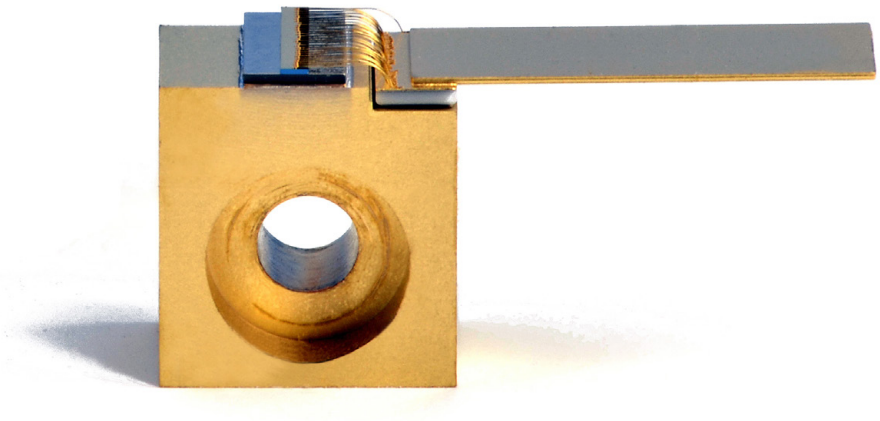
HIGH-POWER GaSb-BASED MIR LASERS

1850 to 2300 nm, 0.5 to 1.2 W, Passive Cooling

Coherent offers a complete mid-infrared laser product line in the entire spectral range from 1800 nm to 2300 nm, based on the unique know-how in mid-infrared chip technology. Applications are in the fields of medical, illumination, materials processing, direct infrared counter-measure (DIRCM) and pumping of mid-infrared solid-state and disc lasers.
The broad-area, gain-guided lasers are based on the (AlGaIn)(AsSb) material system, epitaxially grown on GaSb substrates by multi-wafer MBE.
The single emitters are mounted onto C-Mounts and feature high output powers in combination with high wall-plug efficiencies as well as a fast-axis beam divergence as low as 44° FWHM due to an innovative waveguide design.



FEATURES

- Nominal CW output up to 1.2 W
- Highly efficient and reliable
- Divergence in the fast direction of 44° (FWHM)
- Emitter stripe width of 100 µm or 150 µm
- C-Mount or customized packaging
- Passive cooling
- Also available as unmounted chips or bars

APPLICATIONS

- Dermatological treatments
- Protein coagulation, laser surgery,
- Medical diagnostics and sensing, blood and glucose
- Infrared countermeasure
- Direct pumping of solid-state or fiber lasers for the 2-4 µm regime
- Transparent plastic welding without additives
- Wind velocity, atmospheric gases, trace gas analysis
- Rapid laser drying, aqueous varnish processing

COHERENT

Optical Parameters[1]	BA-1870-0800-SE	BA-1870-1000-SE
CW - Nominal Output Power (mW)	800	1000
Center Wavelength (@ 20 °C at 3A cw)[1] (nm)	1870	1870
Center Wavelength Variation (@ 20 °C) (nm)	±20	±20
Wavelength Temperature Shift with Current (nm/A)	8	12
Wavelength Temperature Coefficient (nm/K)	1.2	
Divergence Parallel (FWHM) (°C)	≤14	
Divergence Perpendicular (FWHM) (°C)	≤47	
Mode	Multimode	
Design Parameters		
Stripe Width (µm)	100	150
Cavity Length (µm)	1500	1500
Chip Width (µm)	500	
Emitter Height (µm)	130 to 140	
Reflectivity Front Facet (%)	3	
Reflectivity Rear Facet (%)	≥95	
Electrical Parameters		
Typical Operation Current (A)	3.2	3.9
Maximum Operation Current (A)	4.0	4.5
Typical Efficiency at Operation Current (%)	19	15
Maximum Operation Voltage (V)	1.3	1.8
Polarization	TE	
Thermal Parameters		
Operating Temperature (°C)	+15 to +40	
Recommended Heat Sink Temperature (°C)	20	
Storage Temperature (°C)	-20 to +60	
Operating and Storage Conditions	Non-Condensing Atmosphere	
Other Parameters		
Heat Sink Type	C-Mount	
Cathode (-)	Wire Flag, see also packaging drawings	
Anode (+)	Base Plate, see also packaging drawings	
RoHS 2002/95EC Compliant	Yes	

Notes:
1. Other wavelength on request

Safety
This is a laser class IV product according to IEC -Standard International Commission (Publication 825, 1993). The laser light emitted from this laser diode is invisible and/or visible and is harmful to the human eye. The safety regulations for eye and personell protection included in the IEC Standard must be observed to avoid any harm to operating personell. Avoid direct exposure and looking into the laser diode, into the collimated beam or into the fiber when it is linked to the module.

