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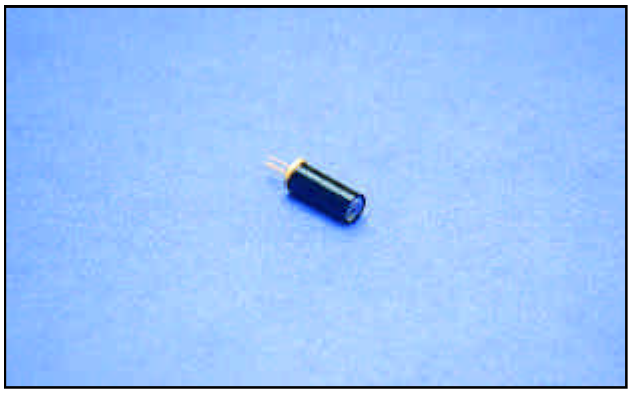
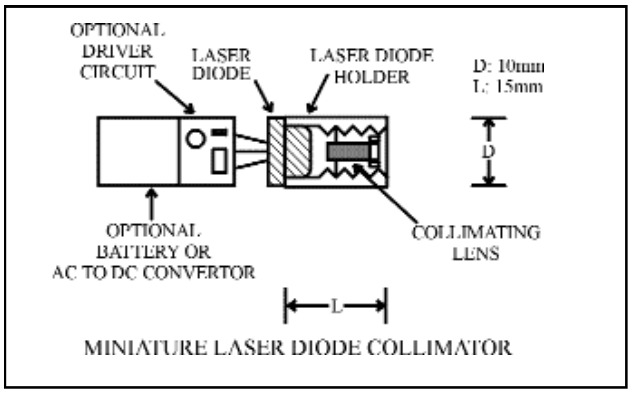
LASER DIODE COLLIMATORS





MINIATURE LASER DIODE COLLIMATOR

Laser diode collimators are used to collimate the highly divergent beam that is emitted by a laser diode. It consists of a laser diode holder, a collimating lens holder, and a high numerical aperture (NA) collimating lens, with a focal length f. The lens is housed in a threaded receptacle that is screwed into the collimating lens holder. By adjusting the distance between the laser diode and the collimating lens, one can collimate the laser diode output.

The dimensions of the collimated beam is determined by two factors - the far field divergence angles $\theta_{\perp}$ and $\theta_{\parallel}$, of the laser diode being used, and the focal length of the collimating lens. The collimating beam dimensions are given by the equations

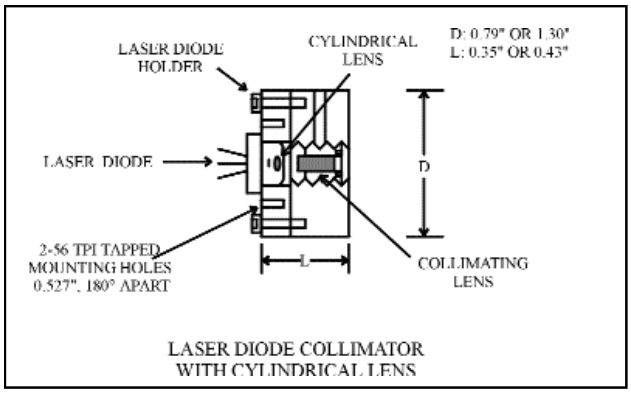
$$BD_{\perp} = 2 \times f \times \sin(\theta_{\perp}/2)$$

$$BD_{\parallel} = 2 \times f \times \sin(\theta_{\parallel}/2)$$

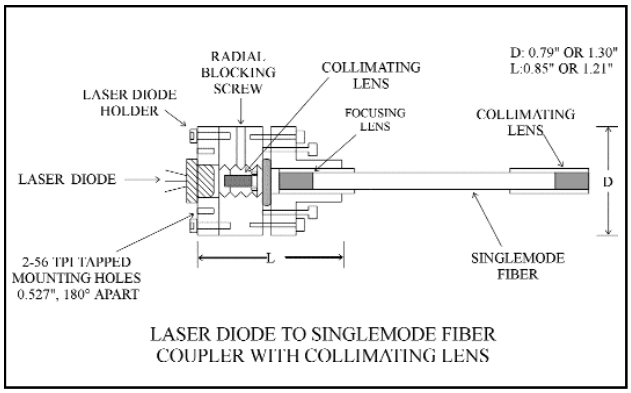
Standard focal lengths include f = 1.6mm, 2.0mm, 2.6mm, 3.9mm, and 6.2mm. For information on the diode characteristics, consult the diode manufacturer for specifications.

