Temperature coefficient of laser diode

Overview

This results in a linear relationship between temperature and the center wavelength of the laser diode with typical temperature tuning coefficients of 0. This coefficient tells us how many nanometers (nm) the wavelength shifts for every degree Celsius (°C) change in. The factors determining temperature and current coefficients of lasing wavelength are investigated and discussed under monitoring CO 2 -gas absorption spectra. This relationship is crucial for applications requiring stable or tunable laser wavelengths. This paper is focused on a 940 nm edge type of semiconductor laser, which is made from 940 nm InGaAs double-quantum-well epitaxial wafer, produced by Metal Organic Chemical Vapor Deposi-tion (MOCVD). In the absence of coating, the efficiency at the room temperature is 0.

Article Content

Jan 06, 2026

Laser diode optical output dependence on junction temperature for ...

Laser diode optical output is studied and modeled. Four major diode parameters (threshold current, slope efficiency, central wavelength of output, and full-width half maximum of ...

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We experimentally demonstrate that uniaxial stress in the normal direction of the p-n junction (which results in tensile stress in the lattice) increases the temperature characteristic of laser diodes. We ...

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Why Laser Diodes Shift Wavelength with Temperature

The table below summarizes typical tuning coefficients across the most common laser diode types to help you quickly assess how much temperature control range your application will ...

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Temperature and current coefficients of lasing wavelength in tunable ...

To analyze the influence of the ambient temperature and injected current on the lasing wavelength of laser diodes, the temperature and current coefficient of lasing wavelength were monitored with the ...

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Temperature and current coefficients of lasing wavelength in ...

s determines the conventionally used temperature-and current-coefficient of lasing wavelength. However, the correlation between the phy ical properties and the temperature- and current-coefficient ...

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How Does Temperature Affect the Wavelength of a Laser Diode, and ...

Changes in temperature affect the bandgap of the semiconductor junction and therefore, the peak wavelength of the gain profile. This results in a linear relationship between temperature and ...

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(PDF) Diode Laser Characteristics

The temperature dependence of laser properties was explored using a diode laser and Peltier cooler. Threshold currents were calculated at various temperatures and comparable to ...

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Laser Diode Control Fundamentals

This results in a linear relationship between temperature and the center wavelength of the laser diode (see Figure 3) with typical temperature tuning coefficients of 0.3 nm/°C.

Oct 18, 2025

Laser Diode Tuning

Subsequently, we are able to derive the temperature and current tuning coefficients (pm/mA and nm/°C). To see tuning in practice, here is a short video which shows the affect of tuning ...

May 06, 2026

An Experimental Study on the Temperature Characteristic of a ...

The characteristic temperature T0 is an important measure of the temperature sensitivity of semiconductor laser diodes. A bigger T0 indicates that the laser diode is less sensitive to temperature.

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