

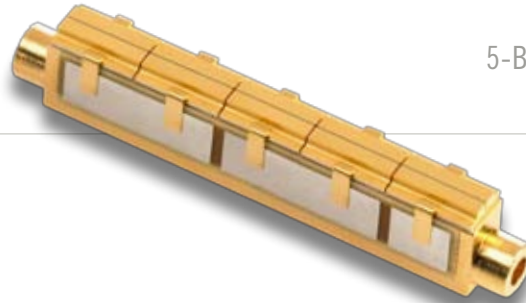
DERRINGER PACKAGE

LASER DIODE ARRAY

100W CW

NORTHROP GRUMMAN

PART NUMBER: ARR115C100
5-BAR X-STRETCH DERRINGER PACKAGE



FEATURES AND BENEFITS

- Assembled With Hard Solder & Expansion Matched Materials
- Small, Compact Design
- Water Cooled
- Ideal For Side Pumping Or Direct Diode Applications
- Available Wavelengths: 790-1550nm
- Multi-wavelength Configurations Available

OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
CW Power Output	25A at 25°C Heat Sink	100	W
Operating Current	100W at 25°C Heat Sink	25	A
Threshold Current	25°C Heat Sink	8	A
Slope Efficiency	25°C Heat Sink	5.75	W/A
Electrical-Optical Efficiency	100W at 25°C Heat Sink	47	%
Center Wavelength	100W at 25°C Heat Sink	808	nm
Wavelength Tolerance	100W at 25°C Heat Sink	+/-3	nm
Spectral Width	100W at 25°C Heat Sink	1.8	nm
Wavelength Shift	—	0.25	nm/°C
Beam Divergence FWHM	—	38x7	x°
Beam Divergence FWHM (Lensed)	—	1x7	x°

ELECTRICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
Series Resistance	25°C Heat Sink	0.020	Ω
Operating Voltage	25°C Heat Sink, 100W	8.5	V

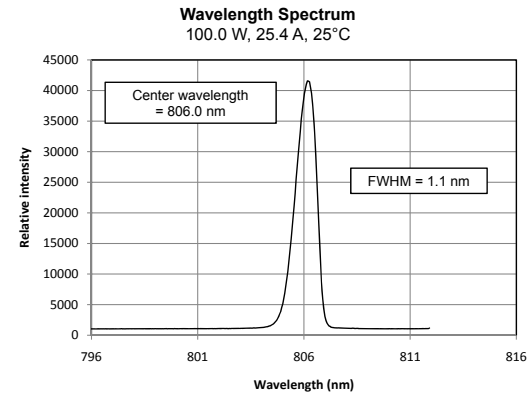
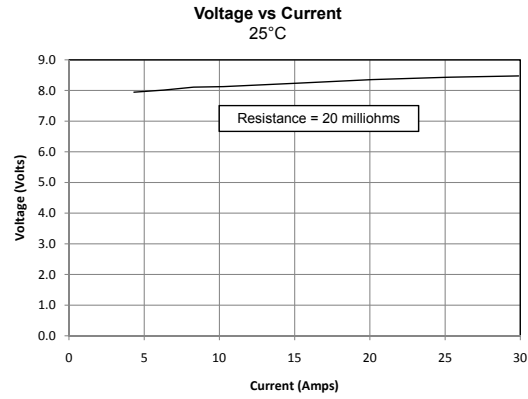
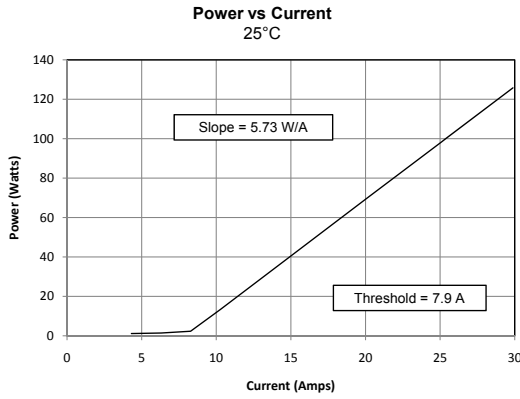
ABSOLUTE MAXIMUM RATINGS

Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

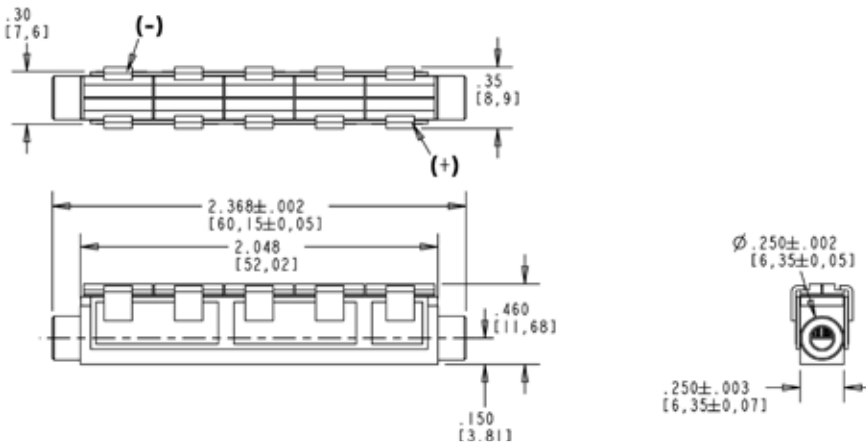
NOTES

- (1) These specifications apply for operation at 808nm. Other wavelengths available upon request.
- (2) A dry nitrogen environment should be provided by the user when storing and operating at temperatures below ambient dew point.
- (3) Fast axis and slow axis lensing options are available for most NG-CEO heat exchanger designs.

> **OPTICAL CHARACTERISTICS (SAMPLE)**



> **MECHANICAL CHARACTERISTICS**



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⚠ DANGER ⚠

INVISIBLE LASER RADIATION

AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION.

