

SHOOTER PACKAGE

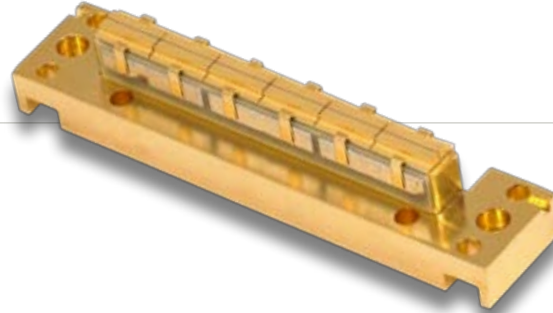
LASER DIODE ARRAY

120W CW

NORTHROP GRUMMAN

PART NUMBER: ARR166C120
6-BAR 6-SHOOTER 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	120	W
Operating Current	120W at 25°C Heat Sink	25	A
Threshold Current	25°C Heat Sink	8	A
Slope Efficiency	25°C Heat Sink	6.90	W/A
Electrical-Optical Efficiency	120W at 25°C Heat Sink	47	%
Center Wavelength	120W at 25°C Heat Sink	808	nm
Wavelength Tolerance	120W at 25°C Heat Sink	+/-3	nm
Spectral Width	120W 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	0.024	Ω
Operating Voltage	25°C Heat Sink, 120W	10.2	V

ABSOLUTE MAXIMUM RATINGS

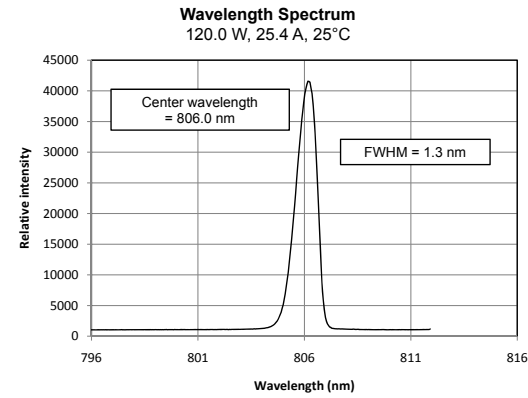
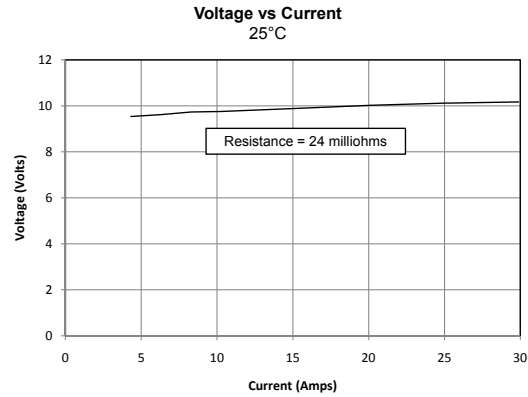
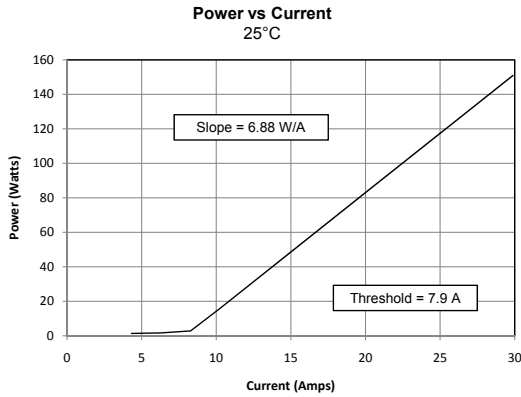
Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