Storage and Shipping
Store and ship the diode laser with shortened electrical contacts in a clean and dry atmosphere and in a temperture range of 0°C to 60°C.

Operation and Handling
Diode lasers are extremely sensitive to over-voltage. Take extreme precaution to avoid electrostatic charges. Precautions against spiking during switching on and off the power supply must be assured. Correct polarity of power supply must be assured.
During handling personell has to wear wrist straps. Grounded work surfaces and additional antistatic techniques are mandatory during handling. Device failure and safety hazard are caused by operation in excess of maximum ratings. Exceeding output
power and temperature specification will result in accelerated device ageing.

Do not mount via any paste-like media!

Optical Parameters[1]	BA-1908-0800-SE	BA-1908-1000-SE
CW - Nominal Output Power (mW)	800	1000
Center Wavelength (@ 20 °C at 3A cw)[1] (nm)	1908	1908
Center Wavelength Variation (@ 20 °C) (nm)	±20	±20
Wavelength Temperature Shift with Current (nm/A)	8	12
Wavelength Temperature Coefficient (nm/K)	1.2	
Divergence Parallel (FWHM) (°C)	≤14	
Divergence Perpendicular (FWHM) (°C)	≤47	
Mode	Multimode	
Design Parameters		
Stripe Width (µm)	100	150
Cavity Length (µm)	1500	1500
Chip Width (µm)	500	
Emitter Height (µm)	130 to 140	
Reflectivity Front Facet (%)	3	
Reflectivity Rear Facet (%)	≥95	
Electrical Parameters		
Typical Operation Current (A)	3.5	3.9
Maximum Operation Current (A)	4.0	4.5
Typical Efficiency at Operation Current (%)	21	18
Maximum Operation Voltage (V)	1.3	1.6
Polarization	TE	
Thermal Parameters		
Operating Temperature (°C)	+15 to +40	
Recommended Heat Sink Temperature (°C)	20	
Storage Temperature (°C)	-20 to +60	
Operating and Storage Conditions	Non-Condensing Atmosphere	
Other Parameters		
Heat Sink Type	C-Mount	
Cathode (-)	Wire Flag, see also packaging drawings	
Anode (+)	Base Plate, see also packaging drawings	
RoHS 2002/95EC Compliant	Yes	

Notes:
1. Other wavelength on request

Safety
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Storage and Shipping
Store and ship the diode laser with shortened electrical contacts in a clean and dry atmosphere and in a temperture range of 0°C to 60°C.

Operation and Handling
Diode lasers are extremely sensitive to over-voltage. Take extreme precaution to avoid electrostatic charges. Precautions against spiking during switching on and off the power supply must be assured. Correct polarity of power supply must be assured.
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power and temperature specification will result in accelerated device ageing.

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Optical Parameters[1]	BA-1940-0900-SE	BA-1940-1200-SE
CW - Nominal Output Power (mW)	900	1200
Center Wavelength (@ 20 °C at 3A cw)[1] (nm)	1940	1940
Center Wavelength Variation (@ 20 °C) (nm)	±20	±20
Wavelength Temperature Shift with Current (nm/A)	8	8
Wavelength Temperature Coefficient (nm/K)	1.2	
Divergence Parallel (FWHM) (°C)	≤14	
Divergence Perpendicular (FWHM) (°C)	≤47	
Mode	Multimode	
Design Parameters		
Stripe Width (µm)	100	150
Cavity Length (µm)	1500	1500
Chip Width (µm)	500	
Emitter Height (µm)	130 to 140	
Reflectivity Front Facet (%)	3	
Reflectivity Rear Facet (%)	≥95	
Electrical Parameters		
Typical Operation Current (A)	3.3	3.9
Maximum Operation Current (A)	4.0	4.5
Typical Efficiency at Operation Current (%)	25	20
Maximum Operation Voltage (V)	1.2	1.6
Polarization	TE	
Thermal Parameters		
Operating Temperature (°C)	+15 to +40	
Recommended Heat Sink Temperature (°C)	20	
Storage Temperature (°C)	-20 to +60	
Operating and Storage Conditions	Non-Condensing Atmosphere	
Other Parameters		
Heat Sink Type	C-Mount	
Cathode (-)	Wire Flag, see also packaging drawings	
Anode (+)	Base Plate, see also packaging drawings	
RoHS 2002/95EC Compliant	Yes	

