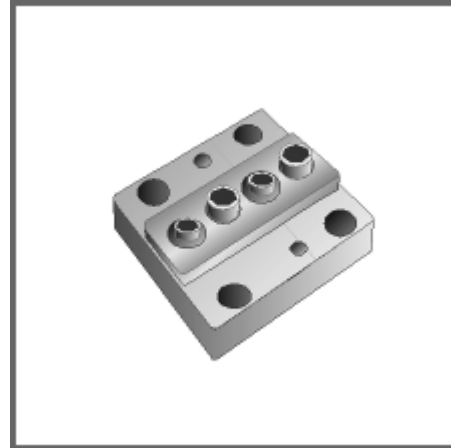
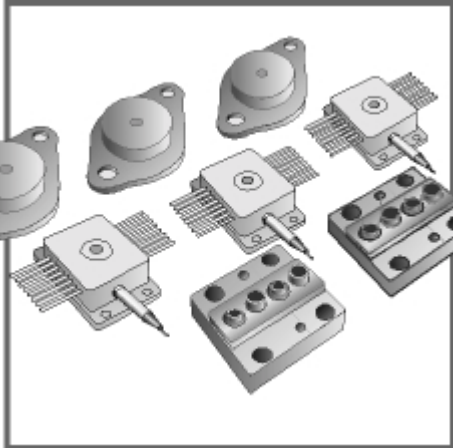


Laser Diodes



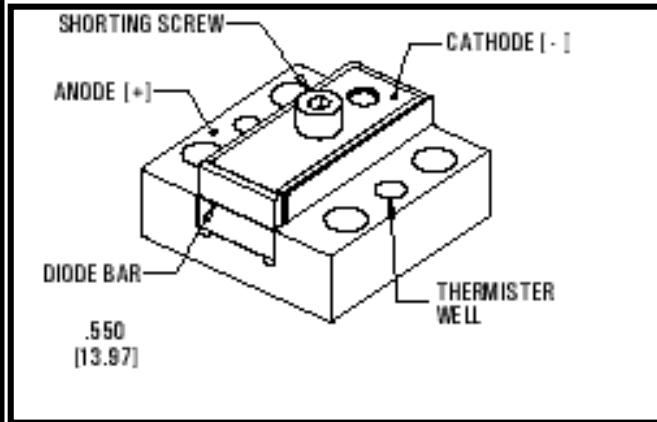
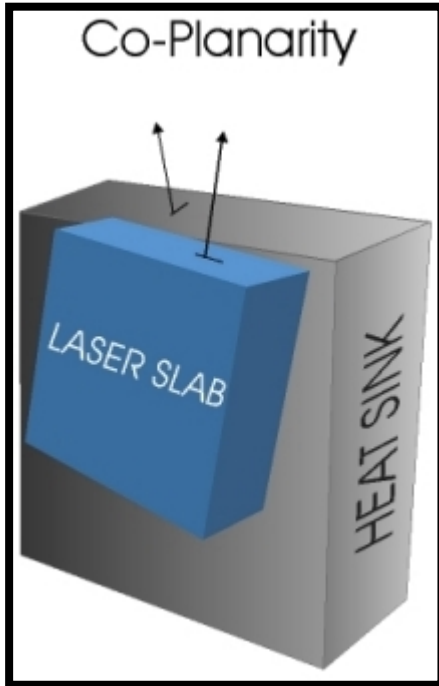
Introduction

In recent years, the commercial use of laser diodes has dramatically increased. Some widely common applications are barcode scanning, graphics printing and fiber-optic communications. The enabling features of these lasers include their optical characteristics, small size, and robustness. The output of laser diodes can be very bright (>20W under continuous wave conditions), making these devices suitable for even more applications like cable TV transmission, HDTV development, and medical instruments. Diffraction limited spot sizes are possible with these devices because of their coherent and monochromatic output. The size of the resultant spot is dependent on the wavelength of the laser, thus there is currently an effort to make commercially available blue laser diodes enable more information to be stored on optical disks at a higher density.

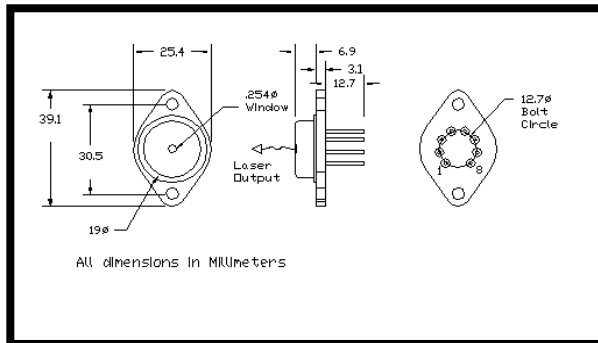
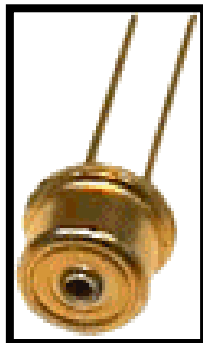
The Measurement Need

State-of-the-art packaging technologies are often the key to production of cost-effective photonic components. The type of packaging technology used in semiconductor laser-diode arrays is key to obtaining high-average-power performance. The packaging must efficiently remove the large amount of heat generated at the laser-diode array with only a small temperature increase at the device since the center wavelength of a laser diode is directly proportional to its operating temperature. Laser diodes come in a variety of packages and the alignment of components to each other and the package is critical to the efficient operation of these devices.

For power levels in the range of 1 Watt or less, the most common package used is The TO-can style package is most commonly used package for lasers in the 1-Watt or less. Other innovative structures include Vertical Cavity Surface Emitting Lasers (VCSEL) and Master Oscillator Power Amplifier (MOPA) lasers. Single diode bar lasers are also very commonly manufactured in high volumes. There are a number of measurements that need to be made on these devices to ensure that the highest quality parts are being manufactured, such as co-planarity and alignment of the laser slab to the heat sink since deviations reduce the heat dissipation and optical output efficiency of the device.



Diode Bar



TO-Can