NOTES

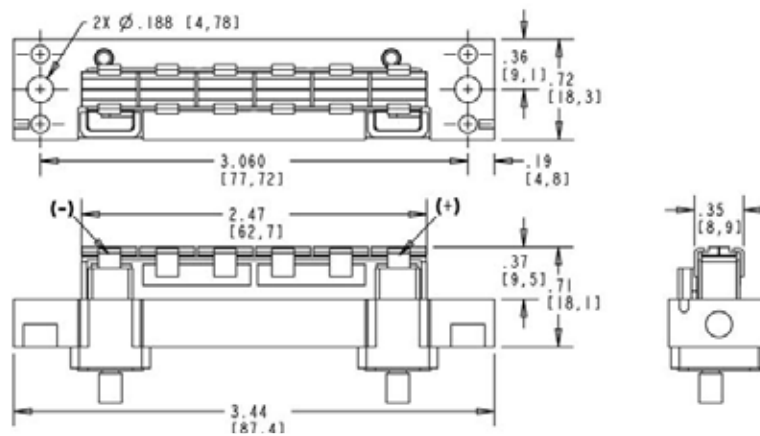
- (1) These specifications apply for operation at 808nm. Other wavelengths available upon request.
- (2) A dry nitrogen environment should be provided by the user when storing and operating at temperatures below ambient dew point.
- (3) Fast axis and slow axis lensing options are available for most NG-CEO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

120W CW

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 0001-1000 (Rev. 08/08)

SHOOTER PACKAGE

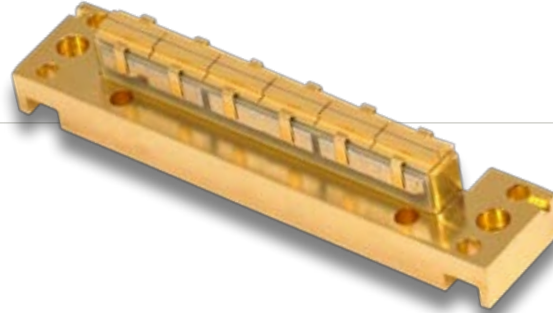
LASER DIODE ARRAY

240W CW

NORTHROP GRUMMAN

PART NUMBER: ARR166C240
6-BAR 6-SHOOTER 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	240	W
Operating Current	240W at 25°C Heat Sink	47	A
Threshold Current	25°C Heat Sink	12	A
Slope Efficiency	25°C Heat Sink	6.90	W/A
Electrical-Optical Efficiency	240W at 25°C Heat Sink	53	%
Center Wavelength	240W at 25°C Heat Sink	808	nm
Wavelength Tolerance	240W at 25°C Heat Sink	+/-3	nm
Spectral Width	240W 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	0.012	Ω
Operating Voltage	25°C Heat Sink, 240W	10.2	V

