

Ceramic heat sink material for optical modules



Overview

Materials like Aluminum Nitride (AlN) and Alumina (Al₂O₃) dissipate heat effectively while isolating components, making them ideal for LEDs, IGBT modules, and MOSFETs. Our CeramCool® ceramic heat sinks made of aluminium oxide and aluminium nitride combine maximum thermal conductivity with electrical insulation, chemical resistance, corrosion resistance and numerous other strengths. OptiTIM is a durable thermal interface material that can withstand the insertion and removal requirements of the pluggable module while. According to our latest research, the global heat sink for optical modules market size reached USD 1.34 billion in 2024, reflecting robust growth driven by the surging demand for high-speed data transmission in data centers and telecommunications infrastructure. Optical module chips, particularly in 100G, 400G, and 800G modules, can generate tens of watts of heat during operation.

Article Content

Ceramic Heat Sinks: A Practical Thermal Management

What materials are used in ceramic heat sinks? Common options include Aluminum Nitride (AlN), Silicon Carbide (SiC), Alumina (Al₂O₃), and

Ceramic Heat Sinks for Power Electronics Cooling

Innovacera manufactures custom ceramic heat sinks that provide superior, reliable cooling performance, replacing traditional metal sinks where electrical insulation is critical.

OptiTIM™

OptiTIM is a durable thermal interface material that can withstand the insertion and removal requirements of the pluggable module while

Broschüre_CeramTec_CeramCool_12-Seiter_EN dd

This helps ceramic walls are 2mm thick on the out side The material selected is Alunit® ceramic, whose W/mK when combined with a direct Ag/Pt heat-sink mounting guarantees outstanding thermal con

Ceramic Heat Sinks: A Practical Thermal Management

Ceramic heat sinks are advanced thermal management solutions designed to dissipate heat from sensitive electronic components. Made from

Optical Transceiver Cooling Solutions | Heatscape

Optical transceiver module cooling refers to thermal solutions designed to remove heat from high-speed pluggable optical modules. These solutions maintain stable performance and prevent overheating in

Thermal Interface materials for efficient heat management in ...

Recent developments with nanomaterials like carbon nanotubes (CNTs), nanowires, graphene, nanocelluloses, and paraffin-based composites are discussed for their improved thermal

Thermal Management with Ceramic Heat Sinks

The ceramic materials used are Rubalit ® aluminum oxide and Alunit ® aluminum nitride, which can be provided with various metallisations and conductive path structures, if required also three

Power Module Using Ceramic Heat Sink and Multilayers Silver Sintering

Abstract— A new packaging technology allowing the development of high performance power modules for harsh environment as well as the optimization of the manufacturing process is presented. The

Highly-Integrated SiC Power Module on Ceramic Heat Sink

SiC MOSFETs Ceramic heat sink with internal pinfin structure Key features Low thermal resistance ($R_{th}'' = 0.15 \text{ Kcm}^2/\text{W}$) Low stray inductance Very low weight and small size (cooler weight = $\sim 10 \text{ g}$)

US6948861B2

By combining fiber-optic management features with a heat sink, on the opposite side of board-mounted opto-electronic components, the optical module achieves increased packaging density and

CERAMIC HEAT SINKS

Whilst copper offers lower thermal capacity compared to ceramic on the first table, if you analyse thermal capacity by a volume area, then ceramic offers better heat dissipation compared to copper.

6 Heat Sink Types: Which One is Best for Your Project?

Heat sinks are important in many types of electronic devices. This article discusses 6 heat sink types, grouped by manufacturing process. #1: Extruded

The importance of good heat dissipation design in

Managing heat dissipation is critical to the successful functionality of optical transceivers. Effective heat management influences transceiver design,

Custom heat sinks for optical modules, China heat sinks for optical ...

Aluminum nitride is a high thermal conductivity ceramic powder that shows excellent thermal conductivity, insulation properties, mechanical strength, and a coefficient of thermal

Heat Sinks | Supplier | Manufacturer

The advantages of our heat sinks, heat spreaders, semiconductor base plates, and substrates lie in the thermal material properties. Their controlled CTE

Molybdenum Alloy Heat Sink Material: Advanced Thermal

High-Power Laser Diode Thermal Management Semiconductor laser modules for materials processing, LIDAR, and fiber-optic pumping generate heat fluxes exceeding 1000 W/cm^2 at the

Thermal Interface Material (TIM) Explained – Key

Explore what Thermal Interface Material (TIM) is, its key types, and why it matters in electronics and optical transceivers. Learn how TIM improves

Heat sink design for LED lighting

Learn about the key aspects of heat sink design for LED lighting, focusing on material conductivity, surface area, and convection to enhance

Application Analysis of Ceramic Heat Sinks

While challenges such as brittleness and manufacturing complexity exist, ongoing advancements in materials and techniques are likely to enhance

Heat sink for optical communication module chips | Weyland

Through optimized materials, design, and simulation, heat sinks ensure optical modules operate efficiently under high-power, high-density, and harsh environmental conditions.

Thermal design study of 200G QSFP-DD LR4 optical

This article mainly studies the influence of the environment on heat dissipation of optical module, especially the influence of various parameters of

A New Package for SiC Power Modules with Ceramic Heatsink

Today, SiC devices are adopted more and more in various applications. Though SiC material has better thermal conductivity than Si material, effectively dissipating the heat through the power module can

How are ceramic heat sinks made

Discover how ceramic heat sinks are made. Learn the manufacturing process and materials used in this detailed How-To Guide.

Heat Sink For Optical Modules Market Research

Composite materials are gaining momentum in the heat sink for optical modules market, driven by the need for lightweight, high-performance, and customizable

Heat Sink for Optical Modules Market Research Report 2033

These heat sinks offer superior heat dissipation by actively moving air or utilizing phase-change materials, thus enabling optical modules to operate reliably under higher power densities and

OptiTIM™

Increasing demands for 200GB, 400GB, and 800GB ethernet speeds will require higher optical module power than cannot be cooled with a

Improving Pluggable Optical Module Performance through Novel,

A thermocouple was placed in a drilled hole in the heat sink and power was applied to the ceramic heater to measure thermal resistance. This analysis was performed with a heat sink coated with the

Understanding Liquid-Cooled Optical Modules and

Discover how liquid-cooled optical modules manage heat efficiently in high-speed data systems. Explore customized heatsink solutions.

Improved Thermal Transfer For Power Modules

Modern power semiconductors need an efficient and reliable cooling. The connection between the power module and the according heat sink is both, centerpiece and bottleneck at the same time. Here, often

Heat Sink Selection Guide for High-Power LED Modules

Learn key tips for choosing and using heat sinks with high-power LED modules, including cooling surface area, design options, and thermal interface materials.

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://adicor.eu>

Email: info@adicor.eu

Phone: +33 6 48 37 92 15

Address: 12 Rue de la Paix, 75002 Paris, France

This document is for informational purposes only. Specifications subject to change without notice.

