



*n*LIGHT's CascadesTM, an actively, water-cooled, low thermal resistance bar provides end users with state-of-the-art power, brightness and reliability. These near-infrared (NIR) 1-cm arrays, based on our proprietary MOCVD structure, offer low beam divergence and narrow spectral bandwidth. CascadesTM are available in a wide range of wavelengths between 780 nm to 980 nm, and 1400 nm to 1600 nm.

The design of these devices allows multiple packages to be placed side by side. Standard packaging footprint allows these bars to easily integrate into your product.

Features

- High brightness
- High reliability
- Low bar smile
- Narrow spectral linewidth
- High polarization purity

Applications

- Solid-state laser pumping
- Materials processing
- Medical therapeutics
- Graphic arts

Proven Performance

Typical Device Performance

Center Wavelength (kange) nm 790-825 790-825 790-825 910-980 910 <th colspan="2">Package</th> <th colspan="6">C1-xxx-yyy¹</th>	Package		C1-xxx-yyy ¹						
Center Wavelength (kange) nm 790-825 790-825 790-825 910-980 910 <th colspan="9">Optical</th>	Optical								
CW Output Power W 60 80 100 60 80 25 Bar Length cm 1 1 1 1 1 1 1 1 Number of Emitters / Bar # 49 64 64 49 49 19 Emitter Size µm 100 100 120 100 100 100 Spectral Width (FWHM) nm <3 <3 <4 <44 <1 Slope Efficiency W / A >1.1 >1.05 >1.0 >0.9 >0.9 >0.9 Polarization TM or TE TM TM TM TE TE TE Slow-axis Divergence Degrees 30° 36° 36° 38° 0.3 0.3 0.3 0.3 Beterical mm '°C 0.28 0.28 0.28 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3	Center Wavelength (Range) ¹	nm	790-825	790-825	790-825	910-980	910-980	1400- 1600	
Bar Lengthcm1111111Number of Emitters / Bar#49646464494919Emitter Size μ m100100120100100100100Emitter Spacing μ m200150150200200500Spectral Width (FWHM)nm<3	Center Wavelength Tolerance	nm	± 3	± 3	± 3	± 3	± 3	± 5	
Number of Emitters / Bar#496464494919Emitter Size μ m100100120100100100100Emitter Spacing μ m200150150200200500Spectral Width (FWHM)nm<3	CW Output Power	W	60	80	100	60	80	25	
Emitter Sizeμm100100120100100100Emitter Spacingμm200150150200200500Spectral Width (FWHM)nm<3	Bar Length	cm	1	1	1	1	1	1	
Emitter Spacingμm200150150200200500Spectral Width (FWHM)nm< 3	Number of Emitters / Bar	#	49	64	64	49	49	19	
Spectral Width (FWHM)nm< 3< 3< 3< 4< 4< 1Slope EfficiencyW / A> 1.1> 1.05> 1.0> 0.9> 0.9> 0.9PolarizationTM or TETMTMTMTETETEFast-axis DivergenceDegrees36°36°36°38°38°27'Slow-axis DivergenceDegrees10°10°10°10°10°10°10°Wavelength Temperature Coefficient1nm / °C0.280.280.280.330.30.3ElectricalPower Conversion Efficiency%554848505230Threshold Current (I _{TH})A14242681210Operating Current (I _{OP})A6092110709570Operating Voltage (V _{OP})V1.81.81.851.61.61.2Storage Temperature Range ³ °C10 to 4010 to 4010 to 4010 to 4010 to 40Thermal Resistance ² °C / W0.350.350.350.350.350.350.35Operating Temperature°C20 to 3520 to 3520 to 3520 to 3520 to 3520 to 3520 to 35Internal°C / W0.350.350.350.350.350.350.350.35Operating Temperature°C / W0.350.350.350.350.350.350.35	Emitter Size	μm	100	100	120	100	100	100	
