

# Aluminum substrate of laser diode



## Overview

Aluminum nitride (AlN) is one of the most thermally conductive ceramic materials. In optical communication modules, the trend toward greater miniaturization and integration is making aluminum nitride essential as a submount material for laser diodes (LDs), which generate high levels of heat. The ceramic substrate material is Aluminium Nitride (AlN). Standard grade is 170W/m·K. Via the acquisition of Ion Beam Milling, Inc. As each application is different, we work with. Remtec manufactures High performance metallized laser and photo diode submounts, accessory circuits and spacers to customer specification. Remtec's submounts are produced on BeO and AlN ceramics using PCTF® (Plated Copper on Thick Film) metallization. For less thermally demanding applications. As the submount for the heat dissipation of high-power diode laser chips, the AuSn pre-deposited DPC material is fabricated through metallization of AlN ceramic substrate and pre-deposition of micron-level AuSn thin film in specific areas. It is a key technology that ensures the long-term reliable.



## Article Content

Jul 30, 2025

### LASER AND PHOTO DIODE SUBMOUNTS

Applications include high performance laser and photo diode submounts, optoelectronic circuits, spacers, power modules as well as RF power amplifiers and TC modules.

Jan 23, 2026

### AlN Laser Diode Carriers

For laser mounting a thin layer of vacuum-deposited AuSn can be selectively applied over conductor areas. The standard alloy ratio is nominally 72Au/28Sn, normally at ~4-5 microns thick.

Aug 24, 2025

### Chapter 9.4.1: Doping Layers and Substrates | GlobalSpec

9.4.1 Doping Layers and Substrates A diode laser must contain at least three layers: a p- type layer, an n- type layer, and an intermediate active or junction layer where recombination causes light

Sep 17, 2025

### Diode Laser Materials

As the submount for the heat dissipation of high-power diode laser chips, the AuSn pre-deposited DPC material is fabricated through metallization of AlN ceramic substrate and pre-deposition of micron

Jul 01, 2025

### Miniature laser diode submounts

Miniature laser diode submounts Miniature thin film metallised aluminium nitride submounts with pre-deposited AuSn, for mounting of laser diodes and LEDs.

Apr 28, 2026

### Microsoft Word

The plated copper vias" capability allows design and manufacture of hermetic integral substrate package with built-in laser diode submounts and low dc resistance conductor traces.

May 27, 2026

### Diode Submounts

Our team has experience producing circuits utilizing substrates of varying thicknesses with high thermal conductivity such as Alumina, Aluminum Nitride,

Dec 31, 2025

Direct formation of pure copper layer on aluminum nitride by

Keisuke Takenaka, Jumpei Tokumoto, Koji Kobayashi, Hideyo Osanai, Koji Toji, Yuji Sato, Masahiro Tsukamoto; Direct formation of pure copper layer on aluminum nitride by multibeam

May 23, 2026

Miniature laser diode submounts

Use the links on the left for details of our comprehensive capabilities in manufacturing patterned AlN laser mounts together with sharp edge C-mounts,

Oct 21, 2025

Can a Diode Laser Cut Aluminum? Find Out Here

Discover if a diode laser can effectively cut aluminum. Learn about its capabilities, limitations, and the best laser options for metal cutting.

Jun 04, 2026

LASER AND PHOTO DIODE SUBMOUNTS

The plated copper vias" capability allows design and manufacture of hermetic integral substrate package with built-in laser diode submounts and low dc resistance conductor traces.

Feb 28, 2026

High-Power Laser Diode Packaging with 99.6% Alumina Substrates

Complete guide to using 99.6% Alumina Ceramic Substrates for high-power laser diode packaging. Learn about thermal management, surface finish requirements, and key sourcing considerations for

Nov 10, 2025

Experimental and theoretical study of substrate modes in (Al,In)GaN ...

For (Al,In)GaN laser diodes the parasitic modes are typically caused by the SiC or GaN substrate or buffer layers. Substrate modes have an impact on near-field and far-field of the

May 15, 2026

Vertical semiconductor deep ultraviolet light emitting diodes on a ...

Vertical semiconductor deep ultraviolet light emitting diodes on a nanowire-assisted aluminum nitride bufer layer Qihua Zhang, Heemal Parimoo, Eli Martel & Songrui Zhao\*

Apr 14, 2026

Pure copper layer formation on stainless-steel and aluminum substrate ...

We also developed a multibeam LMD system with the blue diode laser in which metal powder was supplied perpendicularly to the processing point and multiple lasers were irradiated from the

Jun 30, 2025

Thin-Film Submounts for Laser Diodes

Aluminum nitride (AlN) is one of the most thermally conductive ceramic materials. In optical communication modules, the trend toward greater miniaturization and integration is making

Mar 07, 2026

Research status of laser cladding technology on aluminum ...

Aluminum alloy is one of the most promising lightweight materials. Despite this, there are still many limitations in the future use of aluminum alloys due to issues such as low hardness,

Apr 24, 2026

Engraving on Metal with a Diode Laser : r/lasercutting

Put it under your laser and let the program run the engraving process (focus it first, so the point gets as small as possible, depending on your lens, mine is a short range one, adjust the hight. For me,

Oct 18, 2025

AlN laser diode carriers

The AlN substrate material is available with as-fired, lapped or polished surface finishes. Standard substrate thicknesses are 0.63mm and 1.0mm with as-fired finish.

Oct 10, 2025

Substrates to Fabricate Laser Diodes

Substrates for laser diodes are materials that serve as the foundation for the laser diode device. These substrates play a crucial role in determining the performance and reliability of laser diodes.

Sep 19, 2025

High-speed formation of pure copper layers via multibeam laser metal ...

Therefore, the technology for forming pure copper layer on a pure copper substrate is important. Laser metal deposition (LMD) is one of the additive manufacturing technologies. A blue

Oct 07, 2025

Aluminum Nitride (AlN) Substrate

Laser diodes have been widely used in optical communication and optical storage products. The high thermal conductivity of aluminum nitride makes aluminum nitride substrates the best material for

Oct 17, 2025

Aluminum Nitride (AlN) Packages / Substrates /

Aluminum Nitride (AlN) is a ceramic material with very strong properties of thermal conductivity and electrical insulation resistance. AlN is used for components that

Oct 08, 2025

Deep UV aluminium gallium nitride laser diode at

Previous UV laser diode reports have been restricted to the 315-400nm UV-A range. Asahi Kasei Corp and Nagoya University in Japan and

Apr 24, 2026

Effects of quantum well thickness and aluminum content of electron ...

The effects of quantum well (QW) thickness and aluminum content of electron blocking layer (EBL) on device performance of InGaN-based laser diodes (LDs) are numerically investigated

Apr 27, 2026

Vertical semiconductor deep ultraviolet light emitting diodes on a ...

Takeuchi, M. et al. AlN/AlGaIn short-period superlattice sacrificial layers in laser lift-off for vertical-type AlGaIn-based deep ultraviolet light emitting diodes.

Apr 22, 2026

Aluminium surface treatment with ceramic phases using diode laser ...

Laser surface alloying LSA of aluminium is useful surface treatment technique because it offers advantage of localized processing and with proper process parameters it is capable of

## Contact Us

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