* Diode laser
5W & up, 780-1560nm
CLASS IV

⚠ WARNING ⚠

ELECTROSTATIC DISCHARGE SENSITIVE DEVICE
REQUIRING SPECIAL HANDLING

REV. A 10/09 REV 0001-1000 Rev0000

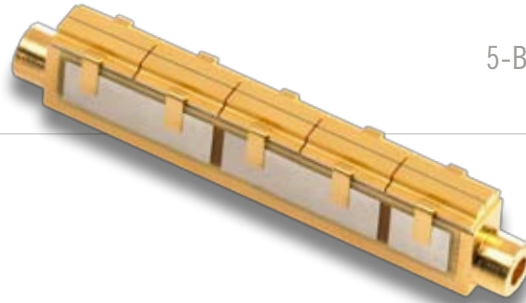
DERRINGER PACKAGE

LASER DIODE ARRAY

200W CW

NORTHROP GRUMMAN

PART NUMBER: ARR115C200
5-BAR X-STRETCH DERRINGER PACKAGE



FEATURES AND BENEFITS

- Assembled With Hard Solder & Expansion Matched Materials
- Small, Compact Design
- Water Cooled
- Ideal For Side Pumping Or Direct Diode Applications
- Available Wavelengths: 790-1550nm
- Multi-wavelength Configurations Available

OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
CW Power Output	47A at 25°C Heat Sink	200	W
Operating Current	200W at 25°C Heat Sink	47	A
Threshold Current	25°C Heat Sink	12	A
Slope Efficiency	25°C Heat Sink	5.75	W/A
Electrical-Optical Efficiency	200W at 25°C Heat Sink	53	%
Center Wavelength	200W at 25°C Heat Sink	808	nm
Wavelength Tolerance	200W at 25°C Heat Sink	+/-3	nm
Spectral Width	200W at 25°C Heat Sink	1.8	nm
Wavelength Shift	—	0.25	nm/°C
Beam Divergence FWHM	—	38x7	x°
Beam Divergence FWHM (Lensed)	—	1x7	x°

ELECTRICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
Series Resistance	25°C Heat Sink	0.010	Ω
Operating Voltage	25°C Heat Sink, 200W	8.5	V

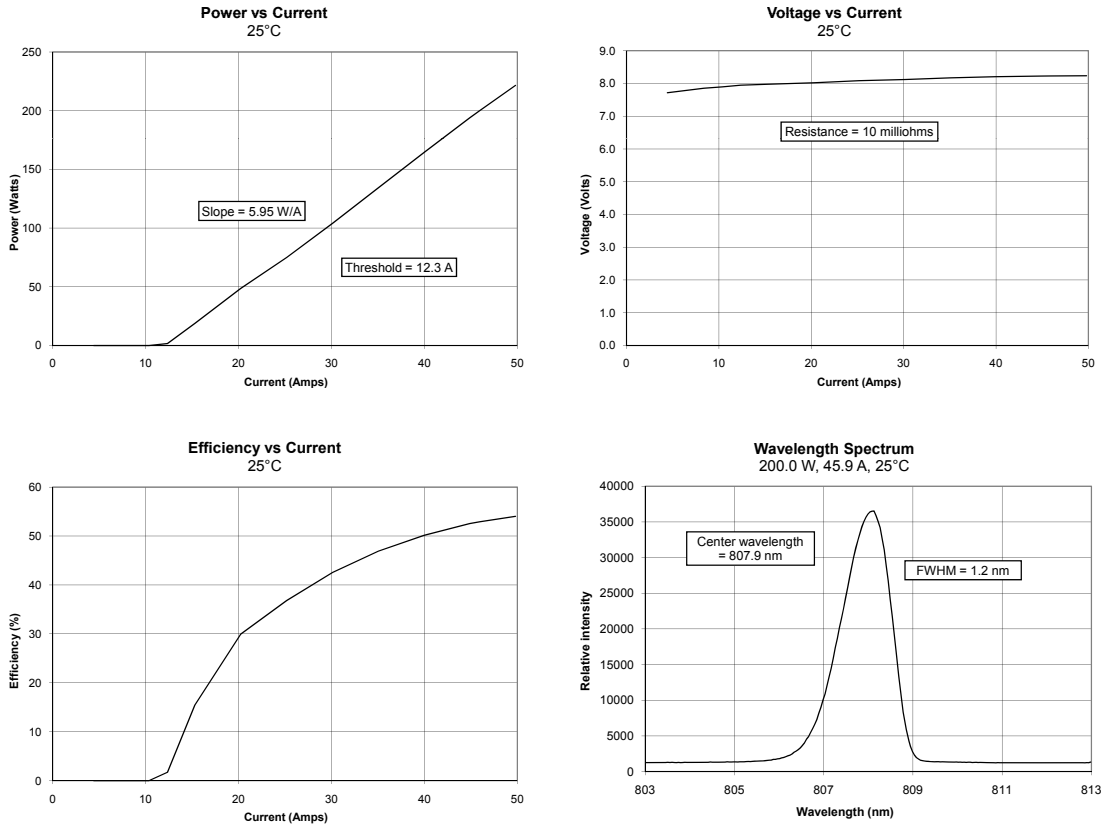
ABSOLUTE MAXIMUM RATINGS

Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

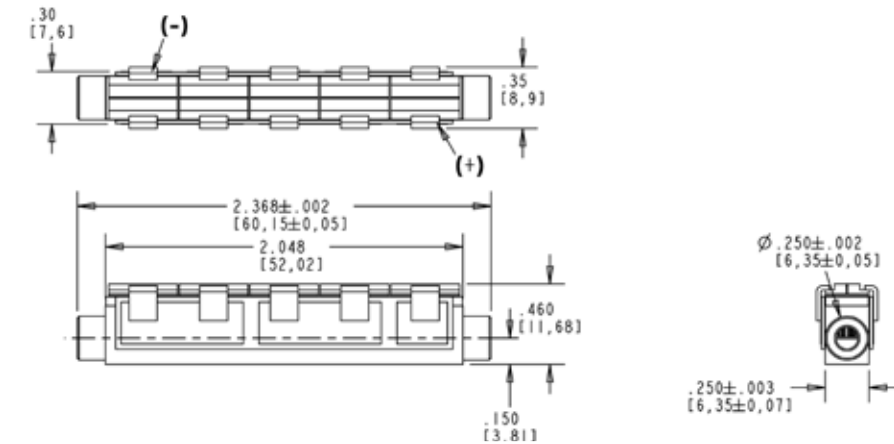
NOTES

- (1) These specifications apply for operation at 808nm. Other wavelengths available upon request.
- (2) A dry nitrogen environment should be provided by the user when storing and operating at temperatures below ambient dew point.
- (3) Fast axis and slow axis lensing options are available for most NG-CEO heat exchanger designs.

OPTICAL CHARACTERISTICS (SAMPLE)



MECHANICAL CHARACTERISTICS



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⚠ DANGER ⚠

INVISIBLE LASER RADIATION

AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION.

