

7W 445nm Laser Diode Component – Spindle Mounted

This multi-mode laser diode component is pressed fit mounted in a copper housing and has an metal printed mountable heat-sink. The laser is set in the heat sink with several set screws on the top bottom and sides of the heatsink. The front of the component contains an adjustable glass focusing lens for the laser output. MFG setting of 4amps will give approximately 7W or more of output power. While the mounting case provides heat sinking capability for the laser diode, it is up to the consumer to make sure the laser is operating effectively within these limits.

Absolute Maximum Ratings:

Item	Absolute Maximum Ratings	Unit
Forward Current (Tc = 25°C)	5	A
Absolute Max Output Power	>7	W
Allowable Reverse Current (Tc = 25°C)	85	mA
Lifetime @3 amps	>1000	Hours
Lifetime @4 amps	~1000	Hours
Lifetime @5 amps	<100	Hours
Operating Case Temperature	50	°C

Electrical / Optical Characteristics

Item	Min	Typ.	Max	Unit
Typical Optical Output Power @3 amps		5.3	6	W
Typical Optical Output Power @4 amps		6.5	7	W
Typical Optical Output Power @5 amps		7	7.3	W
Typical Operating Current		2.5		A
Dominant Wavelength	435	445	455	nm
Threshold Current	80		220	mA
Operating Voltage	3.7		5.5	V
Focused Spot Size	.007	0.01		Inch
Beam Divergence Full Angle (1/e ²) //	5	14	25	deg.
Beam Divergence Full Angle (1/e ²) - Perp	30	44	50	deg.

-Above specifications are for reference purposes only and are subject to change. Figures in specifications may contain measurement errors.

Output Conditions

The laser diode output will vary depending on the temperature. While there is a housing and a small heat sink, it is recommended that the diode not be on for long periods of time. The laser diode will also require more current to maintain the same amount of output power as the diode degrades.



Normal Operating Conditions:

The laser diode will operate at its optimal level for thermal performance at 4 amps and an output of 7W. Additional current above this level will lead to possible degradation of the laser output and thermal damage if additional precautions for thermal management are not taken. It is possible to reduce the current on the diode to increase the lifetime of the laser. Running at higher current levels reduce the lifetime of the laser.

Static Precautions

Take precaution when handling laser diodes as they are a static sensitive devices. Static electricity and electrical surges will degrade the performance of the laser diode.

Laser Safety



Laser light can cause damage to eyesight and skin if proper laser safety is not used. Always wear the appropriate laser goggles to prevent any laser light, either directly or indirectly to contact the eye. Never expose skin directly to laser radiation. Focused light will increase the safety hazard.



Laser Parts



Laser Connection

If your laser was part of a driver kit, it will be cabled with a Molex mini fit Jr connector which will connect directly to the laser driver board output.

Connection:

- Connect the laser to the Molex Mini Fit Jr. Header "H3" for laser output.



If you want to connect the laser to another power supply, you can cut the connector off and:

- Connect the laser positive (Red Wire) to the positive output of the laser driver.
- Connect the laser ground (Black Wire) to the negative output of the laser driver.

Cleaning the Lens:

Sometimes soot or smoke can get onto the lens surface when processing, causing decreased levels in output power. Only clean the lens with approved lens wipes or a microfiber cloth. It is suitable to also use alcohol on the wipes or cloth when cleaning.

Focusing Your Laser

Your laser head comes pre-focused to 1/8" below the laser shroud. You can use the provided focusing tool to find the correct distance below the laser. Just simply move the laser head down until it just hits the tool and focus is set.

The laser module has an adjustable lens at the output aperture. Turn clockwise to adjust the lens into the housing and counter clockwise to adjust it out. The high efficiency lens has been designed to provide the smallest spot and highest power density at about 1" (25mm) to 3" (76mm). When we discuss the word "spot", it is actually a very small rectangle that the laser is producing.

Remember to use laser shielding if possible and your safety goggles when performing this exercise.

