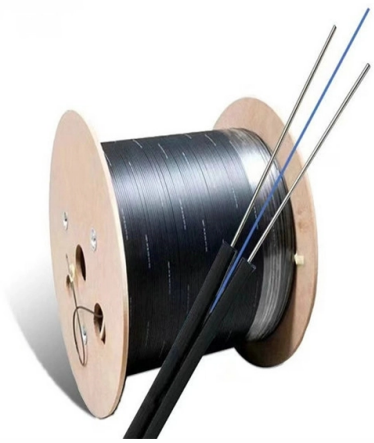
Diodes for Blue Lasers



Overview

Blue Laser Diodes – MouserMouser offers inventory, pricing, & datasheets for Blue Laser Diodes. Breakthroughs in blue and green laser diodesWithin the disp.

Key Takeaways

Blue laser diodes typically operate in the 400–480 nm range, with output powers from milliwatts to several watts, using GaN or InGaN semiconductor materials.

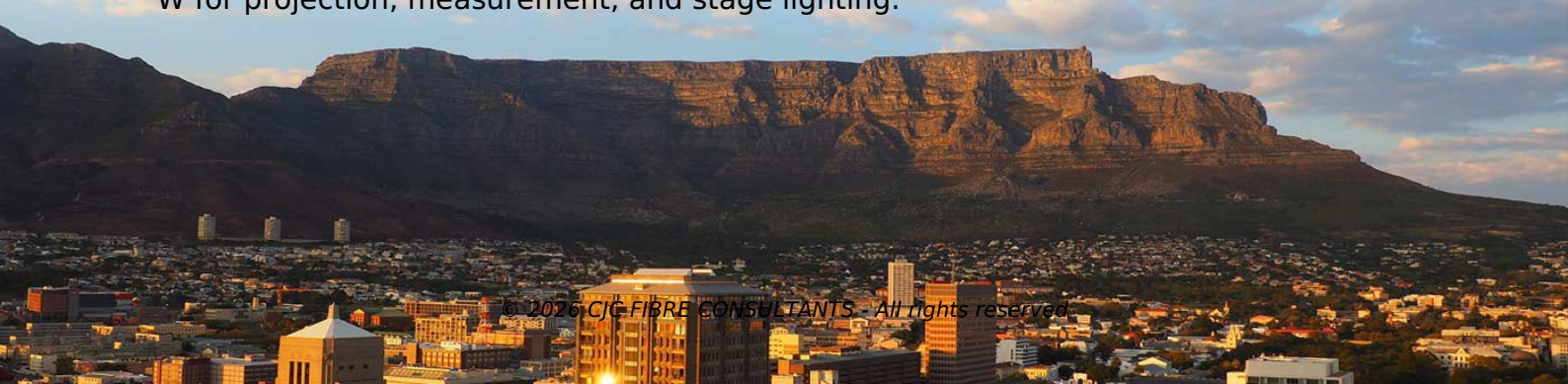
Wavelength and Technology

Blue laser diodes emit light in the 400–500 nm range, with shorter wavelengths (below 445 nm) often appearing violet but still classified as blue lasers. The most common semiconductor materials are gallium nitride (GaN) and indium gallium nitride (InGaN), which form the active region of the diode and allow efficient photon generation. Modern diodes can be built on sapphire or GaN mono-crystal substrates, with multiple quantum wells to enhance output and efficiency.

Power and Efficiency

Output power varies widely depending on the diode type: Low-power diodes: 50–300 mW, suitable for alignment, projection, or small-scale applications. High-power diodes: Up to 10 W for broad-area diodes, and fiber-coupled systems can reach hundreds of watts. Example: The ams OSRAM PLPT9 450LC_E delivers 5.

5 W at 455 nm with a wall-plug efficiency of 43%, packaged in a robust TO90 metal can. Continuous-wave (CW) diodes like OSRAM's 450 nm series can provide up to 1. 6 W for projection, measurement, and stage lighting.



© 2026 CJC FIBRE CONSULTANTS - All rights reserved

Packaging and Operation

Blue laser diodes are available in TO-can packages (TO56, TO90) for thermal stability and ease of integration. They can operate in continuous-wave (CW) or pulsed modes, with monitoring photodiodes included in some models to maintain stable output. Wavelength binning in 2 nm steps allows precise selection for applications requiring high wavelength accuracy.

Applications

Blue laser diodes are widely used in: Data storage: Blu-ray discs and high-density optical media. Industrial processing: Metal marking, cutting, and welding due to strong absorption in metals like copper. Medical and scientific: Flow cytometry, microscopy, and spectroscopic measurements.

Projection and display: Stage lighting, holography, and high-resolution imaging.

