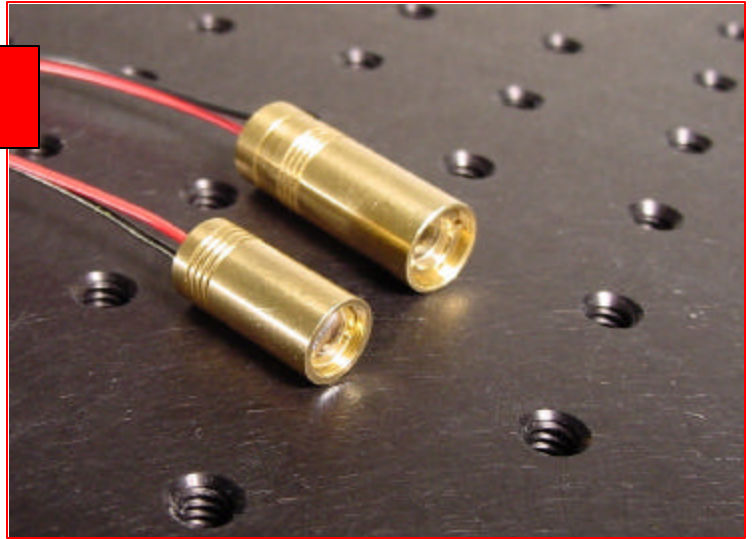


MiniLaseCF™

Red Diode Laser Modules

Featuring

Collimated / Focused Circular Beam



Features

The MiniLaseCF™ Family of lasers from Blue Sky Research has been specifically designed to offer superior beam qualities in a compact package for OEM applications. The MiniLaseCF™ products combine Blue Sky Research's VPS (virtual point source) lasers with high quality optics, solid packages and laser drive electronics. The circular, diffraction-limited gaussian beam from MiniLaseCF™ products, either well collimated or focused at the chosen distance, is much better than the beam from a regular diode laser module and easier to be integrated with other optics. The built-in automatic power stabilization (APC) function provides high stability and low noise at the same time. All devices include integrated on/off LED indicators to visually confirm module operation and simplify OEM field service operations.

Performance

MiniLaseCF™ products utilize the patented μ lens™ technology to gain distinct performance advantages over traditional LD based modules. Starting from a regular laser diode with elliptical beam, the technology creates a virtual point source (VPS) with circular divergence beam. A high-quality aspherical lens is then used to collimate or focus the beam, which keeps the diffraction-limited quality. A good Gaussian profile ($M2 < 1.3$) and low wavefront aberrations enable the beam from the MiniLaseCF to be collimated better or be focused into a smaller, more visible spot/target. The built-in APC function keeps the short-term power stability for the MiniLase products less than 1.0% at 25°C. The noise is kept low at <0.5% within 20Hz - 20MHz in short term. Properly used with a heat sink, modules have typical lifetimes, (MTTF, Mean Time to Failure) of +10,000 hrs.

Flexibility of the design is a key concept for the MiniLaseCF™ products. A series of standard products are offered as well as a great possibility of customer-specified wavelength, power, beam size or focused distance. Please consult Blue Sky Research for more details on the custom MiniLaseCF™ laser module.

Options

- Wavelength of 635nm, 650nm, 670nm, 785nm and custom wavelength available
- Collimated beam outputs of 1mm, 1.5mm, 2.5mm, or 4.0mm
- Focused beam can be obtained from 1.0mm beam and 4.0mm beam. The focus distances range from 25mm to infinity for the 1.0mm beam while 180mm to infinity for 4.0mm beam
- Power connection is available via a ruggedized cable, wire leads or laser diode pins
- User configurable output power