Diode laser
5W & up, 780-1560nm
CLASS IV

⚠ WARNING ⚠

ELECTROSTATIC DISCHARGE SENSITIVE DEVICE
REQUIRING SPECIAL HANDLING

REV. A 10/09

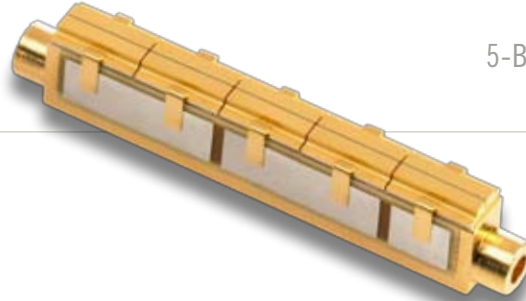
DERRINGER PACKAGE

LASER DIODE ARRAY

1000W QCW

NORTHROP GRUMMAN

PART NUMBER: ARR115P1000
5-BAR X-STRETCH DERRINGER PACKAGE



FEATURES AND BENEFITS

- Assembled With Hard Solder & Expansion Matched Materials
- Ideal For Long Pulse And/Or High Duty Cycle Applications
- Multi-wavelength Configurations Available From 790-1550nm
- Standard Bar Pitch Options Include 400 μm , 800 μm , and 1200 μm
- Small, Compact Water Cooled Design Is Ideal For Side Pumping Or Direct Diode Applications
- Derringer Package Available With Up To 40 Bars And A Maximum Output Power Of 8.0 kW

OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	175A at 25°C Heat Sink	1000	W
Operating Current	1000W at 25°C Heat Sink	175	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	6.25	W/A
Electrical-Optical Efficiency	1000W at 25°C Heat Sink	57	%
Center Wavelength	1000W at 25°C Heat Sink	808	nm
Wavelength Tolerance	1000W at 25°C Heat Sink	+/-3	nm
Spectral Width	1000W at 25°C Heat Sink	3.0	nm
Wavelength Shift	—	0.25	nm/°C
Beam Divergence FWHM	—	38x7	x°
Beam Divergence FWHM (Lensed)	—	1x7	x°

ELECTRICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
Series Resistance	25°C Heat Sink	0.010	Ω
Operating Voltage	25°C Heat Sink, 1000W	10.0	V

ABSOLUTE MAXIMUM RATINGS

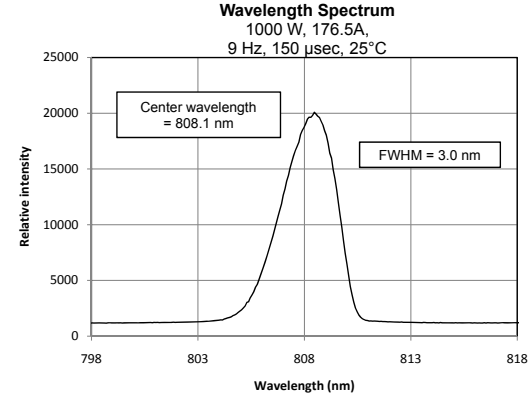
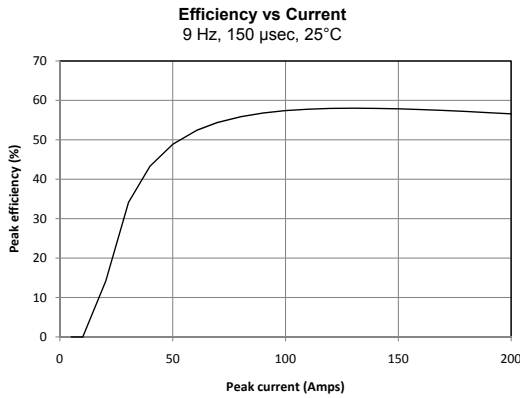
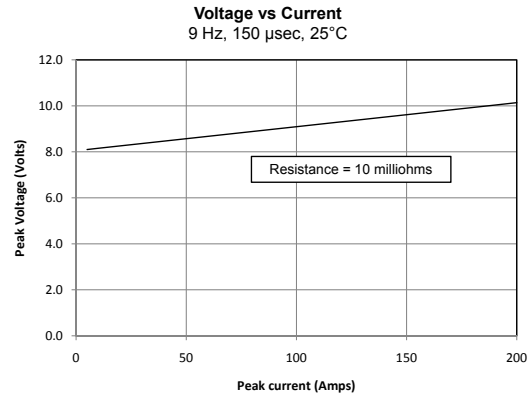
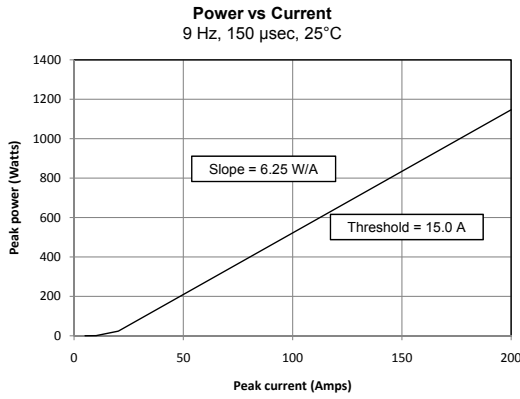
Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

NOTES

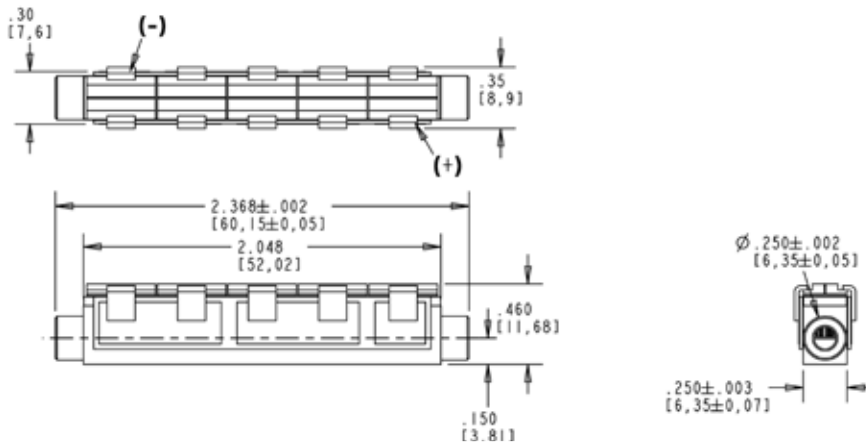
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- (3) Fast axis and slow axis lensing options are available for most NG-CEO heat exchanger designs.

1000W QCW

OPTICAL CHARACTERISTICS (SAMPLE)



MECHANICAL CHARACTERISTICS



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DANGER

INVISIBLE LASER RADIATION

AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION.