Notes:
1. Other wavelength on request

Safety
This is a laser class IV product according to IEC -Standard International Commission (Publication 825, 1993). The laser light emitted from this laser diode is invisible and/or visible and is harmful to the human eye. The safety regulations for eye and personell protection included in the IEC Standard must be observed to avoid any harm to operating personell. Avoid direct exposure and looking into the laser diode, into the collimated beam or into the fiber when it is linked to the module.

Storage and Shipping
Store and ship the diode laser with shortened electrical contacts in a clean and dry atmosphere and in a temperture range of 0°C to 60°C.

Operation and Handling
Diode lasers are extremely sensitive to over-voltage. Take extreme precaution to avoid electrostatic charges. Precautions against spiking during switching on and off the power supply must be assured. Correct polarity of power supply must be assured.
During handling personell has to wear wrist straps. Grounded work surfaces and additional antistatic techniques are mandatory during handling. Device failure and safety hazard are caused by operation in excess of maximum ratings. Exceeding output
power and temperature specification will result in accelerated device ageing.

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Optical Parameters[1]	BA-1980-0600-SE	BA-2100-0500-SE
CW - Nominal Output Power (mW)	600	500
Center Wavelength (@ 20 °C at 3A cw)[1] (nm)	1980	2100
Center Wavelength Variation (@ 20 °C) (nm)	±20	±20
Wavelength Temperature Shift with Current (nm/A)	20	20
Wavelength Temperature Coefficient (nm/K)	1.2	
Divergence Parallel (FWHM) (°C)	≤14	
Divergence Perpendicular (FWHM) (°C)	≤47	
Mode	Multimode	
Design Parameters		
Stripe Width (µm)	100	100
Cavity Length (µm)	1500	1000
Chip Width (µm)	500	
Emitter Height (µm)	130 to 140	
Reflectivity Front Facet (%)	3-5	
Reflectivity Rear Facet (%)	≥95	
Electrical Parameters		
Typical Operation Current (A)	3.2	2.7
Maximum Operation Current (A)	4.0	3.5
Typical Efficiency at Operation Current (%)	10	10
Maximum Operation Voltage (V)	1.9	1.9
Polarization	TE	
Thermal Parameters		
Operating Temperature (°C)	+15 to +40	
Recommended Heat Sink Temperature (°C)	20	
Storage Temperature (°C)	-20 to +60	
Operating and Storage Conditions	Non-Condensing Atmosphere	
Other Parameters		
Heat Sink Type	C-Mount	
Cathode (-)	Wire Flag, see also packaging drawings	
Anode (+)	Base Plate, see also packaging drawings	
RoHS 2002/95EC Compliant	Yes	

Notes:
1. Other wavelength on request

Safety
This is a laser class IV product according to IEC -Standard International Commission (Publication 825, 1993). The laser light emitted from this laser diode is invisible and/or visible and is harmful to the human eye. The safety regulations for eye and personell protection included in the IEC Standard must be observed to avoid any harm to operating personell. Avoid direct exposure and looking into the laser diode, into the collimated beam or into the fiber when it is linked to the module.

Storage and Shipping
Store and ship the diode laser with shortened electrical contacts in a clean and dry atmosphere and in a temperture range of 0°C to 60°C.

Operation and Handling
Diode lasers are extremely sensitive to over-voltage. Take extreme precaution to avoid electrostatic charges. Precautions against spiking during switching on and off the power supply must be assured. Correct polarity of power supply must be assured.
During handling personell has to wear wrist straps. Grounded work surfaces and additional antistatic techniques are mandatory during handling. Device failure and safety hazard are caused by operation in excess of maximum ratings. Exceeding output
power and temperature specification will result in accelerated device ageing.