MiniLaseCF™

Typical Specifications

MiniLaseCF™ Series

Wavelength (nm)	Power (mW)	Beam Characteristics					Package Size		
		Profile	Size [†] (mm)	Focus Distance (mm)	Minimal Spot Size @ Focus* (1/e ² , mm)	Divergence Full Angle (mrad)	Diameter (mm)	Length (mm)	Drawing
635	1, 5, 10, 30	Collimated	1.0	NA	NA	<1.2	9.5	20	A
			1.5	NA	NA	<1.0			
			2.5	NA	NA	<0.8			
635	1, 5, 10, 30	Collimated	4.0	NA	NA	<0.5	11	30	B
635	1, 5, 10, 30	Focused	1.0	25 to Inf	0.025	NA	9.5	20	A
635	1, 5, 10, 30	Focused	4.0	180 to Inf	0.040	NA	11	30	B
650	5	Collimated	1.0	NA	NA	<1.2	9.5	20	A
			1.5	NA	NA	<1.0			
			2.5	NA	NA	<0.8			
650	5	Collimated	4.0	NA	NA	<0.5	11	30	B
650	5	Focused	1.0	25 to Inf	0.025	NA	9.5	20	A
650	5	Focused	4.0	180 to Inf	0.040	NA	11	30	B
670	5	Collimated	1.0	NA	NA	<1.2	9.5	20	A
			1.5	NA	NA	<1.0			
			2.5	NA	NA	<0.8			
670	5, 10	Collimated	4.0	NA	NA	<0.5	11	30	B
670	5	Focused	1.0	25 to Inf	0.025	NA	9.5	20	A
670	5, 10	Focused	4.0	180 to Inf	0.040	NA	11	30	B
785	20, 60	Collimated	1.0	NA	NA	<1.2	9.5	20	A
			1.5	NA	NA	<1.0			
			2.5	NA	NA	<0.8			
785	20, 40, 60	Collimated	4.0	NA	NA	<0.5	11	30	B
785	20, 60	Focused	1.0	25 to Inf	0.025	NA	9.5	20	A
785	20, 40, 60	Focused	4.0	180 to Inf	0.040	NA	11	30	B

[†] Beam size is the diameter measured as 1/e² aperture at the exit aperture of modules.

* The minimal spot sizes happen at the 25mm and 180mm focus distance separately for package A and B. Increasing the focus distance will increase the spot size.

Other spot sizes and focus distances are available. Please contact BSR with any custom requests.

Contact Information:

BLUE Sky Research * 1537 Centre Pointe Drive * Milpitas, CA 95035 * (408) 941-6068 * FAX (408) 941 – 6069
www.blueskyresearch.com * email: Sales @blueskyresearch.com



MiniLaseCF™

Optical Characteristics (Collimated & Focused Beam)

Spectral Line width	<0.5nm typical
Beam Aspect Ratio	<1.20
Polarization	>100:1
Power Stability (25°C)	2hr, <1%
Beam Diameter Tolerance	+/- 15%
M ² Value	<1.3
Aberrations	<0.25 λ
Beam Pointing Stability	<50μrad
Pointing accuracy	<25mrad
Centricity	<0.25mm

Electrical Specifications

Input Power supply	3.3Vdc +/- 10%
Operating current (I _{op} @ 25°C)	
Pout (635nm) = 5 or 10mW	75mA
Pout (650nm) = 5	60mA
Pout (670nm) = 5 or 10mW	80mA
Pout (635nm) = 30mW	120mA
Pout (785nm) = 30mW	120mA
LED	Indicates "on/off" state
Case	Positive

Environmental Specifications

Cooling:	Convection *
Operating Temp:	0-50 °C
Storage Temp:	-10 to 85°C

*Heat sinking recommended for all and mandatory for laser with 10mW and more power

Mechanical Specifications:

All the housings are made with brass. Please refer to the drawings next page.