Slope EfficiencyW/A> 1.1> 1.05> 1.0> 0.9> 0.9> 0.9PolarizationTM or TETMTMTMTETETEFast-axis DivergenceDegrees 36° 36° 36° 38° 38° 27° Slow-axis DivergenceDegrees 10° 10° 10° 10° 10° 10° 10° 10° 10° Wavelength Temperature Coefficient ¹ nm /°C 0.28 0.28 0.28 0.28 0.3 0.3 0.3 ElectricalPower Conversion Efficiency% 55 48 48 50 52 30° Threshold Current (I_{TH})A 14 24 26 8 12 10° Operating Current (I_{OP})A 60 92 110 70 95 70° Operating Voltage (V_{OP})V 1.8 1.8 1.85 1.6 1.6 1.2 Series Resistance (R_{S}) Ω 0.05 0.05 0.05 0.05 0.05 0.05 MechanicalTTT $20^{\circ}C/W$ 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 $0.20^{\circ}D_{OD}$ $0.02^{\circ}D_{OD}$ $0.02^{\circ}D_{OD}$ $0.02^{\circ}D_{OD}$ $0.02^{\circ}D_{OD}$ $0.02^{\circ}D_{OD}$ $0.02^{\circ}D_{OD}$ $0.05^{\circ}D_{OD}$	Emitter Spacing	μm	200	150	150	200	200	500	
PolarizationTM or TETMTMTMTMTETETEFast-axis DivergenceDegrees 36° 36° 36° 38° 38° 27° Slow-axis DivergenceDegrees 10° 10° 10° 10° 10° 10° 10° 10° 10° Wavelength Temperature Coefficient1 $nm / ^{\circ}$ C 0.28 0.28 0.28 0.3 0.3 0.3 ElectricalPower Conversion Efficiency $\%$ 55 48 48 50 52 30° Threshold Current (I_{TH})A 14 24 26 8 12 10° Operating Current (I_{OP})A 60 92 110 70 95 70° Operating Voltage (V_{OP})V 1.8 1.8 1.85 1.6 1.6 1.2 Series Resistance (R_s) Ω 0.005 0.005 0.005 0.005 0.005 0.005 Mechanical V 1.8 1.8 1.85 1.6 1.6 1.2 Thermal Resistance ² $^{\circ}C / W$ 0.35 0.35 0.35 0.35 0.35 20×35 20×35 Operating Temperature $m'(min/plate$ $200 \cdot 250$ <	Spectral Width (FWHM)	nm	< 3	< 3	< 3	< 4	< 4	< 10	
Fast-axis DivergenceDegrees36°36°36°36°38°38°27'Slow-axis DivergenceDegrees10° <t< td=""><td>Slope Efficiency</td><td>W/A</td><td>> 1.1</td><td>> 1.05</td><td>> 1.0</td><td>> 0.9</td><td>> 0.9</td><td>> 0.4</td></t<>	Slope Efficiency	W/A	> 1.1	> 1.05	> 1.0	> 0.9	> 0.9	> 0.4	
Slow-axis DivergenceDegrees10°<	Polarization	TM or TE	ТМ	ТМ	ТМ	TE	TE	TE	
Wavelength Temperature Coefficient1nm / °C0.280.280.280.280.30.30.3ElectricalPower Conversion Efficiency%554848505230Threshold Current (I _{TH})A14242681210Operating Current (I _{OP})A6092110709570Operating Voltage (V _{OP})V1.81.81.851.61.61.2Series Resistance (Rs)Ω0.0050.0050.0050.0050.0050.0050.005MechanicalThermal Resistance2°C / W0.350.350.350.350.350.350.350.35Operating Temperature Range3°C / W0.35 <td>Fast-axis Divergence</td> <td>Degrees</td> <td>36°</td> <td>36°</td> <td>36°</td> <td>38°</td> <td>38°</td> <td>27°</td>	Fast-axis Divergence	Degrees	36°	36°	36°	38°	38°	27°	
ElectricalPower Conversion Efficiency%554848505230Threshold Current (I _{TH})A14242681210Operating Current (I _{OP})A6092110709570Operating Voltage (V _{OP})V1.81.81.851.61.61.2Series Resistance (Rs)Ω0.0050.0050.0050.0050.0050.0050.005MechanicalStorage Temperature Range ³ °C10 to 4010 to 40Thermal Resistance ² °C / W0.350.350.350.350.350.350.350.350.35Operating Temperature°C20 to 3520 to 35<	Slow-axis Divergence	Degrees	10°	10°	10°	10°	10°	10°	
Power Conversion Efficiency%554848505230Threshold Current (I _{TH})A14242681210Operating Current (I _{OP})A6092110709570Operating Voltage (V _{OP})V1.81.81.851.61.61.2Series Resistance (R _S)Ω0.0050.0050.0050.0050.0050.005MechanicalStorage Temperature Range ³ °C10 to 4010 to 4010 to 4010 to 4010 to 4010 to 40Thermal Resistance ² °C /W0.350.350.350.350.3520 to 3520 to 3	Wavelength Temperature Coefficient ¹	nm / °C	0.28	0.28	0.28	0.3	0.3	0.3	
