

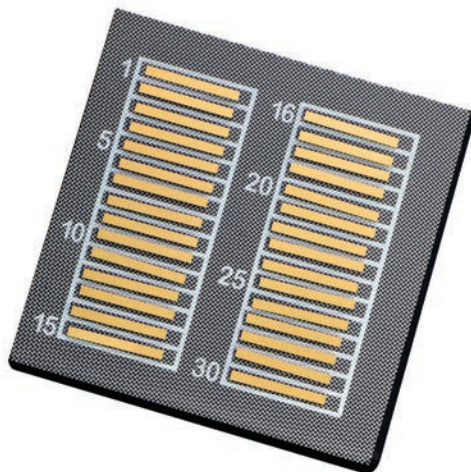


Unmounted Diode Laser Bars (UMBs), 780-830 nm

High Power Diode Laser Bars for Pumping and Direct-Diode Applications

Based on Coherent's legendary Aluminum-free Active Area (AAA™) epitaxy, Coherent 780-830 nm diode laser bars provide unsurpassed reliability and performance. Standard options include 60W 18% fill factor bars, 80W 28% fill factor bars and 100W 50% fill factor bars rated to >20k hrs lifetime, and 500W QCW 80% fill factor bars rated to >1e9 shots. Specifications and options—including power, wavelength, and emitter configuration—can be tailored to your demands.

Please contact Coherent to discuss your unique requirements.



Superior Reliability & Performance

Unmounted Diode Laser Bars, 780-830 nm Features:

- Unique AAA epitaxial technology for highest reliability and lifetime
- Powers up to 100W CW and 500W QCW
- TM and TE polarization options
- High efficiency
- Wide variety of bar configurations (emitter width, fill factor, and cavity length)

Unmounted Diode Laser Bars, 780-830 nm Applications:

- Laser Pumping
- Medical
- Materials Processing
- Illumination

www.Coherent.com/UMB780-830

Unmounted Diode Laser Bars (UMBs), 780-830 nm

High Power Diode Laser Bars for Pumping and Direct-Diode Applications

Device Specifications ^{1,2,3,4,5,6,7}	18% fill factor bars	
	40W 18FFx2mm TE	60W 18FFx2mm TE-Plus
Bar Geometry	18FFx2mm	18FFx2mm
Polarization	TE	TE
Rated Power (W)(at T _j ≤50°C)	40	60
Pulsewidth (μs)	-	-
Duty Cycle (%)	-	-
Fill Factor (%)	18	18
Number of Emitters	19	19
Emitter Width (μm)	90	90
Emitter-to-Emitter Pitch (μm)	500	500
Cavity Length (mm)	2	2
Centroid Wavelength Available ^{1,8} (nm)	780 to 830	780 to 830
Centroid Wavelength, Standard ¹ (nm)(at 25°C)	808 ±3	808 ±3
Spectral Width, Standard ¹ (nm)	<3	<3
Wavelength Temperature Coefficient (nm/°C)	0.28	0.28
Fast Axis Divergence (degrees)(FWHM)	31	29
Slow Axis Divergence (degrees)(FWHM)	<10	<10
Threshold Current (A)	8 typical	8 typical
Operating Current (A)	<46 (42 typical)	<62 (58 typical)
Operating Voltage (V)	<2.0	<2.0

¹ Wavelength specifications are based on testing of unmounted bars under low current, low duty cycle, short-pulsewidth test conditions. Contact factory for details.

² <=80W CW bars are qualified on a Coherent conduction-cooled package (CCP) operated at full power and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

³ >=100W CW bars are qualified on a Coherent water-cooled package (WCP) operated at full power and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

⁴ 200W QCW bars are qualified on a Coherent conduction-cooled package (CCP) operated at the indicated nominal conditions and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

⁵ 300W and 500W QCW bars are qualified as half-bars on a Coherent conduction-cooled package (CCP) operated at half the rated full-bar power at the indicated nominal conditions and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

⁶ Specifications listed here apply at beginning of life. Operating current at end of life is 120% the operating current at beginning of life.

⁷ Please consult the factory for any requirements not listed, including the following options:

- Centroid wavelength and spectral width requirements other than listed here.
- Optical output powers other than listed here.
- Emitter aperture widths other than listed here.

⁸ Contact factory for availability.

Operation Notes

Negative current transients greater than 25 μA and/or reverse voltages >3V can destroy the device.