* Diode laser
5W & up, 780-1560nm
CLASS IV

WARNING

ELECTROSTATIC DISCHARGE SENSITIVE DEVICE
REQUIRING SPECIAL HANDLING

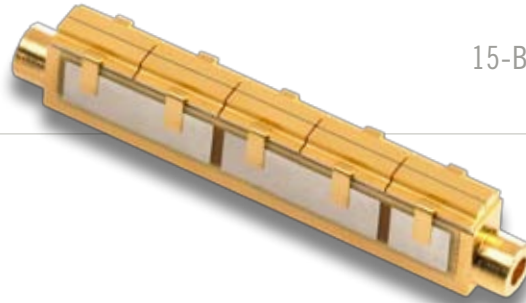
REV. A 10/09

DERRINGER PACKAGE

LASER DIODE ARRAY

1500W QCW

NORTHROP GRUMMAN



PART NUMBER: ARR115P1500
15-BAR X-STRETCH DERRINGER PACKAGE

FEATURES AND BENEFITS

- Assembled With Hard Solder & Expansion Matched Materials
- Ideal For Long Pulse And/Or High Duty Cycle Applications
- Multi-wavelength Configurations Available From 790-1550nm
- Standard Bar Pitch Options Include 400 μm , 800 μm , and 1200 μm
- Small, Compact Water Cooled Design Is Ideal For Side Pumping Or Direct Diode Applications
- Derringer Package Available With Up To 40 Bars And A Maximum Output Power Of 8.0 kW

OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	95A at 25°C Heat Sink	1500	W
Operating Current	1500W at 25°C Heat Sink	95	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	18.8	W/A
Electrical-Optical Efficiency	1500W at 25°C Heat Sink	58	%
Center Wavelength	1500W at 25°C Heat Sink	808	nm
Wavelength Tolerance	1500W at 25°C Heat Sink	+/-3	nm
Spectral Width	1500W at 25°C Heat Sink	2.0	nm
Wavelength Shift	—	0.25	nm/°C
Beam Divergence FWHM	—	38x7	x°
Beam Divergence FWHM (Lensed)	—	1x7	x°

ELECTRICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
Series Resistance	25°C Heat Sink	0.030	Ω
Operating Voltage	25°C Heat Sink, 1500W	270	V

ABSOLUTE MAXIMUM RATINGS

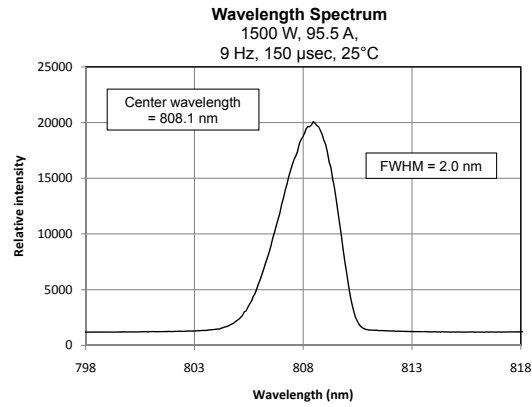
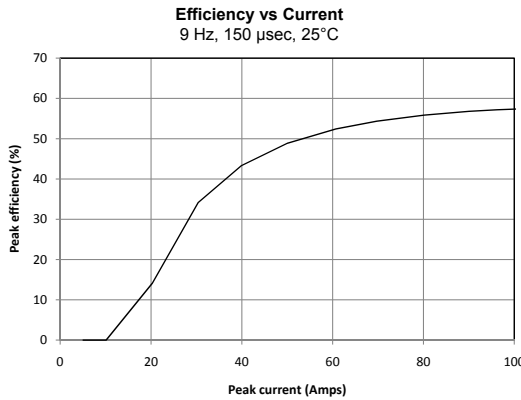
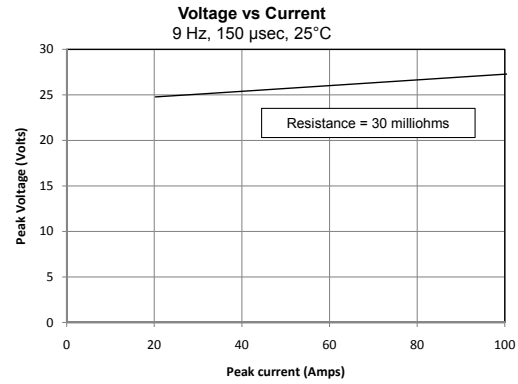
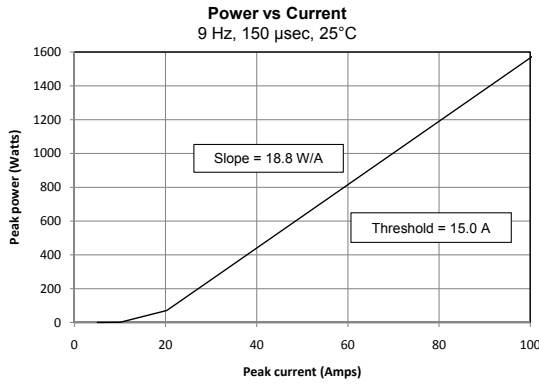
Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

NOTES

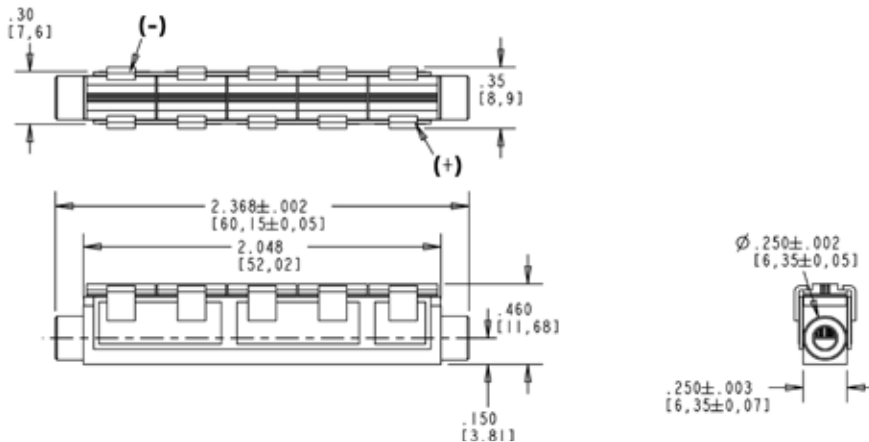
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- (3) Fast axis and slow axis lensing options are available for most NG-CEO heat exchanger designs.

1500W QCW

OPTICAL CHARACTERISTICS (SAMPLE)



MECHANICAL CHARACTERISTICS



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DANGER

INVISIBLE LASER RADIATION

AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION.