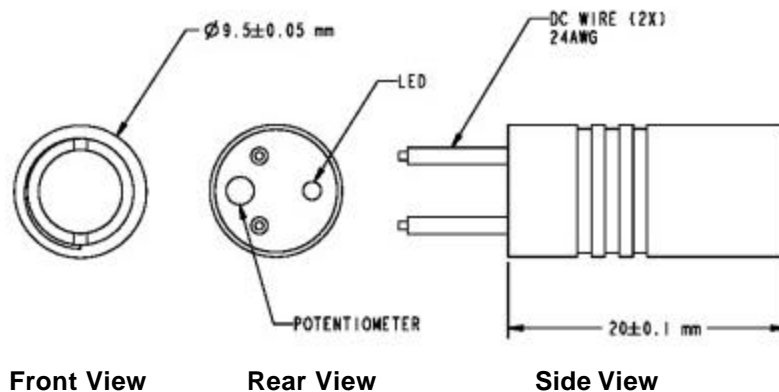
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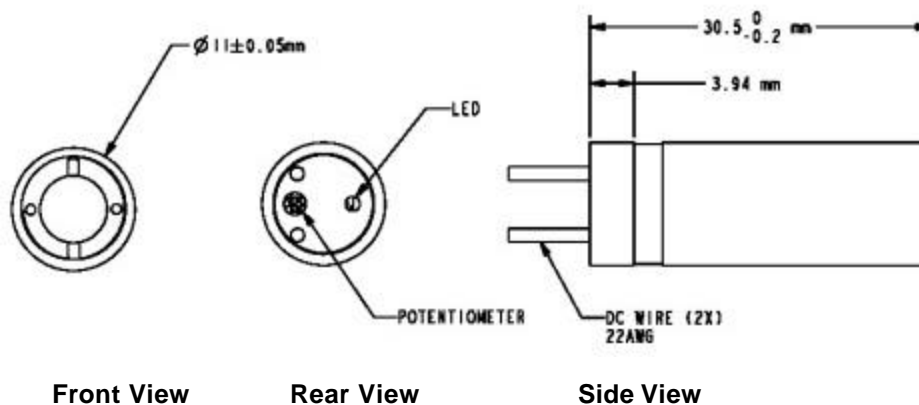


MiniLaseCF™

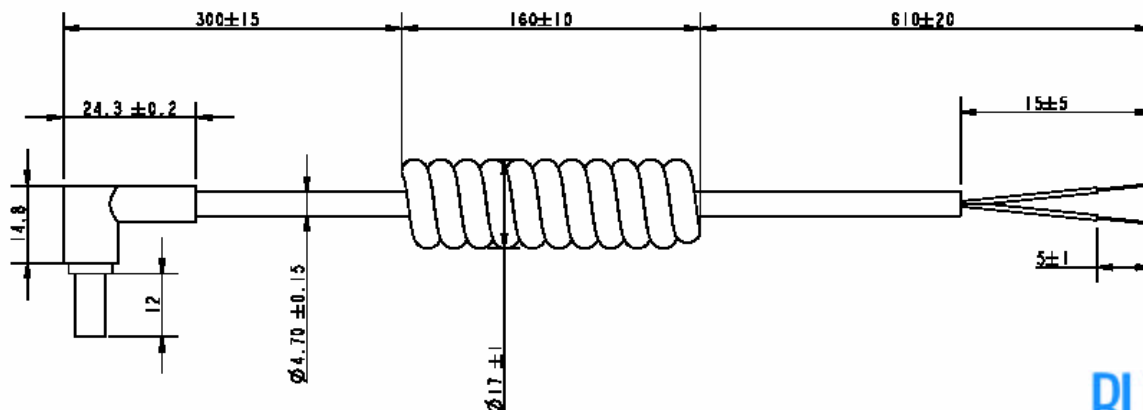
Package A:



Package B:



Rugged cable:



* Not to scale and center plug of connector is positive voltage.

