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NLD45500G

- Blue Laser Diode
- 442 nm, 5 W
- Multi Transvers Mode
- TO9 package, Flat Window
- Integrated ESD Protection



Description

NLD45500G is a direct emitting high power blue laser diode in 9 mm TO-Can without monitor photodiode. It features multi transverse mode emission with stable performance and long life time. **NLD45500G** comes with an **integrated Zener diode** for ESD protection, and is RoHS compliant.

Maximum Rating ($T_{CASE} = 25^{\circ}C$)

Parameter	Symbol	Values		Unit
		Min.	Max.	
Operating Current	I_F		3.5	mA
Operating Temperature	T_{CASE}	0	+ 65	$^{\circ}C$
Storage Temperature	T_{STG}	- 40	+ 85	$^{\circ}C$
Reverse Current	I_R		85	mA



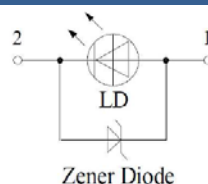
Electro-Optical Characteristics ($T_{CASE} = 25^{\circ}C, I_F = 3.0A$)

Parameter	Symbol	Values			Unit	
		Min.	Typ.	Max.		
Dominant Wavelength	λ_P	438	442	452	nm	
Optical Output Power	P_O		5.0		W	
Operating Voltage	V_F	3.6		4.8	V	
Threshold Current	I_{th}	250		450	mA	
Slope Efficiency	η		1.8		W/A	
Polarization	P_{GR}		100:1			
Beam Divergence ($1/e^2$)	parallel	$\Theta_{ }$	5	10	25	deg.
	perpendicular	Θ_{\perp}	35	52	26	deg.
Beam Pointing Accuracy	$\Delta\Theta_{\perp}$		-3		+3	deg.