* Diode laser
5W & up, 780-1560nm
CLASS IV

WARNING

ELECTROSTATIC DISCHARGE SENSITIVE DEVICE
REQUIRING SPECIAL HANDLING

REV. A 10/09 805 0010 10000 Rev. 0000

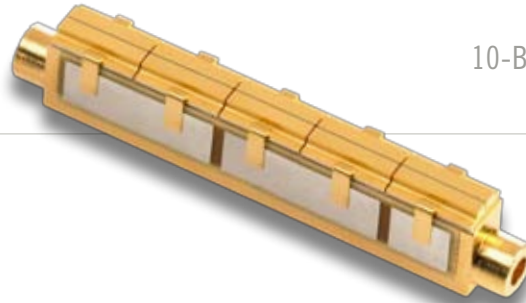
DERRINGER PACKAGE

LASER DIODE ARRAY

2000W QCW

NORTHROP GRUMMAN

PART NUMBER: ARR115P2000
10-BAR X-STRETCH DERRINGER PACKAGE



FEATURES AND BENEFITS

- Assembled With Hard Solder & Expansion Matched Materials
- Ideal For Long Pulse And/Or High Duty Cycle Applications
- Multi-wavelength Configurations Available From 790-1550nm
- Standard Bar Pitch Options Include 400 μm , 800 μm , and 1200 μm
- Small, Compact Water Cooled Design Is Ideal For Side Pumping Or Direct Diode Applications
- Derringer Package Available With Up To 40 Bars And A Maximum Output Power Of 8.0 kW

OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	175A at 25°C Heat Sink	2000	W
Operating Current	2000W at 25°C Heat Sink	175	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	12.5	W/A
Electrical-Optical Efficiency	2000W at 25°C Heat Sink	57	%
Center Wavelength	2000W at 25°C Heat Sink	808	nm
Wavelength Tolerance	2000W at 25°C Heat Sink	+/-3	nm
Spectral Width	2000W at 25°C Heat Sink	3.0	nm
Wavelength Shift	—	0.25	nm/°C
Beam Divergence FWHM	—	38x7	x°
Beam Divergence FWHM (Lensed)	—	1x7	x°

ELECTRICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
Series Resistance	25°C Heat Sink	0.020	Ω
Operating Voltage	25°C Heat Sink, 2000W	20.0	V

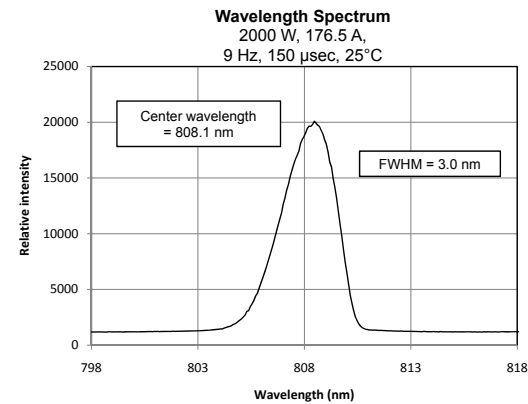
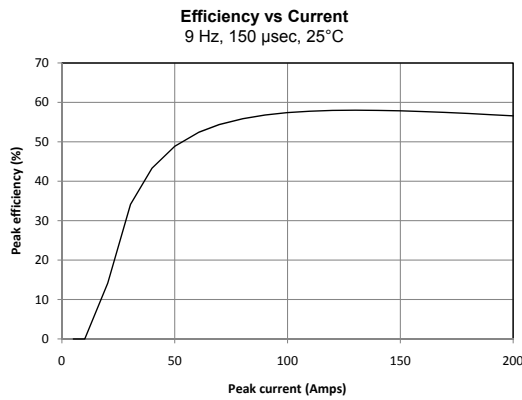
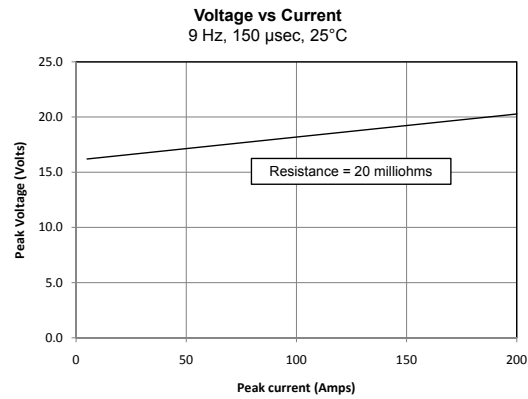
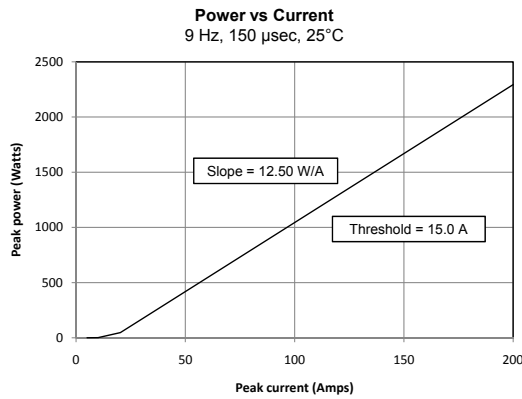
ABSOLUTE MAXIMUM RATINGS

Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

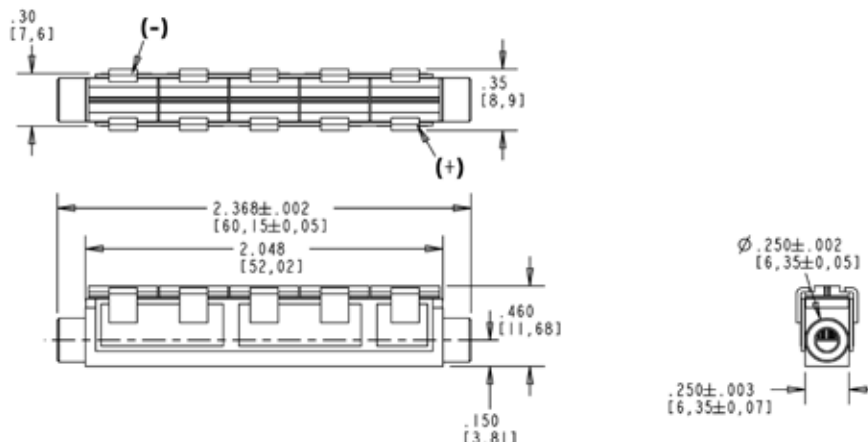
NOTES

- (1) These specifications apply for operation at 808nm. Other wavelengths available upon request.
- (2) A dry nitrogen environment should be provided by the user when storing and operating at temperatures below ambient dew point.
- (3) Fast axis and slow axis lensing options are available for most NG-CEO heat exchanger designs.