ABSOLUTE MAXIMUM RATINGS

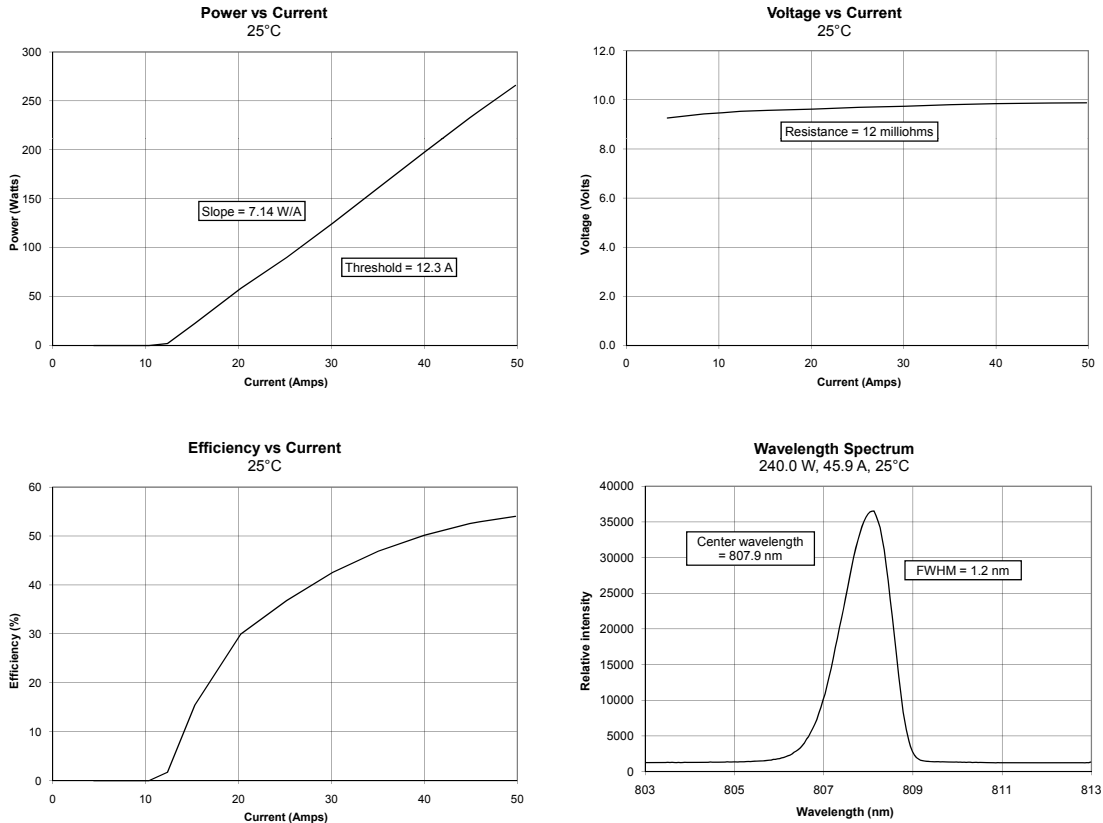
Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

NOTES

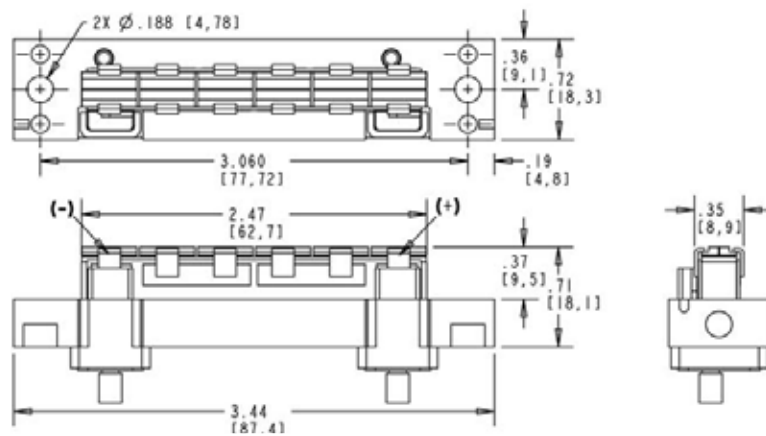
- (1) These specifications apply for operation at 808nm. Other wavelengths available upon request.
- (2) A dry nitrogen environment should be provided by the user when storing and operating at temperatures below ambient dew point.
- (3) Fast axis and slow axis lensing options are available for most NG-CEO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

240W CW

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

SHOOTER PACKAGE

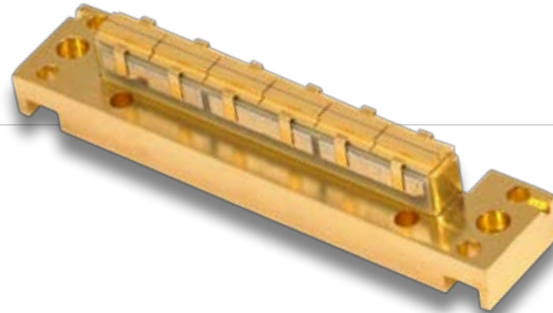
LASER DIODE ARRAY

1200W QCW

NORTHROP GRUMMAN

PART NUMBER: ARR166P1200
6-BAR 6-SHOOTER 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
- Shooter Package Available With Up To 48 Bars And A Maximum Output Power Of 9.6 kW

OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	175A at 25°C Heat Sink	1200	W
Operating Current	1200W at 25°C Heat Sink	175	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	750	W/A
Electrical-Optical Efficiency	1200W at 25°C Heat Sink	57	%
Center Wavelength	1200W at 25°C Heat Sink	808	nm
Wavelength Tolerance	1200W at 25°C Heat Sink	+/-3	nm
Spectral Width	1200W 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	0.012	Ω
Operating Voltage	25°C Heat Sink, 1200W	12.0	V

ABSOLUTE MAXIMUM RATINGS

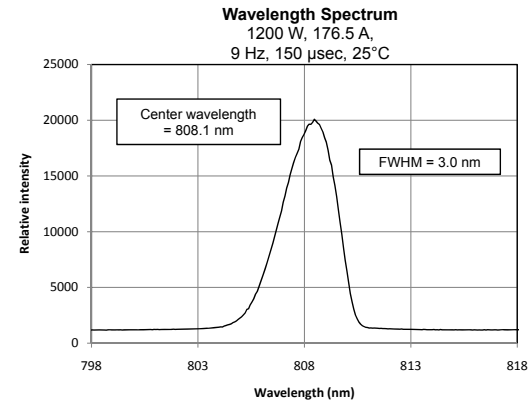
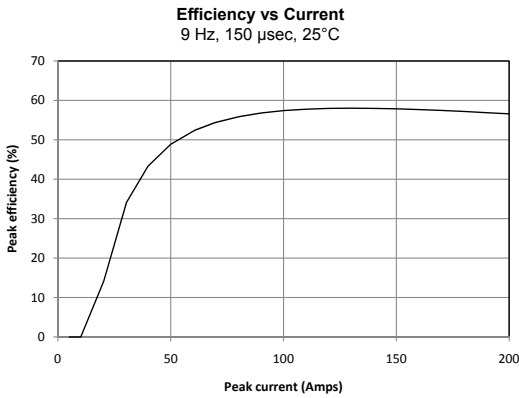
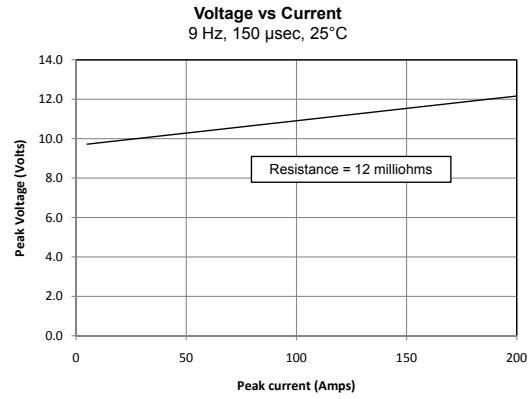
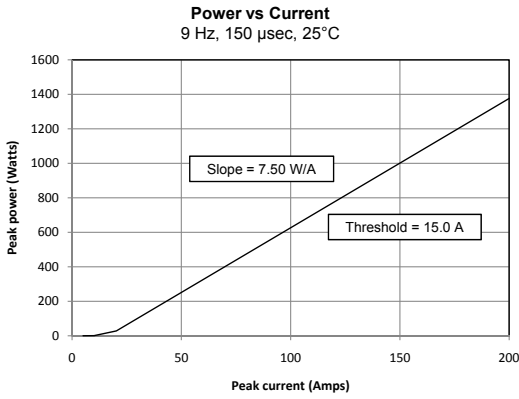
Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

