relative price of security and reassurance from a durable label can actually provide aggregated value.

Even so, Avery Dennison recognizes that cost is a factor that deters some PCBA manufacturers from investing in track and trace label technology.

That's why Avery Dennison offers its portfolio of high-temperature PI materials at a range of price points. By matching performance standards to budgets, Avery Dennison can recommend high-temperature label solutions to meet any PBCA specification and, as a result, help more PCBA manufacturers avoid the real costs of counterfeited products. >

Contact Avery Dennison at durablesteam@averydennison.com to learn more about our durable label portfolio and how we can meet your cost and performance requirements.

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