OPTICAL CHARACTERISTICS (SAMPLE)



MECHANICAL CHARACTERISTICS



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⚠ DANGER ⚠

INVISIBLE LASER RADIATION

AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION.

* Diode laser
5W & up, 780-1560nm
CLASS IV

⚠ WARNING ⚠

ELECTROSTATIC DISCHARGE SENSITIVE DEVICE
REQUIRING SPECIAL HANDLING

REV. A 10/09 HW 9001-1000 Rev.0001

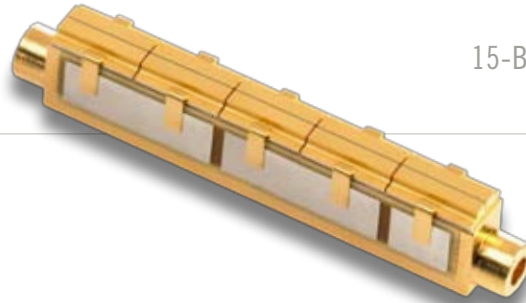
DERRINGER PACKAGE

LASER DIODE ARRAY

3000W QCW

NORTHROP GRUMMAN

PART NUMBER: ARR115P3000
15-BAR X-STRETCH DERRINGER PACKAGE



FEATURES AND BENEFITS

- Assembled With Hard Solder & Expansion Matched Materials
- Ideal For Long Pulse And/Or High Duty Cycle Applications
- Multi-wavelength Configurations Available From 790-1550nm
- Standard Bar Pitch Options Include 400 μm , 800 μm , and 1200 μm
- Small, Compact Water Cooled Design Is Ideal For Side Pumping Or Direct Diode Applications
- Derringer Package Available With Up To 40 Bars And A Maximum Output Power Of 8.0 kW

OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	175A at 25°C Heat Sink	3000	W
Operating Current	3000W at 25°C Heat Sink	175	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	18.8	W/A
Electrical-Optical Efficiency	3000W at 25°C Heat Sink	57	%
Center Wavelength	3000W at 25°C Heat Sink	808	nm
Wavelength Tolerance	3000W at 25°C Heat Sink	+/-3	nm
Spectral Width	3000W at 25°C Heat Sink	3.0	nm
Wavelength Shift	—	0.25	nm/°C
Beam Divergence FWHM	—	38x7	x°
Beam Divergence FWHM (Lensed)	—	1x7	x°

ELECTRICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
Series Resistance	25°C Heat Sink	0.030	Ω
Operating Voltage	25°C Heat Sink, 3000W	30.0	V

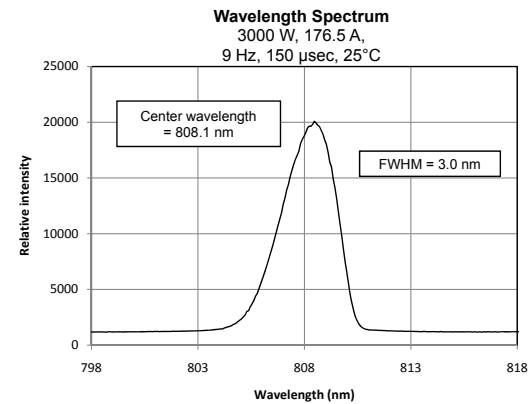
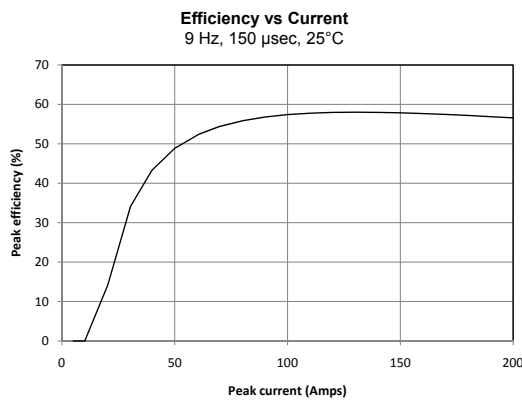
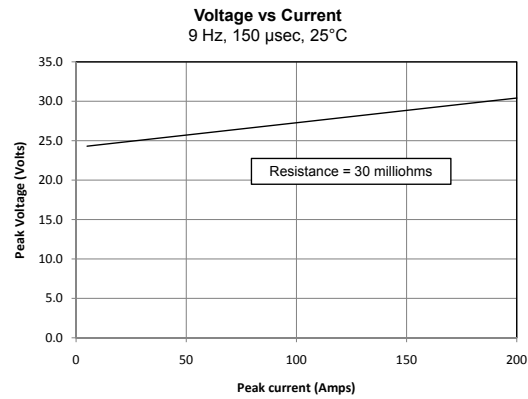
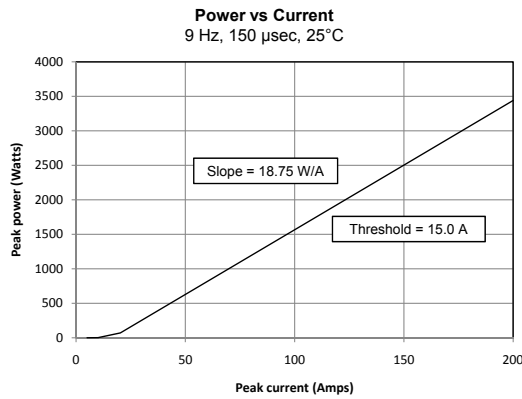
ABSOLUTE MAXIMUM RATINGS

Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

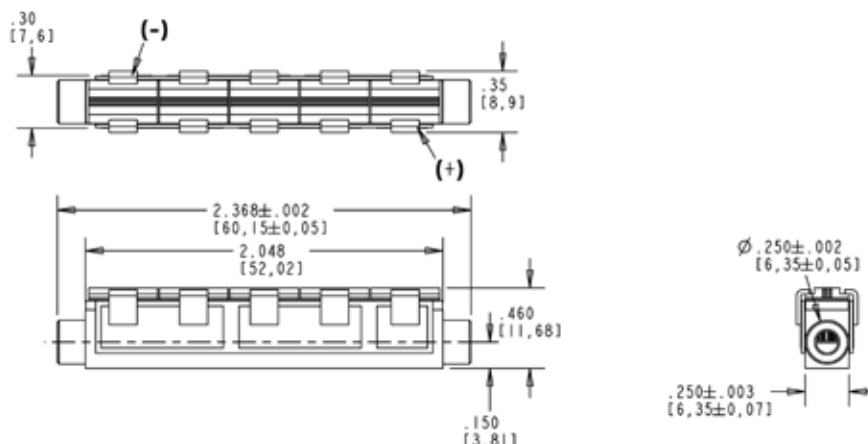
NOTES

- (1) These specifications apply for operation at 808nm. Other wavelengths available upon request.
- (2) A dry nitrogen environment should be provided by the user when storing and operating at temperatures below ambient dew point.
- (3) Fast axis and slow axis lensing options are available for most NG-CEO heat exchanger designs.

