Diode Laser Components

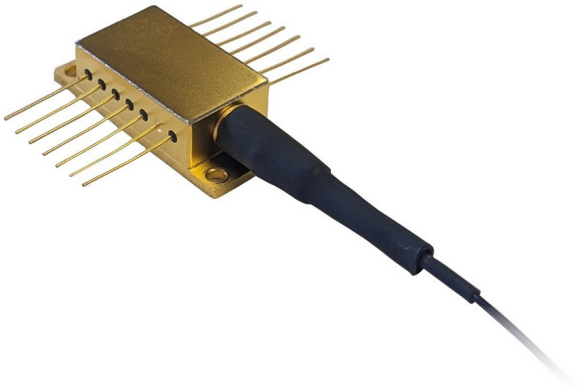
SureLock™

Raman Butterfly Laser Diodes

Coherent's Raman Butterfly Lasers are wavelength-stabilized, spectrally narrowed, high-power, compact laser diodes available in both free-space and fiber-coupled outputs designed specifically for incorporation into Raman spectroscopy systems. The highly integrated opto-mechanical package allows for either fiber coupled or free space solution with maximum stability for building affordable, portable instrument-quality solutions.

All SureLock™ Series lasers feature the PowerLocker® Volume Holographic Grating (VHG) for precise, ultra-stable center wavelengths and narrow spectral bandwidth. This technology minimizes wavelength shifts due to temperature changes, ensuring consistent optical performance across the entire power range, from 0% to 100%, making these lasers highly reliable for demanding applications. The narrowed spectral bandwidth, low power consumption, and broad operating temperature characteristics deliver affordable portable instrument quality performance

Wavelength availability options cover a wide wavelength range. Customization options are available to meet specific customer requirements.



FEATURES

- Industry standard 14 pin butterfly to ease integration
- Exceptionally narrow spectral bandwidth, typically 0.08 nm, ideal for high-resolution Raman spectroscopy
- Superior wavelength stability of <0.010 nm/°C of wavelength vs temperature dependence across a large stabilized temperature range to ensure consistent performance
- Stabilized from 0%-100% allowing flexible power usage options
- Availability of custom wavelengths and tolerances to meet specific Raman application requirements
- Standard 0.22NA 105 µm multimode fiber delivers up to 600mW and free space output allows up to 800 mW for robust Raman signal generation

APPLICATIONS

- Raman Spectroscopy
- Metrology
- Bioinstrumentation
- Sensing
- Analytical Instrumentation

COHERENT

Specifications[1]	Fiber Coupled				
	638 nm	785 nm	830 nm	976 nm	1064 nm
SKU	115-ER263-035	115-ER263-019	115-ER263-020	115-ER263-021	115-ER263-022
Output Power (mW) Maximum	350	600	600	1000	600
Center Wavelength[2] (nm) Minimum Typical Maximum	637.5 638 638.5	784.5 785 785.5	829.5 830 830.5	975.5 976 976.5	1063.8 1064.2 1064.6
Spectral Bandwidth (nm) Typical Maximum[3]	0.07 0.15	0.08 0.15	0.08 0.15	0.08 0.15	0.09 0.15
Spectral Bandwidth (cm^{-1}) Typical Maximum[3]	1.7 3.7	1.2 2.4	1.2 2.2	0.8 1.6	0.8 1.3
Sidemode Suppression Ratio (SMSR) (dB) Minimum	40				
Polarization Typical	-	-	-	-	-
Beam Divergence (mrad) (V x H) Typical	-	-	-	-	-
Fiber Type Length (m) (min.) Connector Fiber Jacket	1 FC/PC 0.22NA 105 µm 900 µm Tubing				
Operating Requirements					
Threshold Current (mA) Typical	325	325	325	250	250
Operating Current Typical Maximum	800 1000	1100 1500	1100 1500	1100 1500	1200 1600
Operating Voltage (VDC) Typical Maximum	1.9 2.2	1.9 2.2	1.9 2.2	1.9 2.2	2.1 2.5
Central Stabilized Temperature (°C) Minimum Typical Maximum	20 28 40				
Stabilized Temperature Range (°C) Minimum	10				
TEC Current (A) Maximum	2				
TEC Voltage (V) Maximum	4				
Thermistor	10K NTC Beta 3450				
Storage Temp. (°C) Minimum Maximum	-20 80				

1. All specifications are at rated power with a case temperature within 25°C unless otherwise noted. Temperature is internal setpoint TEC temperature.
2. Wavelengths specified are vacuum referenced. Ex 632.991 nm vacuum referenced is equivalent to 632.816 nm standard air referenced for HeNe
3. Measurement system is resolution limited. Actual results may be better.

