

Function of Cross Laser Diode



AI Overview

A cross laser diode projects a precise cross-shaped laser beam for alignment, positioning, and measurement applications in industrial and precision tasks.

Overview A cross laser diode module is a self-contained device that integrates a laser diode, optical lenses, a laser driver circuit, and a mechanical housing to project a cross-shaped or crosshair laser beam. Unlike standard line or dot laser modules, the cross laser diode uses specialized lenses to split and shape the emitted laser into two perpendicular lines, forming a highly visible cross pattern.

Key Functions

- Alignment and Positioning:** The cross pattern provides a clear visual reference for aligning objects, machinery, or materials with high precision. It is commonly used in woodworking, garment manufacturing, and automated cutting systems to ensure accurate placement.
- Measurement and Inspection:** The intersecting lines of the cross allow operators or vision systems to determine exact center points, edges, or reference planes, which is essential in 3D scanning, vision inspection, and quality control.
- Enhanced Visibility and Accuracy:** Cross laser diodes often feature fine adjustable focus, low divergence, and high boresight accuracy, ensuring that the lines remain straight, uniform, and clearly visible over a working distance. Green lasers are particularly effective for human visibility, making them ideal for alignment tasks.

Applications

- Woodworking Machinery:** For vertical and multi-blade saws, sliding table saws, and other cutting equipment to reduce manual marking errors and improve efficiency.
- Garment Industry:** For positioning buttons, marking fabric, and guiding cutting machines.
- 3D Scanning and Vision Systems:** High-precision cross lines help in capturing accurate spatial data and performing automated inspections.

Technical Features

- Integrated Laser Driver:** Ensures stable output and protects the diode from overcurrent.
- Cross Line Lens System:** Projects two perpendicular lines with controlled thickness and uniformity, often exceeding 70% u...

Article Content

What is Cross Line Laser Diode Module□

Traditional cross line laser diode module solution is to select suitable cross line lens, and integrate it with laser diode, drive circuit and housing case with proper adjustment. In this way, the straight, clear and

Cross Laser Diode

You have some frickin" sharks at your lair, and you're thinking "it would be really great if I could attach some lasers to them" and then you see these little laser

An Introduction to Laser Diodes

An Introduction to Laser Diodes Learn about the laser diode, including package types, applications, drive circuitry, and some laser diode

Lecture 20

Lecture 20 - Laser Diodes 1 - Outline Stimulated emission and optical gain
Absorption, spontaneous emission, stimulated emission Threshold for optical gain
Laser diode basics Lasing and conditions at

Laser Diode

It functions similarly to an LED, but the key difference lies in the mechanism of light generation and the nature of emitted light. In an LED, light is

Cross Line Laser Modules

Unique properties of cross line laser modules include a perfectly straight cross, compact anodized aluminium body, fine adjustable focus, clean beam, low divergence and high boresight accuracy. The

Laser Diodes: Definition, Types, and Applications

A laser diode is a semiconductor device that emits coherent light via stimulated emission, which is more complex and responsive than a light-emitting

How semiconductor laser diodes work

A simple overview of how semiconductor diodes work like a cross between ordinary (gas) lasers and LEDs.

The Technology of Laser Diodes

buried heterostructure laser diode cross-section The fabrication of the EMBH structure is technologically complex and two epitaxial steps are necessary. Less critical is the

Cross Line Laser Modules

A wide choice of laser diode modules with different output power and wavelength combinations in the range from 440 nm to 830 nm is available. Unique properties of cross line laser modules include a

Laser Diodes – semiconductor, gain, index guiding, high power

Laser diodes are semiconductor lasers with a current-carrying p-n junction as the gain medium. They are the most important type of electrically pumped lasers.

Lecture 20

Stimulated emission occurs when a passing photon triggers the recombination of an electron and hole, with emission of a second photon with the same frequency (energy), momentum, and phase.

Laser Diode

A laser diode is a small semiconductor gadget that produces strong and precise light emissions through a cycle called stimulated emission. These

Laser Diode

Laser diode similar to LED is used for producing light but the light is coherent and focused at a small point. It was invented by American physicist Theodore H.

LASER DIODE DRIVER BASICS – Wavelength

Laser Diode Current Source: One key section of a laser diode driver is the Adjustable Current Source. It can also be known as the Output Stage. This

Diode Lasers: Definition, How They Work, Types,

Laser diodes are widely used across various industries, including telecommunications, material processing, and medical treatments. This article

Phase and Frequency Locking of Diode Lasers

light is certainly one of its key features. It explains why the emergence of the laser led to a renaissance of traditional fields like atomic and molecular spectroscopy and at the same time triggered the birth of

Laser Diode Basics | Springer Nature Link

The optical characteristics of laser diodes are summarized. The electrical, mechanical and temperature characteristics of laser diodes are briefly summarized. Vendors and distributors for laser

Laser Diode Characteristics, Precautions for Use and Drive Circuit ...

Laser diodes (LD) are semiconductor devices that convert electrical energy into high-power optical energy. These devices are currently used in the fields of telecommunications and

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Laser Diode Tutorial

The life of a laser diode can be fraught with danger, and where you place it on your table can affect the risk of catastrophic failure to the diode. The information contained within this tutorial will give all the

Semiconductor Laser Diodes

Semiconductor laser diodes come in many shapes and sizes. They maybe round, square, or rectangular, and have a few to many leads. There are many reasons for the different shapes

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