OPTICAL CHARACTERISTICS (SAMPLE)



MECHANICAL CHARACTERISTICS



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DANGER

INVISIBLE LASER RADIATION

AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION.

* Diode laser
5W & up, 780-1560nm
CLASS IV

WARNING

ELECTROSTATIC DISCHARGE SENSITIVE DEVICE
REQUIRING SPECIAL HANDLING

REV. A 10/09 REV 0011-1000 (Rev. 0)

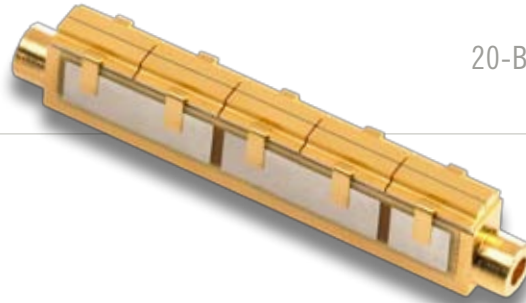
DERRINGER PACKAGE

LASER DIODE ARRAY

4000W QCW

NORTHROP GRUMMAN

PART NUMBER: ARR115P4000
20-BAR X-STRETCH DERRINGER PACKAGE



FEATURES AND BENEFITS

- Assembled With Hard Solder & Expansion Matched Materials
- Ideal For Long Pulse And/Or High Duty Cycle Applications
- Multi-wavelength Configurations Available From 790-1550nm
- Standard Bar Pitch Options Include 400 μm , 800 μm , and 1200 μm
- Small, Compact Water Cooled Design Is Ideal For Side Pumping Or Direct Diode Applications
- Derringer Package Available With Up To 40 Bars And A Maximum Output Power Of 8.0 kW

OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	175A at 25°C Heat Sink	4000	W
Operating Current	4000W at 25°C Heat Sink	175	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	25.0	W/A
Electrical-Optical Efficiency	4000W at 25°C Heat Sink	57	%
Center Wavelength	4000W at 25°C Heat Sink	808	nm
Wavelength Tolerance	4000W at 25°C Heat Sink	+/-3	nm
Spectral Width	4000W at 25°C Heat Sink	3.0	nm
Wavelength Shift	—	0.25	nm/°C
Beam Divergence FWHM	—	38x7	x°
Beam Divergence FWHM (Lensed)	—	1x7	x°

ELECTRICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
Series Resistance	25°C Heat Sink	0.040	Ω
Operating Voltage	25°C Heat Sink, 4000W	40.0	V

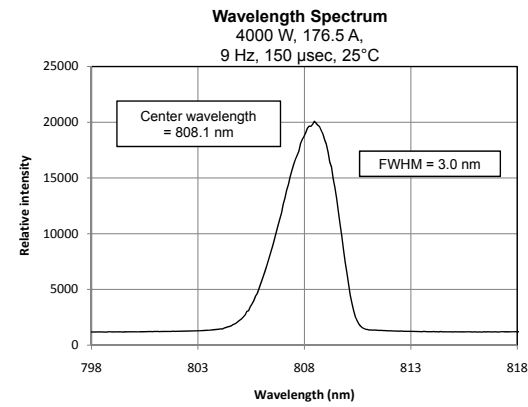
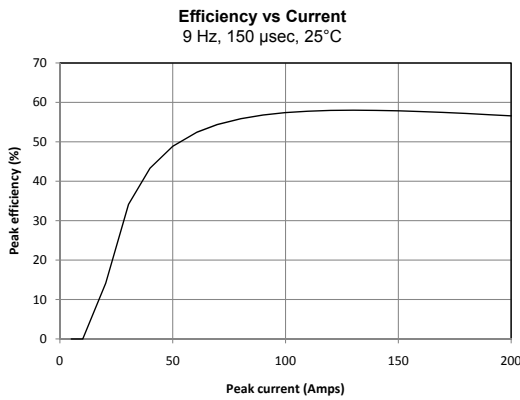
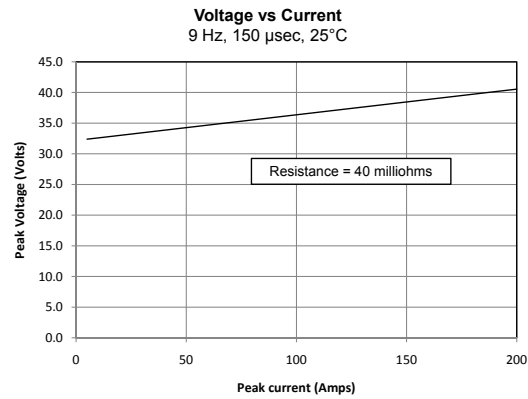
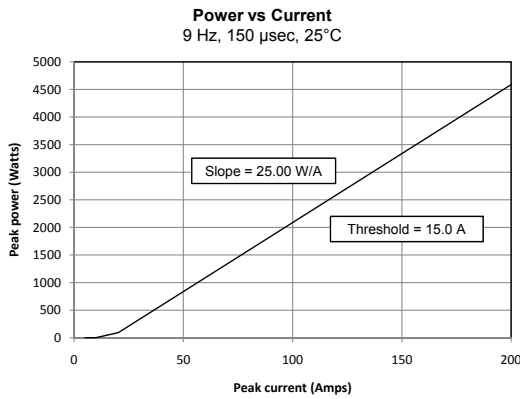
ABSOLUTE MAXIMUM RATINGS

Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

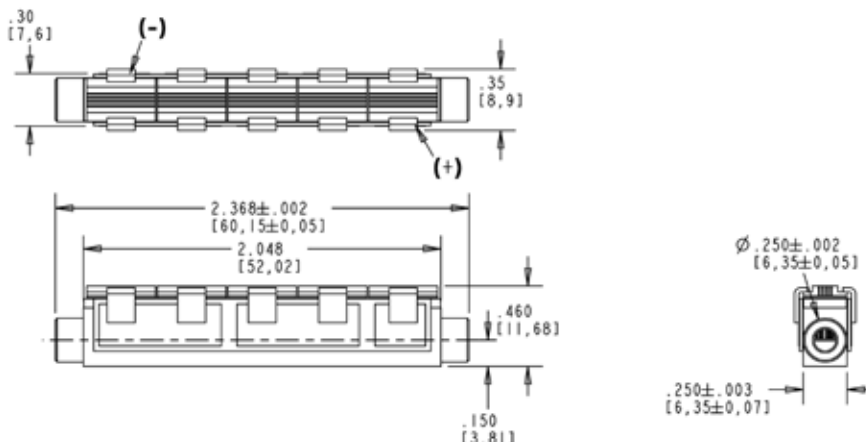
NOTES

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OPTICAL CHARACTERISTICS (SAMPLE)



MECHANICAL CHARACTERISTICS



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* Diode laser
5W & up, 780-1560nm
CLASS IV

⚠ WARNING ⚠

ELECTROSTATIC DISCHARGE SENSITIVE DEVICE
REQUIRING SPECIAL HANDLING

REV. A 10/09 REV. 0011-1000 (Rev. 0001)

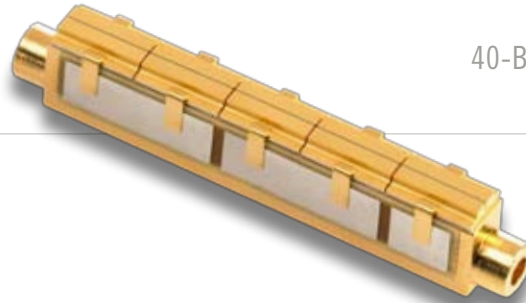
DERRINGER PACKAGE

LASER DIODE ARRAY

8000W QCW

NORTHROP GRUMMAN

PART NUMBER: ARR115P8000
40-BAR X-STRETCH DERRINGER PACKAGE



FEATURES AND BENEFITS

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OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	175A at 25°C Heat Sink	8000	W
Operating Current	8000W at 25°C Heat Sink	175	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	50.0	W/A
Electrical-Optical Efficiency	8000W at 25°C Heat Sink	57	%
Center Wavelength	8000W at 25°C Heat Sink	808	nm
Wavelength Tolerance	8000W at 25°C Heat Sink	+/-3	nm
Spectral Width	8000W at 25°C Heat Sink	3.0	nm
Wavelength Shift	—	0.25	nm/°C
Beam Divergence FWHM	—	38x7	x°
Beam Divergence FWHM (Lensed)	—	1x7	x°

ELECTRICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
Series Resistance	25°C Heat Sink	0.080	Ω
Operating Voltage	25°C Heat Sink, 8000W	80.0	V

ABSOLUTE MAXIMUM RATINGS

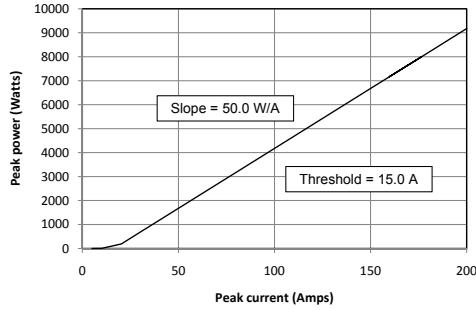
Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

NOTES

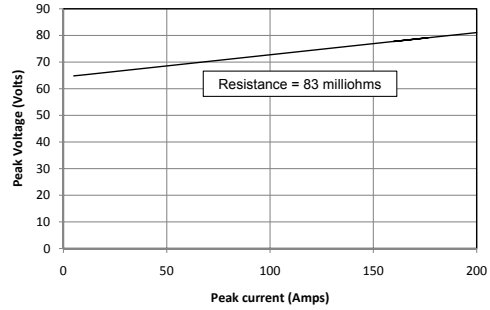
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OPTICAL CHARACTERISTICS (SAMPLE)

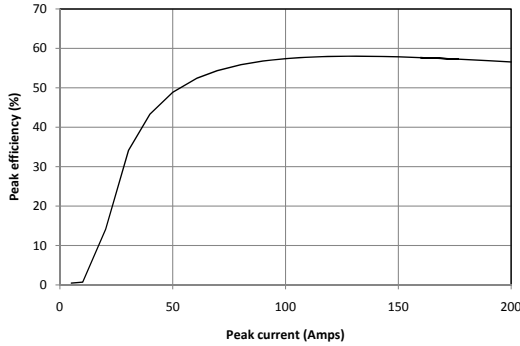
Power vs Current
9 Hz, 150 µsec, 25°C



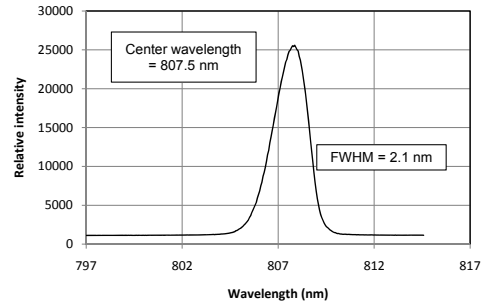
Voltage vs Current
9 Hz, 150 µsec, 25°C



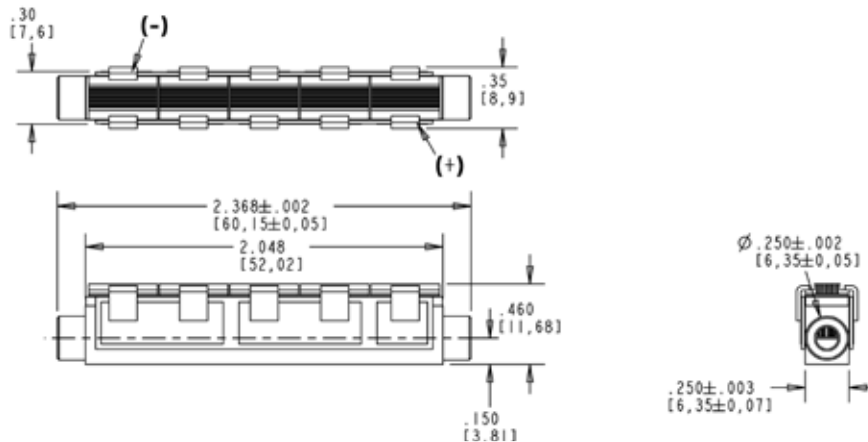
Efficiency vs Current
9 Hz, 150 µsec, 25°C



Wavelength Spectrum
8000 W, 176.5 A,
9 Hz, 150 µsec, 25°C



MECHANICAL CHARACTERISTICS



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REV. A 10/09 8000W-1000 Rev.000