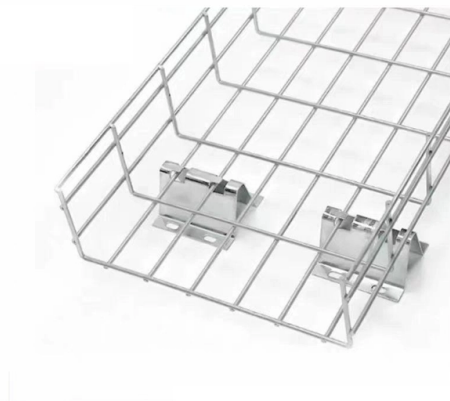


RIVO MULTITRADE OPTICAL SYSTEMS

COB surface mount optical modules



Overview

Understanding How COB LED Chips Redefine The fundamental difference between COB and older technologies like Surface Mounted Introduction To The COB Process.

Key Takeaways

COB (Chip-on-Board) surface mount optical modules integrate bare chips directly onto a PCB, offering high-density, compact, and reliable optical performance. Overview of COB Technology

COB technology involves mounting bare semiconductor chips directly onto a printed circuit board (PCB), connecting them via gold wire bonding, and encapsulating the assembly with organic adhesive or epoxy resin for protection and structural integrity . This approach eliminates individual chip packaging, resulting in a compact, high-density module with minimal signal loss and improved thermal management .

Manufacturing Process

The COB process typically includes three main steps :

- **Die Bonding:** Bare optical or electrical chips are placed on the PCB using conductive adhesives, then secured through high-temperature baking.
- **Wire Bonding:** Gold wires connect the chips to each other and to PCB pads, ensuring electrical and mechanical connections.



- **Optical Coupling and Encapsulation:** Chips are aligned with optical components, and the assembly is encapsulated with epoxy or adhesive to protect against moisture, dust, and mechanical stress. This process allows precise alignment of photodiodes and optical components, which is critical for high-sensitivity optical detection .

Advantages Over SMD Modules

Compared to traditional SMD (Surface-Mount Device) modules, COB modules offer :

- **Higher packaging density:** Multiple chips form a unified module, reducing the footprint.
- **Improved optical performance:** Smooth, panel-like surfaces eliminate visible gaps between chips, enhancing uniformity and reducing graininess.
- **Better thermal management:** Integrated copper layers and epoxy encapsulation facilitate heat dissipation.
- **Enhanced durability:** COB modules are more resistant to moisture, dust, and mechanical impact.
- **Simplified maintenance:** Front-access replacement is possible without disassembling the entire system.

Applications

COB surface mount optical modules are widely used in:

- **LED displays:** Ultra-fine pitch COB modules (pixel pitch

Article Content

Introduction To The COB Process For Optical Modules

Moduletek operates its own die bonding, wire bonding, and automatic coupling production lines, and can supply a

COB LED display modules

COB coating technology is a new type of optical thermally conductive nano-filling material. This technology is characterized by filling

Comparing COB vs. BOX Packaging for Optical Modules

Explore the differences between COB and BOX packaging in optical modules. Discover their applications, costs, and

Introduction To The COB Process For Optical Modules

In recent years, the COB (Chip-on-Board) process has been frequently mentioned in the context of high-speed optical

COB LED Display-flip chip Micro COB LED Screen 0.6mm-1.5mm

COB (Chip on Board) is a kind of LED display packaging technology. LED light-emitting chips are directly bonded to the module

COB LED display modules

COB LED display modules COB coating technology is a new type of optical thermally conductive nano-filling material. This

Technical note / Optics modules

The optics module uses COB technology to mount photodiodes directly to the circuit board. The COB technology enables the

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COB Packaged Optical Module in the Real World: 5 Uses You'll

These modules integrate optical and electronic components into compact, high-performance units, enabling seamless

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