NOTES

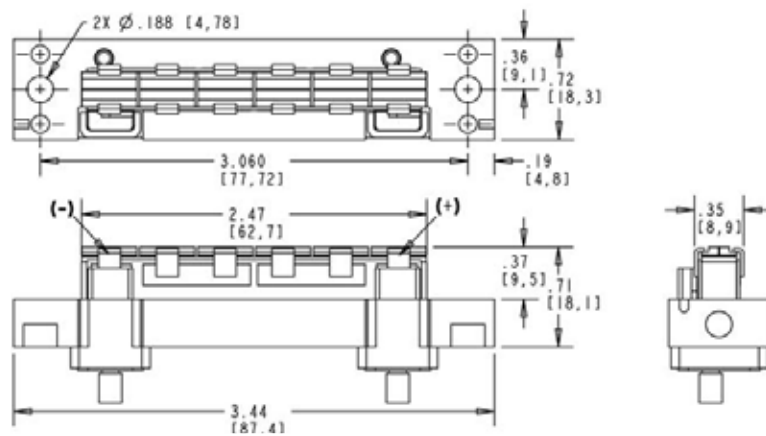
- (1) These specifications apply for operation at 808nm. Other wavelengths available upon request.
- (2) A dry nitrogen environment should be provided by the user when storing and operating at temperatures below ambient dew point.
- (3) Fast axis and slow axis lensing options are available for most NG-CEO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

1200W 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 HW 9001-1000 Rev0000

SHOOTER PACKAGE

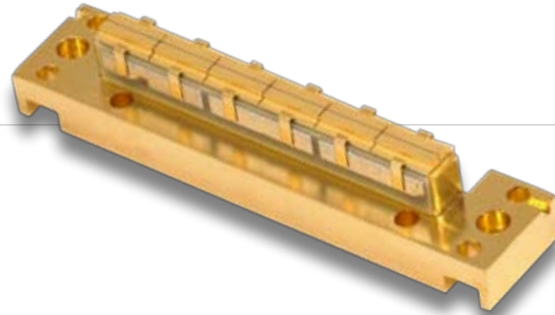
LASER DIODE ARRAY

1800W QCW

NORTHROP GRUMMAN

PART NUMBER: ARR166P1800
18-BAR 6-SHOOTER 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
- Shooter Package Available With Up To 48 Bars And A Maximum Output Power Of 9.6 kW

OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	95A at 25°C Heat Sink	1800	W
Operating Current	1800W at 25°C Heat Sink	95	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	22.5	W/A
Electrical-Optical Efficiency	1800W at 25°C Heat Sink	58	%
Center Wavelength	1800W at 25°C Heat Sink	808	nm
Wavelength Tolerance	1800W at 25°C Heat Sink	+/-3	nm
Spectral Width	1800W 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	0.036	Ω
Operating Voltage	25°C Heat Sink, 1800W	32.4	V

ABSOLUTE MAXIMUM RATINGS

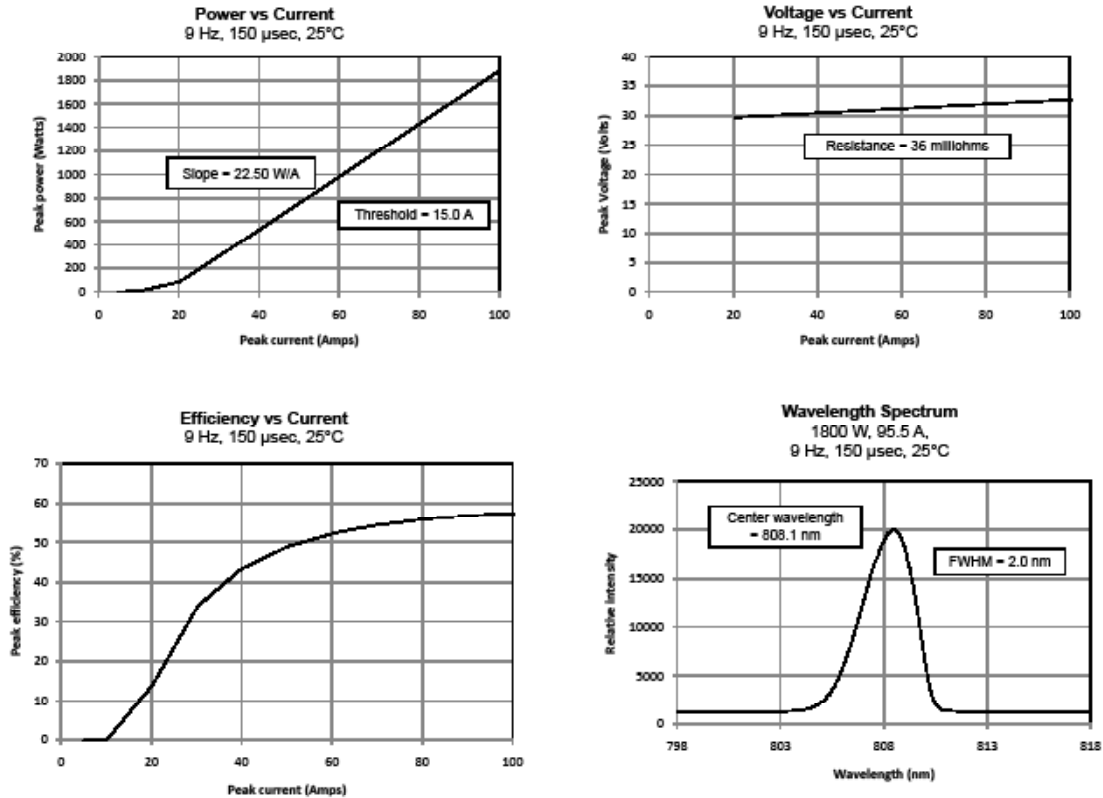
Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