The light from a laser diode is not circularly symmetric. Instead, the output diverges more in one direction than in the perpendicular direction. As a result the output beam from the collimating lens will be elliptical in shape rather than circular. There are two main methods to correct this problem. The first is to add a cylindrical lens or anamorphic prism in front of the diode before collimating it. A second technique is to couple the light from the laser diode into a singlemode fiber and then collimate the output from the fiber. The fiber acts as a spatial filter, providing a near perfect Gaussian output. Both methods are shown in the figures at the bottom of this page. Contact OZ Optics for further information about these techniques.

Laser diode collimators are available in different diameters. The standard diameter package is 0.79 inches in diameter. This size fits most diode types. A larger, 1.3 inch diameter housing, is used for large O.D. diodes, such as H1 packages. A 0.59" diameter housing is available for diode can sizes 9.0mm in diameter or smaller. Smaller housings with 10mm OD's are available for OEM applications.

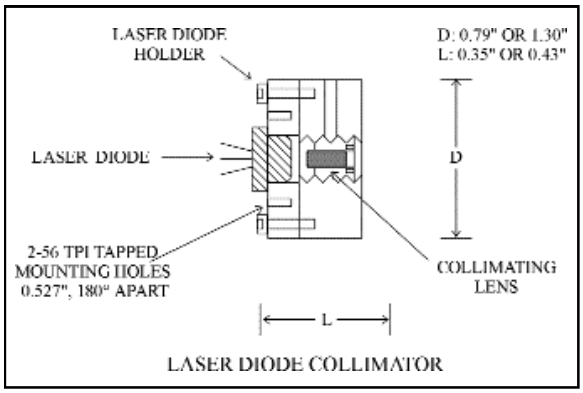


LASER DIODE COLLIMATOR WITH CYLINDRICAL LENS



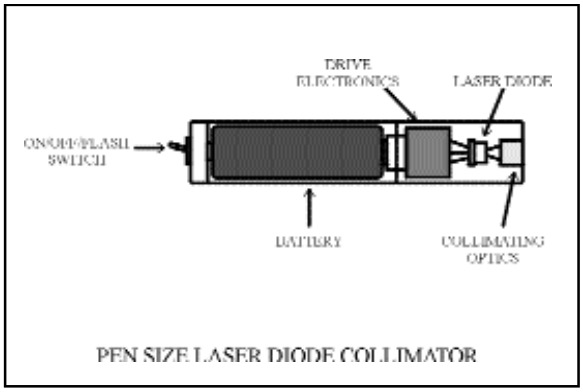
LASER DIODE TO SINGLEMODE FIBER COUPLER WITH COLLIMATING LENS

OZ Optics also offers special compact laser diode to fiber couplers for OEM applications. These packages have the diode and collimating lens permanently glued into the same housing. This package features a compact, rugged housing, at a significant reduction in cost.



LASER DIODE COLLIMATOR

OZ Optics has in stock a selection of laser diodes. OZ Optics can also supply you with laser diode power supplies, that operate either from a battery or a DC voltage source. We can even provide you with complete miniaturized packaged systems. Contact OZ Optics for information on what is available.



PEN SIZE LASER DIODE COLLIMATOR

ORDERING INFORMATION:

Note: When ordering, please specify what type of diode you wish to use, along with any diode characteristics that you know (Wavelength, output power, can size, emitter chip dimensions, divergence angles, distance between the chip and the window on the package, etc.)

Part Number	Description
HULDO-11-*W*-*f*	Laser diode collimator with 1.3" diameter flange.
HULDO-31-*W*-*f*	Laser diode collimator with 0.79" diameter flange.
HULDO-41-*W*-*f*	Laser diode collimator with 0.59" diameter flange.
HULDO-51-*W*-*f*	10mm diameter single piece laser diode collimator.
LDC-21	Collimating lens wrench for standard collimators.
LDC-21A	Collimating lens wrench for large lens collimators.

Where: ***W*** is the operating wavelength in nm;

f is the focal length of the collimating lens, in mm, and the lens type. GR denotes graded index lenses, while AS denotes aspheric lenses. Standard lenses are 1.6GR, 2.0AS, 2.6AS, 3.9AS and 6.2AS. Other focal lengths are available on request. Contact OZ Optics for details.

Note: Add the term **"-LD"** to the part number if OZ Optics is to supply the laser diode. Add the term **"-PS"** to the end of the part number if OZ Optics is to also include a power supply.

Example: A customer wants a laser diode collimator for a 670nm laser diode, using a 2mm focal length aspheric lens. The customer also wants the 0.79" package size. The customer is supplying the laser diode and the power supply. OZ Optics part number: **HULDO-31-670-2.0AS**