Specifications[1]	Free Space				
	638 nm	785 nm	830 nm	976 nm	1064 nm
SKU	115-ER263-037	115-ER263-029	115-ER263-033	115-ER263-027	115-ER263-028
Output Power (mW)					
Maximum	380	800	800	800	800
Center Wavelength[2] (nm)					
Minimum	637.5	784.5	829.5	975.5	1063.8
Typical	638	785	830	976	1064.2
Maximum	638.5	785.5	830.5	976.5	1064.6
Spectral Bandwidth (nm)					
Typical	0.07	0.08	0.08	0.08	0.09
Maximum	0.15	0.15	0.15	0.15	0.15
Spectral Bandwidth (cm^{-1})					
Typical	1.7	1.2	1.2	0.8	0.8
Maximum[3]	3.7	2.4	2.2	1.6	1.3
Sidemode Suppression Ratio (SMSR) (dB)					
Minimum	40				
Polarization					
Typical	-	100:1	100:1	100:1	100:1
Beam Divergence (mrad) (V x H)					
Typical	3x11	3x25	3x25	3x25	3x25
Operating Requirements					
Threshold Current (mA)					
Typical	325	325	325	250	250
Operating Current					
Typical	800	1100	1100	1100	1200
Maximum	1000	1500	1500	1500	1600
Operating Voltage (VDC)					
Typical	1.9	1.9	1.9	1.9	2.1
Maximum	2.2	2.2	2.2	2.2	2.5
Central Stabilized Temperature (°C)					
Minimum	20				
Typical	28				
Maximum	40				
Stabilized Temperature Range (°C)					
Minimum	10				
TEC Current (A)					
Maximum	2				
TEC Voltage (V)					
Maximum	4				
Thermistor	10K NTC Beta 3450				
Storage Temp. (°C)					
Minimum	-20				
Maximum	80				

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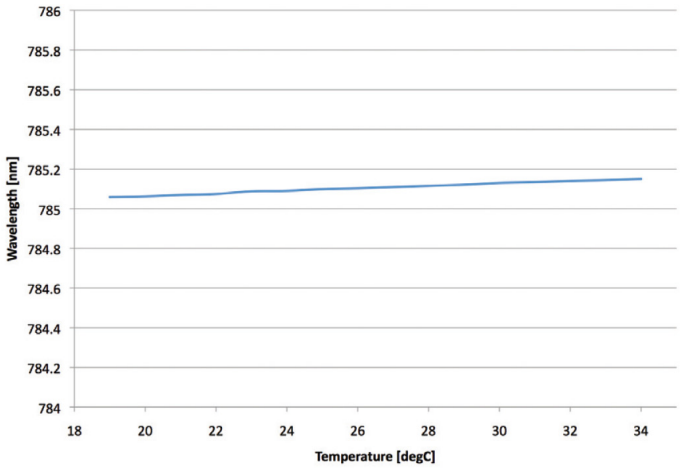
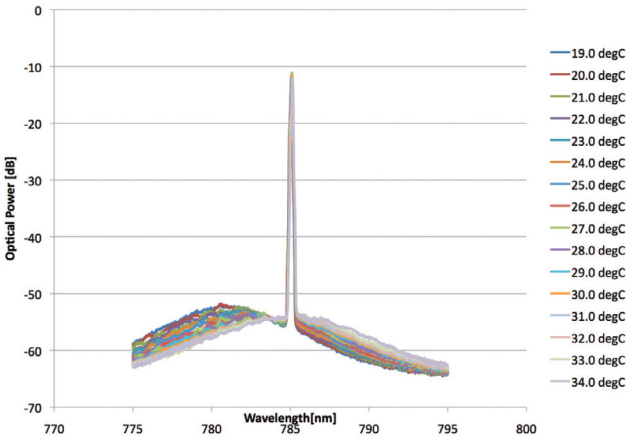
Typical Performance Data

Wavelength vs Temperature Dependency
(785 nm example)



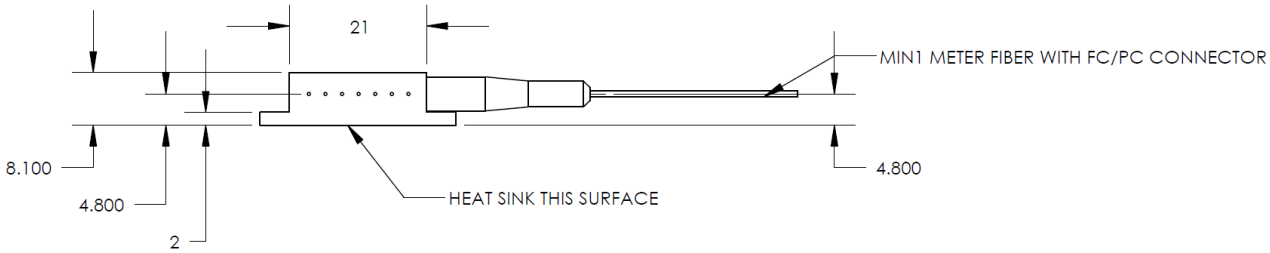
Optical Spectrum
(785 nm example)