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Optical Parameters[1]	BA-2180-0500-SE	BA-2240-0500-SE
CW - Nominal Output Power (mW)	500	500
Center Wavelength (@ 20 °C at 3A cw)[1] (nm)	2180	2240
Center Wavelength Variation (@ 20 °C) (nm)	±20	±20
Wavelength Temperature Shift with Current (nm/A)	20	20
Wavelength Temperature Coefficient (nm/K)	1.2	
Divergence Parallel (FWHM) (°C)	≤14	
Divergence Perpendicular (FWHM) (°C)	≤47	
Mode	Multimode	
Design Parameters		
Stripe Width (µm)	100	100
Cavity Length (µm)	1000	1000
Chip Width (µm)	500	
Emitter Height (µm)	130 to 140	
Reflectivity Front Facet (%)	5	
Reflectivity Rear Facet (%)	≥95	
Electrical Parameters		
Typical Operation Current (A)	3.0	2.5
Maximum Operation Current (A)	3.5	3.5
Typical Efficiency at Operation Current (%)	13	12
Maximum Operation Voltage (V)	1.3	1.7
Polarization	TE	
Thermal Parameters		
Operating Temperature (°C)	+15 to +40	
Recommended Heat Sink Temperature (°C)	20	
Storage Temperature (°C)	-20 to +60	
Operating and Storage Conditions	Non-Condensing Atmosphere	
Other Parameters		
Heat Sink Type	C-Mount	
Cathode (-)	Wire Flag, see also packaging drawings	
Anode (+)	Base Plate, see also packaging drawings	
RoHS 2002/95EC Compliant	Yes	

Notes:
1. Other wavelength on request

Safety
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Storage and Shipping
Store and ship the diode laser with shortened electrical contacts in a clean and dry atmosphere and in a temperture range of 0°C to 60°C.

Operation and Handling
Diode lasers are extremely sensitive to over-voltage. Take extreme precaution to avoid electrostatic charges. Precautions against spiking during switching on and off the power supply must be assured. Correct polarity of power supply must be assured.
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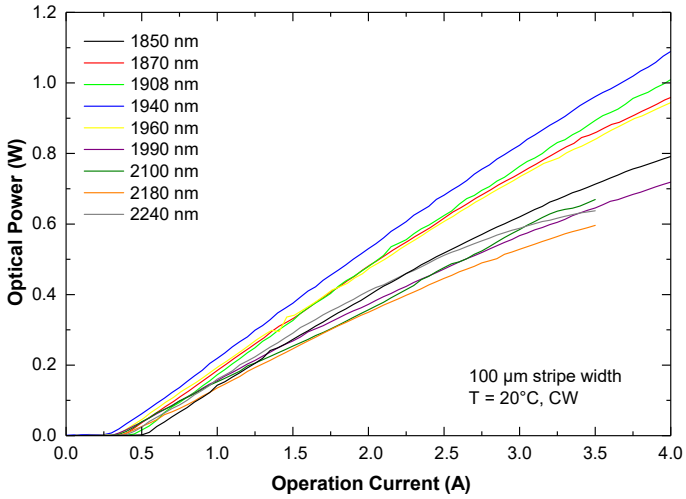
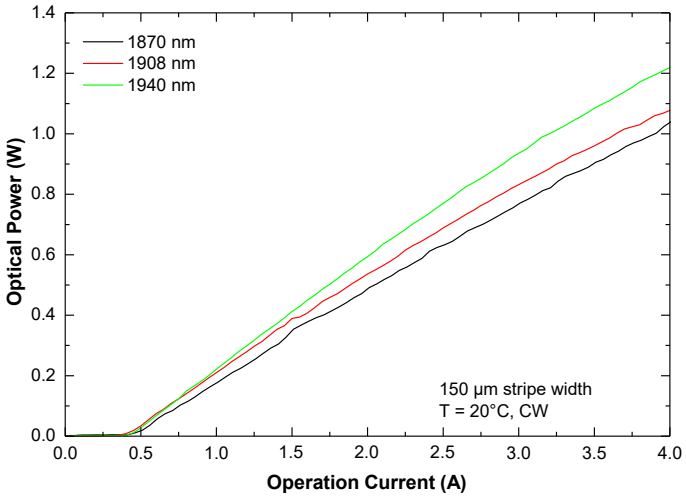
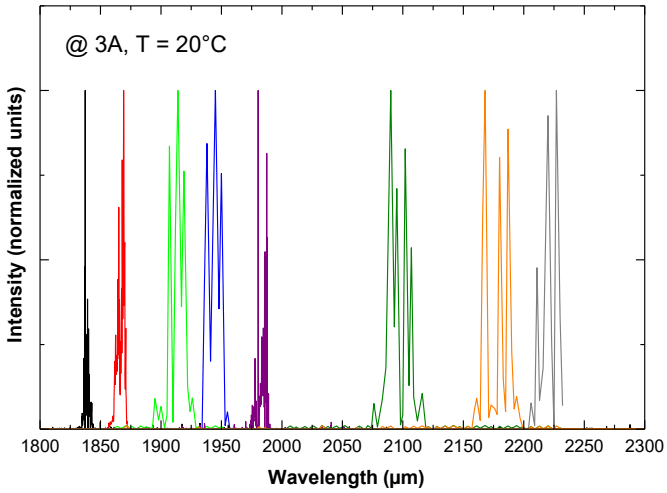
EXAMPLE MEASUREMENT DATA