Unmounted Diode Laser Bars (UMBs), 780-830 nm

High Power Diode Laser Bars for Pumping and Direct-Diode Applications

Device Specifications ^{1,2,3,4,5,6,7}	28-30% fill factor bars			
	40W 30FFx1mm TM	50W 30FFx1.5mm TM	60W 28FFx2mm TE	80W 28FFx2mm TE-Plus
Bar Geometry	30FFx1mm	30FFx1.5mm	28FFx2mm	28FFx2mm
Polarization	TM	TM	TE	TE
Rated Power (W)(at T _j ≤50°C)	40	50	60	80
Pulsewidth (μs)	-	-	-	-
Duty Cycle (%)	-	-	-	-
Fill Factor (%)	30	30	28	28
Number of Emitters	19	19	19	19
Emitter Width (μm)	150	150	140	140
Emitter-to-Emitter Pitch (μm)	500	500	500	500
Cavity Length (mm)	1	1.5	2	2
Centroid Wavelength Available ^{1,8} (nm)	780 to 830	780 to 830	780 to 830	780 to 830
Centroid Wavelength, Standard ¹ (nm)(at 25°C)	808 ±3	808 ±3	808 ±3	808 ±3
Spectral Width, Standard ¹ (nm)	<3	<3	<3	<3
Wavelength Temperature Coefficient (nm/°C)	0.28	0.28	0.28	0.28
Fast Axis Divergence (degrees)(FWHM)	31	31	31	29
Slow Axis Divergence (degrees)(FWHM)	<10	<10	<10	<10
Threshold Current (A)	8 typical	10 typical	12 typical	12 typical
Operating Current (A)	<46 (40 typical)	<55 (50 typical)	<70 (65 typical)	<83 (79 typical)
Operating Voltage (V)	<2.0	<2.0	<2.0	<2.0

¹ Wavelength specifications are based on testing of unmounted bars under low current, low duty cycle, short-pulsewidth test conditions. Contact factory for details.

² <=80W CW bars are qualified on a Coherent conduction-cooled package (CCP) operated at full power and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

³ >=100W CW bars are qualified on a Coherent water-cooled package (WCP) operated at full power and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

⁴ 200W QCW bars are qualified on a Coherent conduction-cooled package (CCP) operated at the indicated nominal conditions and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

⁵ 300W and 500W QCW bars are qualified as half-bars on a Coherent conduction-cooled package (CCP) operated at half the rated full-bar power at the indicated nominal conditions and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

⁶ Specifications listed here apply at beginning of life. Operating current at end of life is 120% the operating current at beginning of life.

⁷ Please consult the factory for any requirements not listed, including the following options:

- Centroid wavelength and spectral width requirements other than listed here.
- Optical output powers other than listed here.
- Emitter aperture widths other than listed here.

⁸ Contact factory for availability.

Operation Notes

Negative current transients greater than 25 μA and/or reverse voltages >3V can destroy the device.

Unmounted Diode Laser Bars (UMBs), 780-830 nm

High Power Diode Laser Bars for Pumping and Direct-Diode Applications

Device Specifications ^{1,2,3,4,5,6,7}	50% fill factor bars	
	60W 50FFx1mm TM	100W 50FFx2mm TE
Bar Geometry	50FFx1mm	50FFx2mm
Polarization	TM	TE
Rated Power (W)(at T _j ≤50°C)	60	100
Pulsewidth (μs)	-	-
Duty Cycle (%)	-	-
Fill Factor (%)	50	50
Number of Emitters	49	24
Emitter Width (μm)	100	200
Emitter-to-Emitter Pitch (μm)	200	400
Cavity Length (mm)	1	2
Centroid Wavelength Available ^{1,8} (nm)	780 to 830	780 to 830
Centroid Wavelength, Standard ¹ (nm)(at 25°C)	808 ±3	808 ±3
Spectral Width, Standard ¹ (nm)	<3	<3
Wavelength Temperature Coefficient (nm/°C)	0.28	0.28
Fast Axis Divergence (degrees)(FWHM)	31	31
Slow Axis Divergence (degrees)(FWHM)	<10	<10
Threshold Current (A)	12 typical	<25 typical
Operating Current (A)	<62 (54 typical)	<120
Operating Voltage (V)	<2.0	<2

¹ Wavelength specifications are based on testing of unmounted bars under low current, low duty cycle, short-pulsewidth test conditions. Contact factory for details.

² <=80W CW bars are qualified on a Coherent conduction-cooled package (CCP) operated at full power and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

³ >=100W CW bars are qualified on a Coherent water-cooled package (WCP) operated at full power and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

⁴ 200W QCW bars are qualified on a Coherent conduction-cooled package (CCP) operated at the indicated nominal conditions and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

⁵ 300W and 500W QCW bars are qualified as half-bars on a Coherent conduction-cooled package (CCP) operated at half the rated full-bar power at the indicated nominal conditions and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

⁶ Specifications listed here apply at beginning of life. Operating current at end of life is 120% the operating current at beginning of life.

⁷ Please consult the factory for any requirements not listed, including the following options:

- Centroid wavelength and spectral width requirements other than listed here.
- Optical output powers other than listed here.
- Emitter aperture widths other than listed here.

⁸ Contact factory for availability.

Operation Notes

Negative current transients greater than 25 μA and/or reverse voltages >3V can destroy the device.