Threshold Current (I _{TH})A14242681210Operating Current (I _{OP})A6092110709570Operating Voltage (V _{OP})V1.81.81.851.61.61.2Series Resistance (Rs)Ω0.0050.0050.0050.0050.0050.005MechanicalStorage Temperature Range ³ °C10 to 4010 to 4010 to 4010 to 4010 to 40Thermal Resistance ² °C / W0.350.350.350.350.350.350.35Operating Temperature°C20 to 3520 to 35Fluid Flow Rateml/min/plate200-250200-250200-250200-250200-250200-250200-250200-250200-250Inlet to Outlet Pressure Droppsi3535353535353535Deionized Water ResistivtyMΩ - cm0.15-0.30.15-0.30.15-0.30.15-0.30.15-0.30.15-0.30.15-0.3	Electrical	'							
Operating Current (I _{OP})A6092110709570Operating Voltage (V _{OP})V1.81.81.851.61.61.2Series Resistance (Rs) Ω 0.0050.0050.0050.0050.0050.005MechanicalStorage Temperature Range ³ °C10 to 4010 to 4010 to 4010 to 4010 to 4010 to 40Thermal Resistance ² °C / W0.350.350.350.350.350.350.350.35Operating Temperature°C20 to 3520 to 35Fluid Flow Rateml/min/plate200-250200-250200-250200-250200-250200-250200-250200-250Inlet to Outlet Pressure Droppsi353535353535353535Deionized Water ResistivtyMΩ - cm0.15-0.30.15-0.30.15-0.30.15-0.30.15-0.30.15-0.30.15-0.3	Power Conversion Efficiency	%	55	48	48	50	52	30	
Operating Voltage (V _{OP})V1.81.81.851.61.61.2Series Resistance (R _S)Ω0.0050.0050.0050.0050.0050.0050.005MechanicalStorage Temperature Range ³ °C10 to 4010 to 4010 to 4010 to 4010 to 4010 to 40Thermal Resistance ² °C / W0.350.350.350.350.350.350.350.35Operating Temperature°C20 to 3520 to 3520 to 3520 to 3520 to 3520 to 3520 to 35Fluid Flow Rateml/min/plate200-250200-250200-250200-250200-250200-250200-250Max Inlet Pressurepsi555555555555Inlet to Outlet Pressure Droppsi353535353535Deionized Water ResistivtyMΩ - cm0.15-0.30.15-0.30.15-0.30.15-0.30.15-0.30.15-0.3	Threshold Current (I _{TH})	А	14	24	26	8	12	10	
Series Resistance (Rs)Ω0.0050.0050.0050.0050.0050.0050.005MechanicalStorage Temperature Range ³ °C10 to 4010	Operating Current (I _{OP})	А	60	92	110	70	95	70	
Mechanical Storage Temperature Range ³ °C 10 to 40 10 t	Operating Voltage (V _{OP})	V	1.8	1.8	1.85	1.6	1.6	1.2	
Storage Temperature Range ³ °C 10 to 40	Series Resistance (R _s)	Ω	0.005	0.005	0.005	0.005	0.005	0.005	
Thermal °C / W 0.35	Mechanical	'							
Thermal Resistance ² °C / W 0.35	Storage Temperature Range ³	°C	10 to 40	10 to 40	10 to 40	10 to 40	10 to 40	10 to 40	
Operating Temperature °C 20 to 35	Thermal								
Fluid Flow Rate ml/min/plate 200-250	Thermal Resistance ²	°C / W	0.35	0.35	0.35	0.35	0.35	0.35	
Max Inlet Pressure psi 55 55 55 55 55 Inlet to Outlet Pressure Drop psi 35 <t< td=""><td>Operating Temperature</td><td>°C</td><td>20 to 35</td><td>20 to 35</td><td>20 to 35</td><td>20 to 35</td><td>20 to 35</td><td>20 to 35</td></t<>	Operating Temperature	°C	20 to 35	20 to 35	20 to 35	20 to 35	20 to 35	20 to 35	
Inlet to Outlet Pressure Drop psi 35 35 35 35 35 Deionized Water Resistivty MΩ - cm 0.15-0.3 <t< td=""><td>Fluid Flow Rate</td><td>ml/min/plate</td><td>200-250</td><td>200-250</td><td>200-250</td><td>200-250</td><td>200-250</td><td>200-250</td></t<>	Fluid Flow Rate	ml/min/plate	200-250	200-250	200-250	200-250	200-250	200-250	
Deionized Water Resistivity MΩ - cm 0.15-0.3 0.	Max Inlet Pressure	psi	55	55	55	55	55	55	
	Inlet to Outlet Pressure Drop	psi	35	35	35	35	35	35	
	Deionized Water Resistivty	MΩ - cm	0.15-0.3	0.15-0.3	0.15-0.3	0.15-0.3	0.15-0.3	0.15-0.3	
Filter μm < 20 < 20 < 20 < 20 < 20 < 20 < 2	Filter	μm	< 20	< 20	< 20	< 20	< 20	< 20	