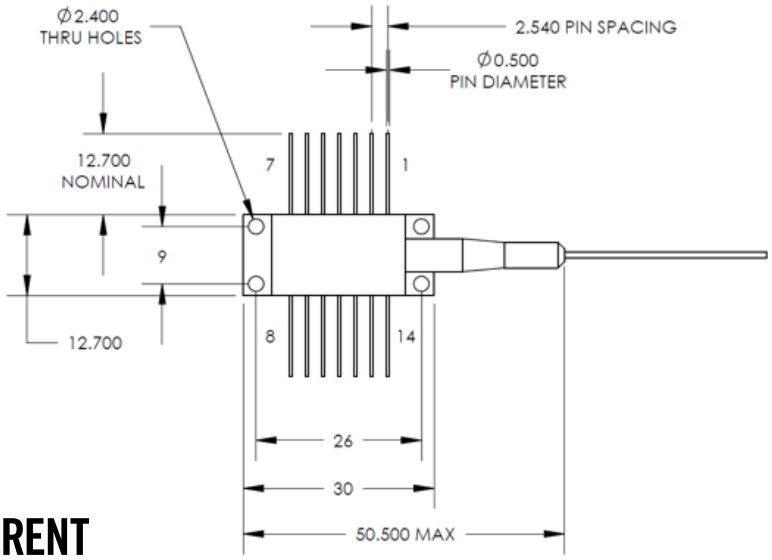
Mechanical Specifications

Fiber Coupled

Side View



Top View

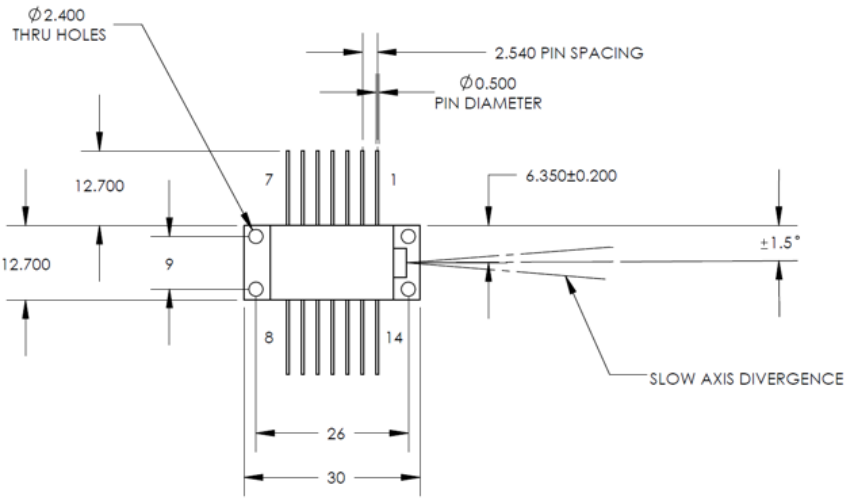


PIN	Description
1	TEC+
2	Thermistor
3	PD Anode
4	PD Cathode
5	Thermistor
6	NC
7	NC
8	NC
9	Laser Cathode
10	Laser Anode
11	Laser Cathode
12	NC
13	Case Ground
14	TEC-

Mechanical Specifications

Free Space

Top View



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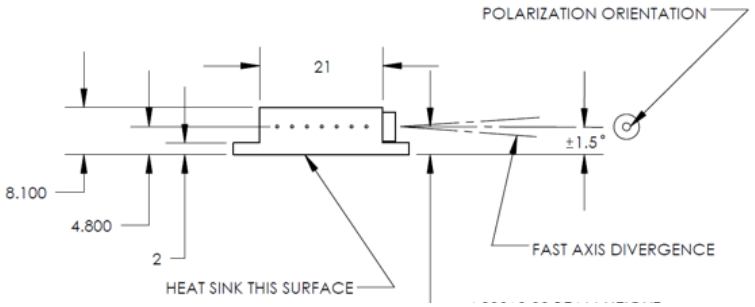
Side View



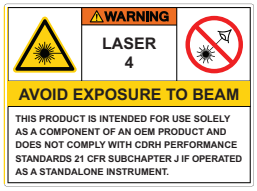
Warnings

Electrostatic Discharge (ESD): Laser diodes are highly sensitive to electrostatic discharge (ESD) and voltage transients. Proper ESD procedures must be followed when handling laser diodes. Laser diode are delivered in a conductive protective container. When not in use, the laser anode and cathode electrical contacts should be shorted together to prevent ESD damage. Create a static free work environment. All personnel and tools that come into contact with the laser are continuously grounded, such as by using a grounding wrist strap. Electrostatic discharges could create latent damage that shorten lifetime of a diode.

Laser Eye Safety: These diodes are intended for use in OEM applications. Use protective eyewear and follow local regulatory requirements for use of laser diodes.

Environmental Conditions: For some highly sensitive applications, environment and ambient conditions need to be considered. Air movement and ambient temperature swings may affect performance in those applications.

Mounting Considerations: Highly alignment sensitive components are mounted inside and diode must be mounted stress free on a flat surface. Thermal dissipation path is through the mounting surface. Use of thermal conductive paste recommended. If thermal dissipation is insufficient, thermal runaway may occur and/or permanent damage to the unit.



For more information
www.coherent.com