Unmounted Diode Laser Bars (UMBs), 780-830 nm

High Power Diode Laser Bars for Pumping and Direct-Diode Applications

Device Specifications^{1,2,3,4,5,6,7}

	200W QCW 90FFx1mm TM	300W QCW 90FFx1.5mm TE
Bar Geometry	90FFx1mm	90FFx1.5mm
Polarization	TM	TE
Rated Power (W QCW)(at Tj ≤50°C)	200	300
Pulsewidth	<1 ms (200 nominal)	≤400 μs (200 nominal)
Duty Cycle (%)	≤20 (2 nominal)	≤10 (7 nominal)
Fill Factor (%)	90	90
Number of Emitters	60	60
Emitter Width (μm)	150	150
Emitter-to-Emitter Pitch (μm)	160	160
Cavity Length (mm)	1.0	1.5
Centroid Wavelength Available ^{1,8} (nm)	780 to 830	780 to 830
Centroid Wavelength, Standard ¹ (nm)(at 25°C)	808 ±3	808 ±3
Spectral Width, Standard ¹ (nm)	<3	<3
Wavelength Temperature Coefficient (nm/°C)	0.28	0.28
Fast Axis Divergence (degrees)(FWHM)	31	31
Slow Axis Divergence (degrees)(FWHM)	<10	<10
Threshold Current (A)	22 typical	32 typical
Operating Current (A)	<200 (180 typical)	<280 (270 typical)
Operating Voltage (V)	<2.2	<2.5

¹ Wavelength specifications are based on testing of unmounted bars under low current, low duty cycle, short-pulsewidth test conditions. Contact factory for details.

² <=80W CW bars are qualified on a Coherent conduction-cooled package (CCP) operated at full power and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

³ >=100W CW bars are qualified on a Coherent water-cooled package (WCP) operated at full power and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

⁴ 200W QCW bars are qualified on a Coherent conduction-cooled package (CCP) operated at the indicated nominal conditions and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

⁵ 300W and 500W QCW bars are qualified as half-bars on a Coherent conduction-cooled package (CCP) operated at half the rated full-bar power at the indicated nominal conditions and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

⁶ Specifications listed here apply at beginning of life. Operating current at end of life is 120% the operating current at beginning of life.

⁷ Please consult the factory for any requirements not listed, including the following options:

- Centroid wavelength and spectral width requirements other than listed here.
- Optical output powers other than listed here.
- Emitter aperture widths other than listed here.

⁸ Contact factory for availability.

Operation Notes

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Unmounted Diode Laser Bars (UMBs), 780-830 nm

High Power Diode Laser Bars for Pumping and Direct-Diode Applications

Device Specifications^{1,2,3,4,5,6,7}

	500W QCW 80FFx1.5mm TE-Plus	500W QCW 80FFx2.0mm TE-Plus
Bar Geometry	80FFx1.5mm	80FFx2.0mm
Polarization	TE	TE
Rated Power (W QCW)(at T _j ≤40°C)	500	500
Pulsewidth	≤400 μs (200 nominal)	≤400 μs (200 nominal)
Duty Cycle (%)	≤10 (7 nominal)	≤10 (7 nominal)
Fill Factor (%)	90	90
Number of Emitters	60	60
Emitter Width (μm)	135	135
Emitter-to-Emitter Pitch (μm)	160	160
Cavity Length (mm)	1.5	2.0
Centroid Wavelength Available ^{1,8} (nm)	780 to 830	780 to 830
Centroid Wavelength, Standard ¹ (nm)(at 25°C)	808 ±3	808 ±3
Spectral Width, Standard ¹ (nm)	<3	<3
Wavelength Temperature Coefficient (nm/°C)	0.28	0.28
Fast Axis Divergence (degrees)(FWHM)	29	29
Slow Axis Divergence (degrees)(FWHM)	<12	<12
Threshold Current (A)	32 typical	40 typical
Operating Current (A)	<470 (440 typical)	<480 (450 typical)
Operating Voltage (V)	<2.5	<2.5

¹ Wavelength specifications are based on testing of unmounted bars under low current, low duty cycle, short-pulsewidth test conditions. Contact factory for details.

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³ >=100W CW bars are qualified on a Coherent water-cooled package (WCP) operated at full power and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

⁴ 200W QCW bars are qualified on a Coherent conduction-cooled package (CCP) operated at the indicated nominal conditions and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

⁵ 300W and 500W QCW bars are qualified as half-bars on a Coherent conduction-cooled package (CCP) operated at half the rated full-bar power at the indicated nominal conditions and 25°C. Customers' results may vary as a function of packaging stress, packaging thermal resistance, operating power, and temperature.

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Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all Unmounted Diode Laser Bars. For full details of this warranty coverage, please refer to the Service section at www.Coherent.com or contact your local Sales or Service Representative.