¹ C1-xxx-yyy: xxx denotes wavelength and yyy denotes rated output power.
² The wavelength temperature coefficient is the wavelength shift per °C change at the diode junction.
³ A non-condensing environment is required for storage and operation below ambient dew point.
⁴ Thermal resistance is the diode junction temperature shift per incremental Watt of heat load.

CFR Regulation

These components do not comply with the federal regulation (Title 21 CFR, Chapter 1, Subchapter J) as administered by the Center for Device and radiological Health. Purchaser acknowledges that their products must comply with these regulations before they can be sold to an end-user.

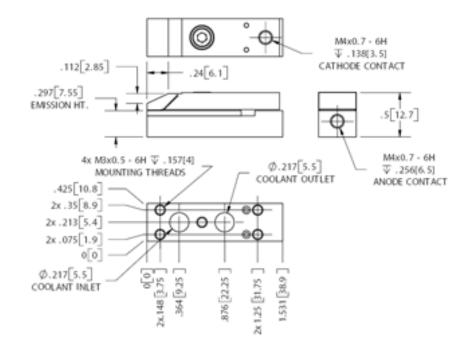
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Package Dimensions



Notice

nLIGHT continually improves its products to provide our customers with outstanding quality and reliability. nLIGHT may make changes to specifications and product descriptions at any time, without notice. In addition, nLIGHT offers a limited warranty to ensure customer satisfaction. For complete details, please contact your nLIGHT sales representative.



Proven Performance