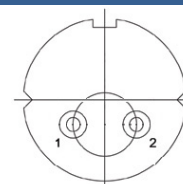
Electrical Connection

Pin Configuration

Pin #	Function
Pin 1	LD Anode
Pin 2	LD Cathode

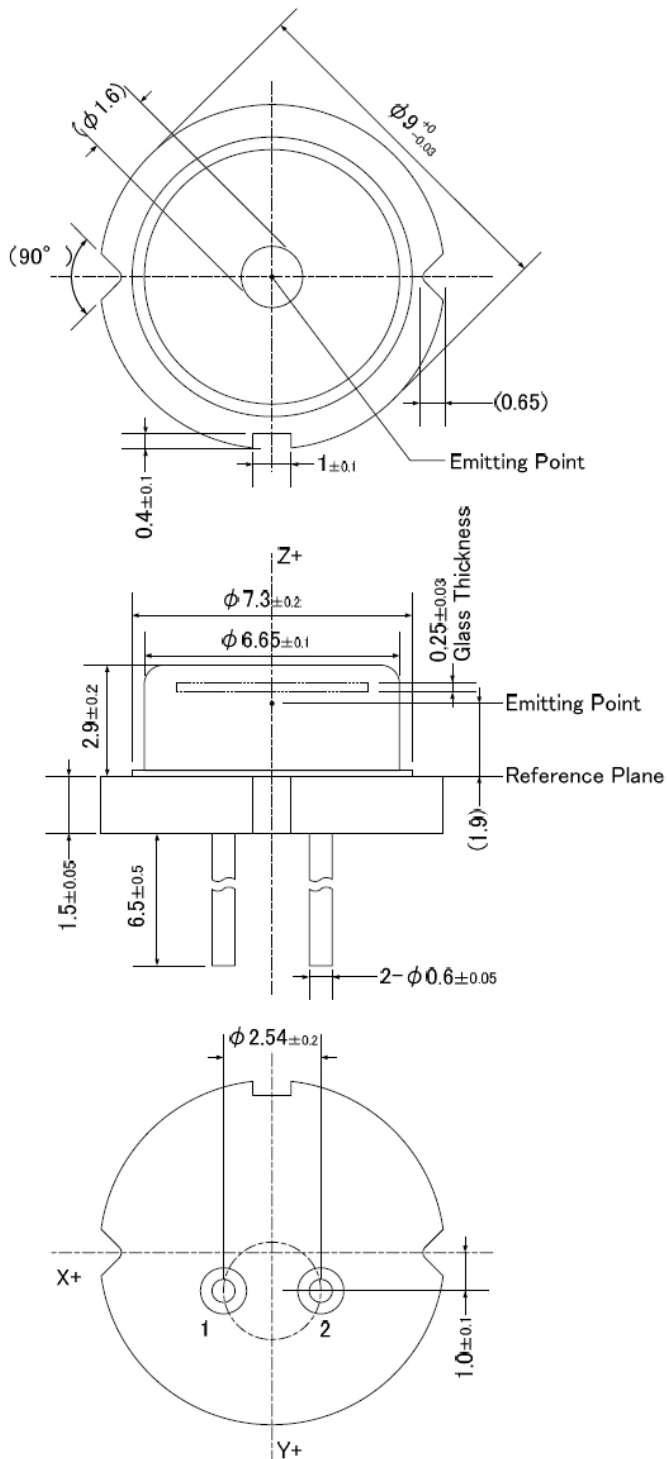


Bottom View





Outline Dimensions

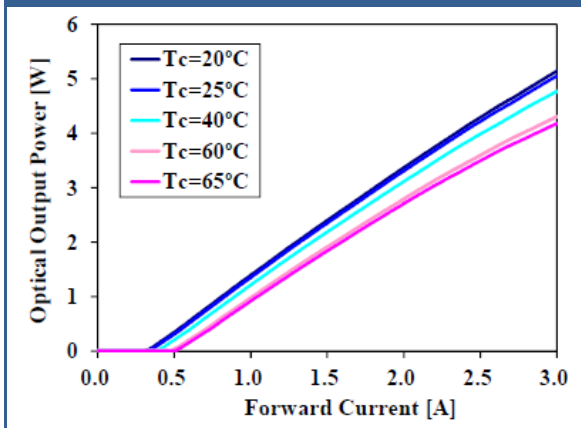


All dimensions in mm

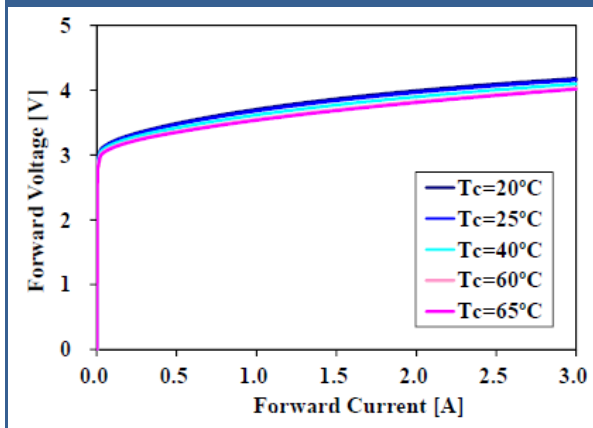


Performance Characteristics

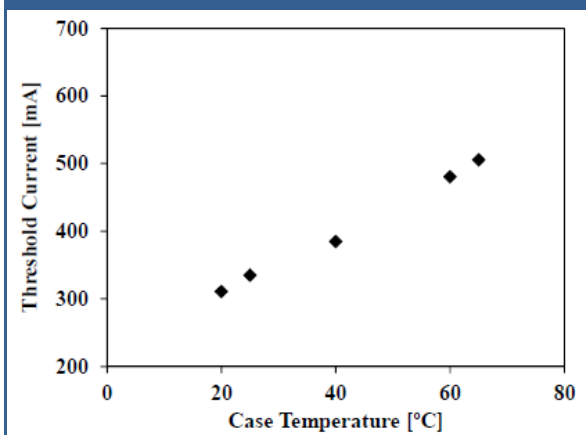
Optical Output Power vs. Operating Current