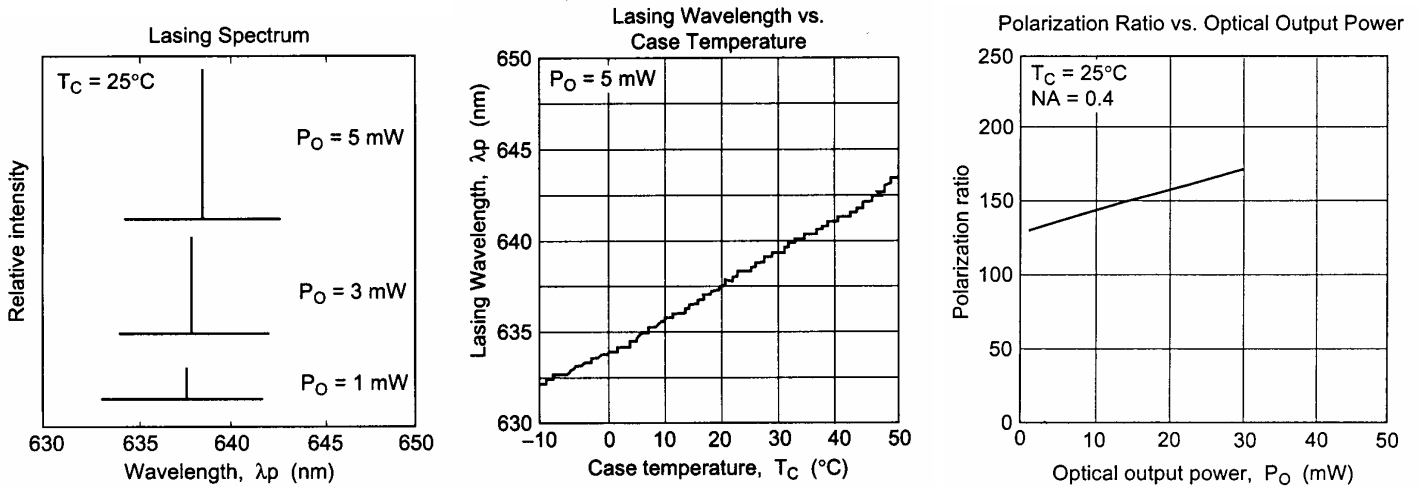
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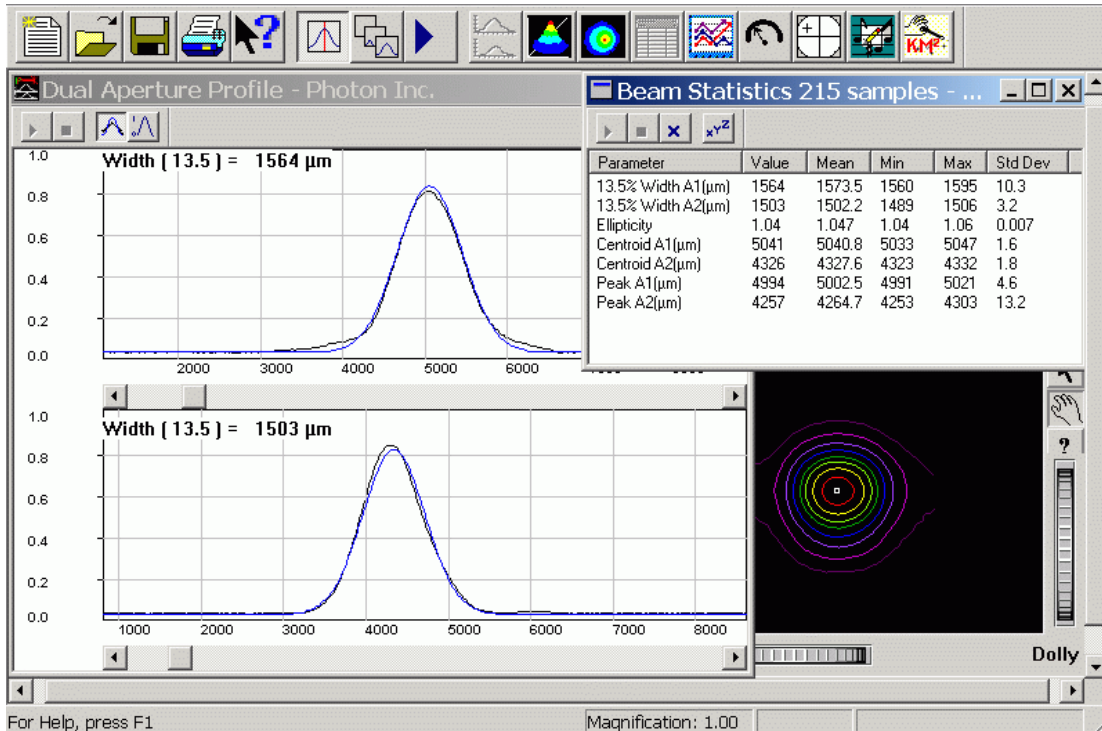
BLUE SKY
RESEARCH

MiniLaseCF™

Typical Performance Plots ($T_A = 25^\circ\text{C}$)



Beam profile (relative intensity) of MiniLaseCF™ in far field pattern overlaid with Gaussian wave shape.