The charts presented only describe typical examples. All modules are characterised individually, the results being contained in the documentation included. The display options are subject to alteration.



P(I), U(I) and spectral characteristics. All measurements have been done at 20 °C in CW operation for p-side (epi-side) down mounting on C-Mounts. Operation beyond the temperature, current and power specified may induce increased thermic stress to the modules and thereby reduce its service life.

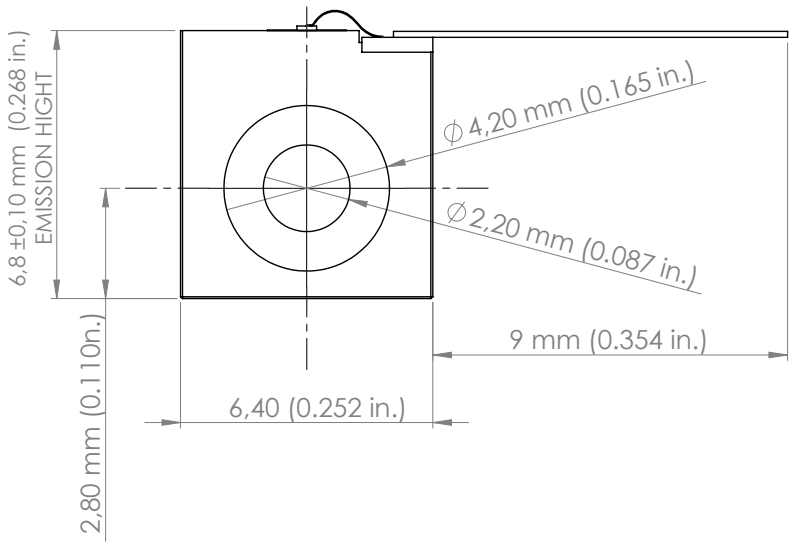




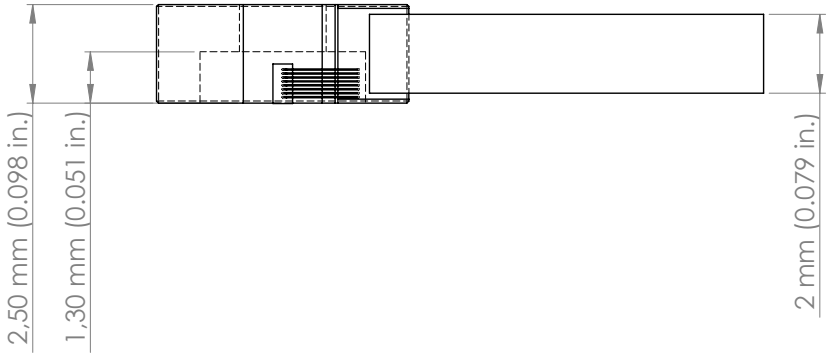
MECHANICAL SPECIFICATIONS

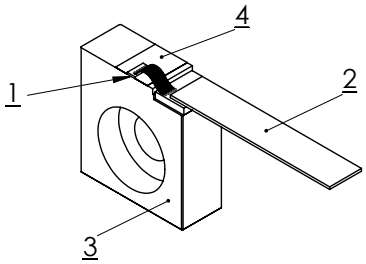
I8N-BA-xxx

Front View



Top View





1 = Output facet
2 = Cathode contact (N-Terminal, - connection)
3 = Anode, body (P-Terminal, + connection)
4 = In - solder