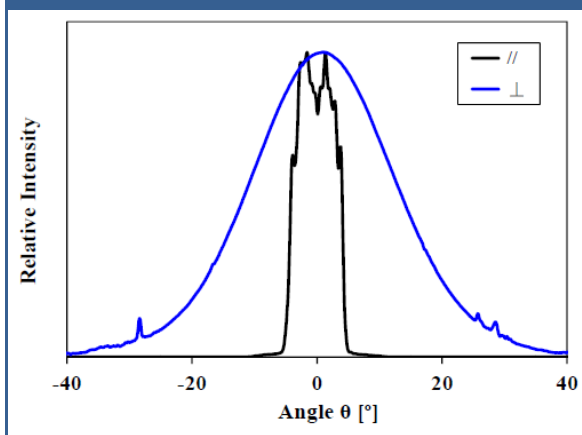
Operating Voltage vs. Operating Current



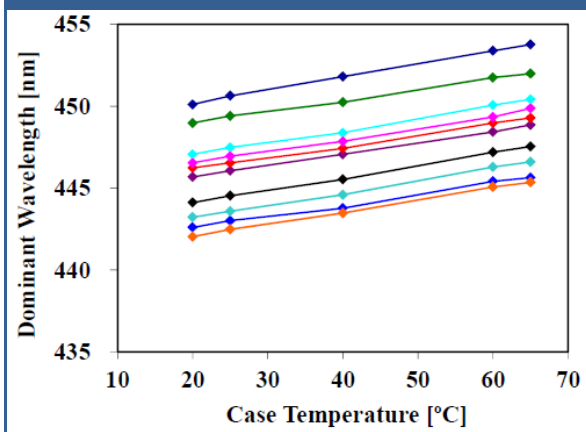
Threshold Current vs. Temperature



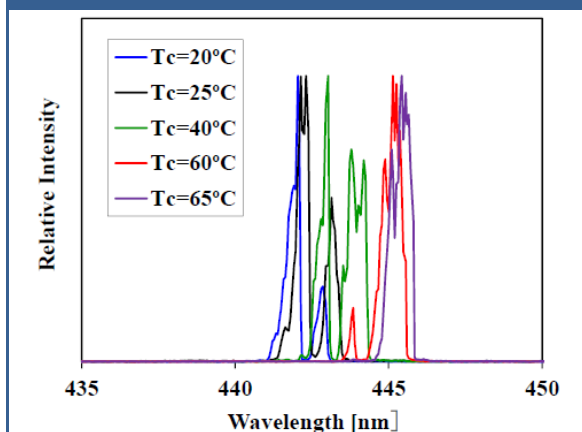
Far Field Pattern (example)



Dominant Wavelength vs. Temperature

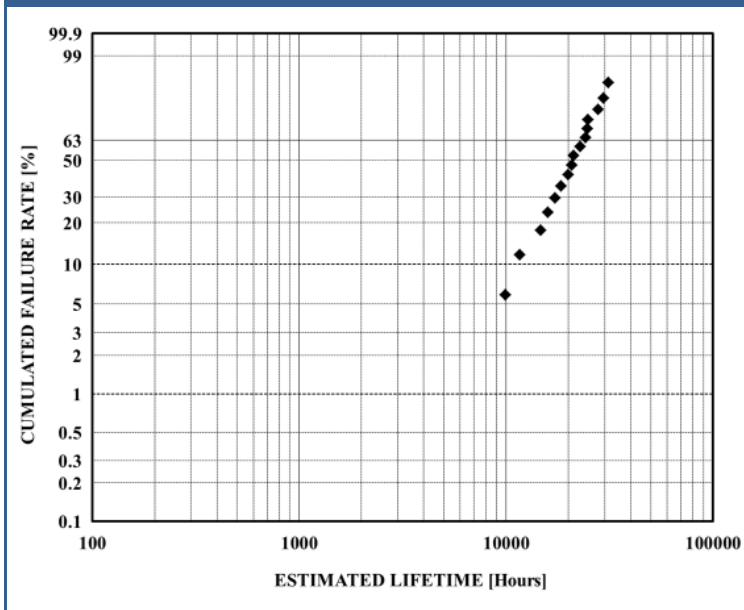


Relative Intensity vs. Wavelength (example)





Life Time Estimation

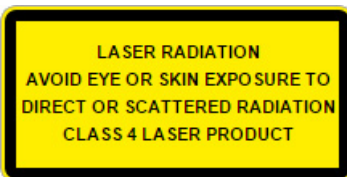


Precautions

Safety

Caution: Laser light emitted from any laser diode may be **harmful to the human eye**. Avoid looking directly into the laser diode's aperture when the diode is in operation.

Note: The use of optical lenses with this laser diode will increase eye hazard



ESD caution

Always do handle laser diodes with extreme care to **prevent electrostatic discharge**, the primary cause of unexpected diode failure. To prevent ESD related failures, it is strongly advised to always **wearing wrist straps**, and **grounding all applicable work surfaces**, when handling laser diodes

Operating Considerations

It is strongly advised to only operate this laser diode with a current source. The current of a laser diode is an exponential function of the voltage across it. **Usage of current regulated drive circuits is mandatory.** Laser diodes may be damaged by excessive drive currents or switching transients

It is advised, to operate the laser diode at the lowest temperature possible, and to never exceed maximum specifications as outlined in the datasheet. Device degradation will accelerate with increased temperature. **Proper heat sinking will greatly enhance stability and life time of the laser diode**