

Non-hermetic packaging of optical modules



Summary of Content

Non-hermetic packaging involves optical chips that are not sealed in a cavity, offering cost efficiency and integration advantages but with reduced environmental protection.

Overview

Non-hermetic packaging is a method where optical chips such as lasers and photodiodes are not enclosed in a sealed cavity. Instead, the chips are directly attached to a substrate or circuit board and protected using adhesives like epoxy or silicone resin, sometimes combined with encapsulants or potting materials . Unlike hermetic packaging, which isolates components from moisture, oxygen, and corrosive gases, non-hermetic modules rely on the inherent resistance of the materials and protective coatings to withstand environmental stresses .

Common Methods

- **Chip-on-Board (COB):** The optical chip is mounted directly on a PCB, with wire bonding for electrical connections, followed by resin encapsulation. This method allows miniaturization and high integration, making it suitable for multi-channel optical transceivers .
- **Chip-on-Chip (COC):** Involves stacking chips directly on top of each other to save space and reduce interconnect complexity .
- **Epoxy or Silicone Sealing:** Provides basic protection against dust and minor moisture exposure without full hermetic isolation .

Article Content

Hermetic vs. "Near Hermetic" Packaging

Hermetic vs. "Near Hermetic" Packaging - a Technical Review Hermetic cavity packages have long been the standard for military and

A Review Of Non Hermetic Optoelectronic Packaging?

Unlike hermetic packaging, which is sealed and evacuated to safeguard against moisture and contaminants, non

Hermetic packaging

Learn about hermetic packaging, its benefits, applications, types, and SCHOTT's expertise in leak-tight solutions for reliable

Hermetic vs "Near Hermetic" Packaging A Technical Review

Hermetic vs "Near Hermetic" Packaging A Technical Review Abstract: Hermetic cavity packages have long been the

Understanding COB, BOX, and TO-CAN Packaging for Optical Devices

BOX packaging seals optical chips in a metal enclosure with inert gas, ensuring long-term stability for high

Non-hermetic optical module

Overview Non-hermetic packaging is an optical module manufacturing process where optical chips are not sealed.

Optical Module: A Comprehensive Analysis from Source to Terminal

Non-hermetic packaging, in simple terms, involves directly attaching or soldering optical chips onto a printed circuit

Optical Packaging/Module Technologies: Design Methodologies

Based on how the enclosure of the packages is assembled and how their fibers are connected, optical packages are classified as

Hermetic Optoelectronic Packaging Solutions | INNOVACERA

Optoelectronic packages serve as the critical interface for photonic components. We deliver end-to-end precision packaging

Optical modules with hermetic and non-hermetic packaging

The difference between hermetic and non-hermetic packaging of optical modules mainly lies in the packaging method applied in

Optical Module: A Comprehensive Analysis from Source

Non-hermetic Packaging As optical modules are widely utilized in the market, data centers

Leadless Hermetic And Non-Hermetic SMT Packages | Remtec

Remtec's proven leadless ceramic SMT substrate technology led to the development of a line of cost-effective leadless hermetic and

A review of non-hermetic optoelectronic packaging

This paper is a summary of a literature survey done on non-hermetic optoelectronic packages focusing on the cost

Optical Transceiver: Packaging Methods & Optical Chip Types

Non-hermetic packaging, in simple terms, refers to directly attaching/welding the optical chip to the circuit board and

Non-Hermetic Packaging For Military And Aerospace

The use of non-hermetic packaging technology for military and aerospace applications

A review of non-hermetic optoelectronic packaging

The paper starts with an introduction to the concept of hermeticity in optoelectronic packages, followed by a detailed review of the

Introduction To Hermetic And Non-Hermetic Packaging Of Optical

Non-hermetic packaging is an optical module manufacturing process where optical chips are not sealed. It usually

Design Guidelines for Photonic Integrated Circuit Packaging

Design Guidelines for Photonic Integrated Circuit Packaging PHIX is a one-stop-shop for the manufacturing of modules powered by

Hermetic Microelectronic Packaging | SCHOTT

Microelectronic Packaging Often referred to as hybrid packages, multi-chip module housings, or IC

A Closer Look at COB and BOX Packaging in Optical Modules:

Improved Electrical Performance: Minimizes signal loss and latency, enhancing the module's efficiency. However, the

(PDF) Hermetic package for optical MEMS

Abstract and Figures This article describes the design and fabrication of a hermetic LTCC package for an optical

Chapter 12 MEMS Packaging Materials

substrate/package technologies . The reason for hermetic packaging is to ensure the long-term reliability of the expensiv, state-of

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