For details on focusing, visit the following web page here:

<https://jtechphotonics.com/?p=2602>

Mounting

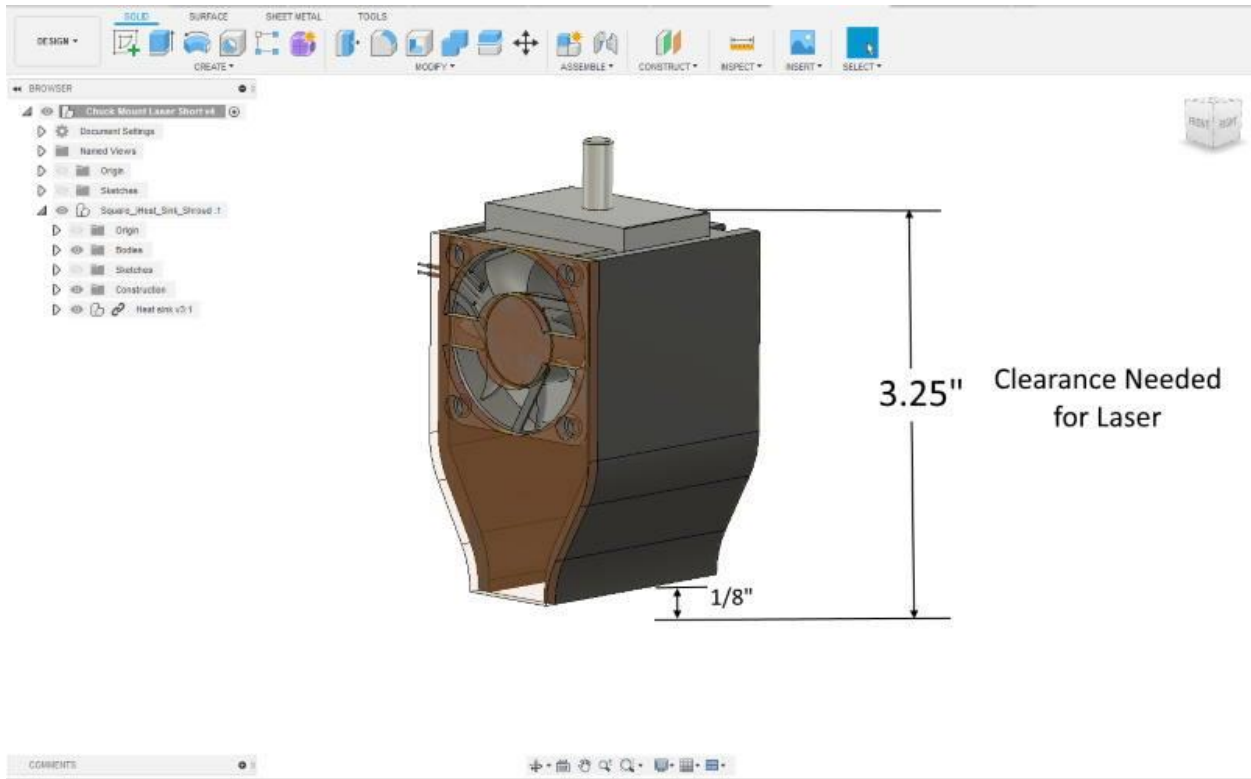
The spindle mount laser is meant to be mounted in the chuck of the router or spindle. Simply put the laser into the chuck and tighten the collet. It is meant for 1/4" collets.

It also has the standard magnetic mounting system for all of the magnetic mounts available from J Tech Photonics.



Clearance

The laser requires 3.25” of clearance for the laser to work properly. Make sure your Z axis has enough clearance for proper operation including your work piece.



Disclaimer

By purchasing this component laser diode you are agreeing to the following.

- You are over 18 years of age .
- You understand that these components that are mentioned above are dangerous when not properly assembled into a finished product.
- You will use these as components and properly incorporate them into a finished product.
- You will use these diodes/modules in a safe and responsible manner and for a legal purpose.
- You are legally responsible for the use of these components, improper use of these components or their end products.
- You are legally responsible for any injury to anybody resulting from the use of or assembly of these components or their finished products.
- You Accept this diode/module as a COMPONENT for integration in a system of YOUR OWN design and will be legally responsible from any and all LIABILITIES. These Diodes and Modules are sold solely as a component for incorporation into the customer's end products. Therefore, this diode/module is exempt from compliance with the appropriate requirements of FDA 21CFR, section 1040.10 and 1040.11 for complete products.