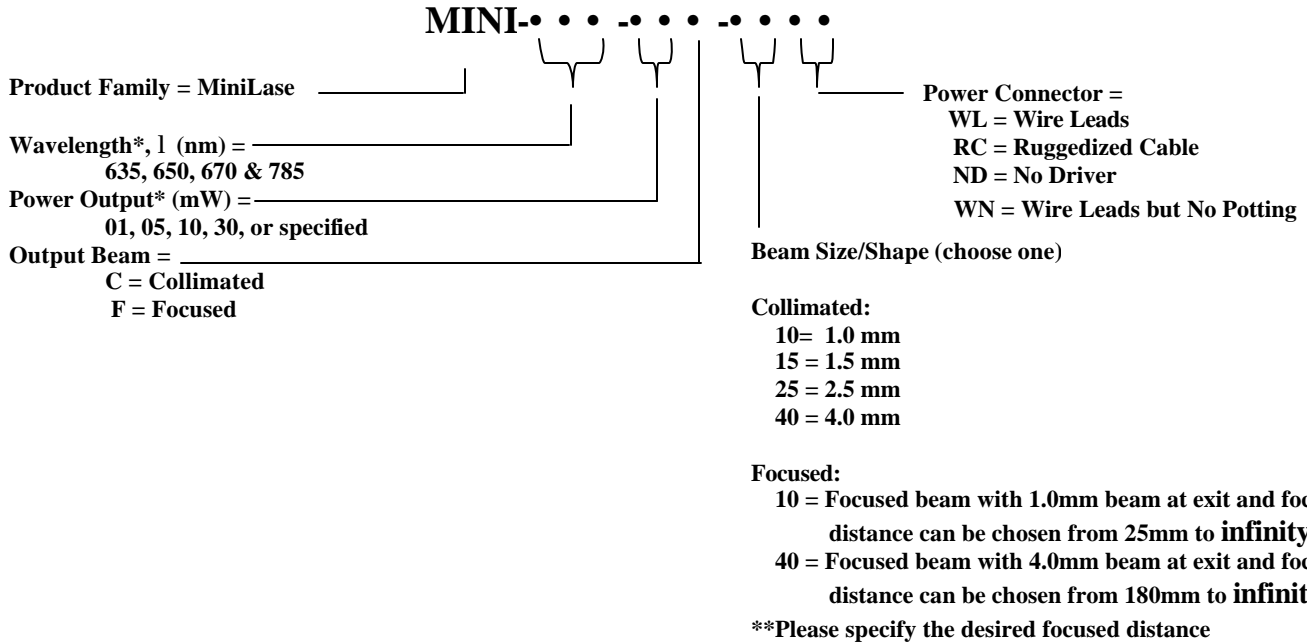


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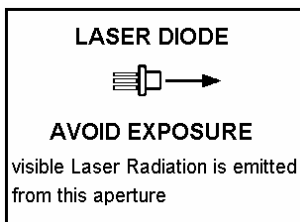
MiniLase CF™

Ordering Information



Example: Mini-635-30C-15WL, Minilase module with a 635nm laser diode, 30 mW output power, 1.5 mm collimated beam, and wire power leads.

* See Table on page 2 for available wavelength/power combinations. For other wavelength and power please contact with Blue Sky Research.



This component does not comply with the Federal Regulations (21 CFR Subchapter1) as administered by the Center for Devices and Radiological health. Purchaser acknowledges that his/her products must comply with these regulations before they can be sold to a customer. The output light from laser diodes is harmful to a human body even if it is invisible. Avoid looking at the output light of a FiberTEC directly or even indirectly through a lens during operation. Observance of operation should be through a TV camera or related equipment. Refer to IEC 825-1 and 21 CFR 1040.10-1040.11 as a radiation safety standard for laser products.

Blue Sky Research follows a policy of continuous improvement. Specifications are subject to change without notice.

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