Summary

When selecting a blue laser diode, consider: Wavelength: 400–480 nm depending on application. Output power: From milliwatts to several watts. Efficiency and thermal management: High wall-plug efficiency and low thermal resistance packaging.

Operation mode: CW or pulsed. Application requirements: Optical power, beam quality, and wavelength stability. Blue laser diodes have become highly efficient and versatile, enabling applications ranging from consumer electronics to industrial and scientific uses.

Article Content

Breakthroughs in blue and green laser diodes

Within the display industry, the high efficiency and output power of GaN-based blue and green LDs are contributing to improved colour reproduction and brightness in digital cinema

Blue laser

Blue, direct diode semiconductor lasers can be built using inorganic gallium nitride (GaN) or InGaN gain medium, upon which many (dozens or more) layers of

Blue Lasers – Buyer''s Guide & Supplier List | RP

This buyer''s guide for blue lasers provides technical background, comparison of major types, selection criteria, and an overview of suppliers.

Blue Laser Diodes

© 2026 CJC FIBRE CONSULTANTS - All rights reserved

Our expertise in laser diode technology allows us to provide you with any technical support you may require in selecting the optimum laser diode for your

Laser Diodes | Components to Systems | UV-LWIR

Our vast selection of laser diodes includes both free-space & fiber-coupled outputs, like high-power Fiber-Coupled Multimode, high beam quality single mode, and

ams OSRAM 455 nm High-Efficiency Blue Laser Diode

Whether for large-scale projections or intricate laser displays, this blue laser diode delivers exceptional results, enhancing visual experiences across multiple

Laser diode

While initial diode laser research was conducted on simple P–N diodes, all modern lasers use the double-hetero-structure implementation, where the carriers and

Global GaN Laser Diodes Market Size, Industry Share, Trends

Global GaN Laser Diodes Market Size By Type (Edge-emitting Laser Diodes, Vertical-cavity Surface-emitting Laser Diodes (VCSELs)), By Application (Telecommunications, Data

GH04580A2G Sharp 80mW 450nm Blue Laser Diode

Description du produit A propos de la diode laser bleue GH04580A2G Sharp 80 mW 450 nm Il s''agit d''une diode laser monomode bleue GH04580A2G de 80 mW avec une longueur d''onde de 450 nm.

VPSL-0670-005-x-5-B

VPSL-0670-005-x-5-B - Laser Diode from Blue Sky Research. Get product specifications, Download the Datasheet, Request a Quote and get pricing for VPSL-0670-005-x-5-B on GoPhotonics

Industrial and Pointing Lasers

Industrial and Pointing Lasers Machine Vision Laser Development Kit Features a 660nm, 35mW Red Laser Diode

Global High Power Blue Laser Diode Market Research Report 2026

The High Power Blue Laser Diode market size, estimates, and forecasts are provided in terms of shipments (K Units) and revenue (US$ millions), with 2025 as the base year and historical and

Dual air-cladding nitride laser diodes open new paths for longer ...

© 2026 CJC FIBRE CONSULTANTS - All rights reserved

Laser diodes made from gallium nitride (GaN) can be found in many everyday applications: laser projectors, Blu-ray players, medical devices, car headlights and fiber-optic

302 Laser Cap | 302 Laser Diodes – Blueprint Bryan

Use Blueprint 302 Laser Diode Cap on dry hair and scalp for 6 minutes daily. Battery-powered so you can use on the go. Wear with visor for a

Why Sharp Diode Beams Cut Cleaner Than Hobby CO_2 Lasers

Technical comparisons of diode and CO_2 lasers explain that the shorter wavelength of diodes is strongly absorbed by many dark woods, inks, paints, and some plastics, which helps a

Tailoring Amplified Spontaneous Emission via Substituent

Anthracene derivatives are promising gain media for organic semiconductor lasers. However, amplified spontaneous emission (ASE) has been reported only in a limited number of

How is a Blue Laser Diode calibrated to activate a Whitening?

Our Blue Laser Diode emit the exact wavelength needed to catalyze the peroxide in your serum base, ensuring optimal B2B whitening efficacy.

Laser Diodes – Mouser Europe

Laser diodes are available at Mouser Electronics from industry leading manufacturers. Mouser is an authorized distributor for many laser diode manufacturers including ams Osram, KYOCERA AVX,

Related Video Reference

This video was associated with the source search result. Verify technical details against current product documentation and project requirements.

© 2026 CJC FIBRE CONSULTANTS - All rights reserved

Contact Us

Continue your research online:

Website: https://cjcconsultants.co.za
Technical inquiry: https://cjcconsultants.co.za/contact.html

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

© 2026 CJC FIBRE CONSULTANTS - All rights reserved