NOTES

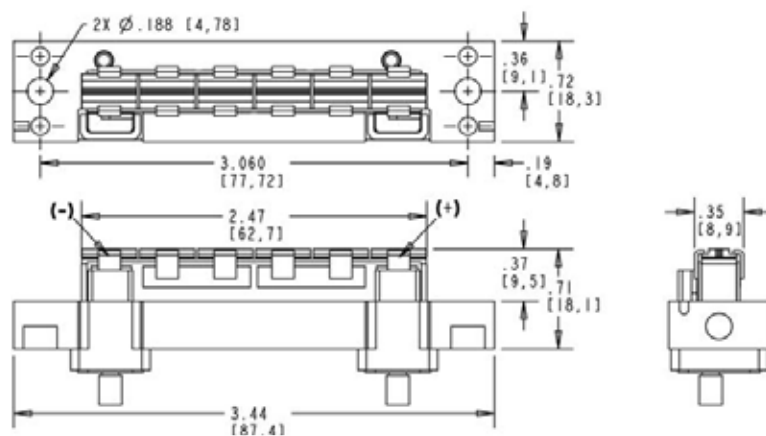
- (1) These specifications apply for operation at 808nm. Other wavelengths available upon request.
- (2) A dry nitrogen environment should be provided by the user when storing and operating at temperatures below ambient dew point.
- (3) Fast axis and slow axis lensing options are available for most NG-CEO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

1800W 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

SHOOTER PACKAGE

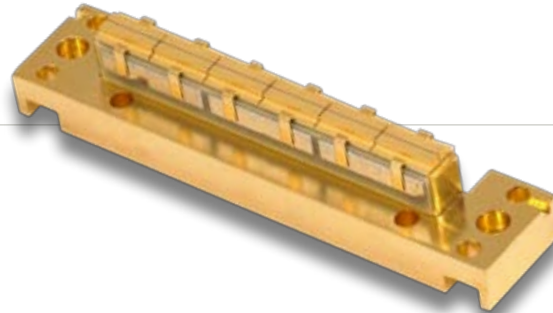
LASER DIODE ARRAY

2400W QCW

NORTHROP GRUMMAN

PART NUMBER: ARR166P2400
12-BAR 6-SHOOTER 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
- Shooter Package Available With Up To 48 Bars And A Maximum Output Power Of 9.6 kW

OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	175A at 25°C Heat Sink	2400	W
Operating Current	2400W at 25°C Heat Sink	175	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	15.0	W/A
Electrical-Optical Efficiency	2400W at 25°C Heat Sink	57	%
Center Wavelength	2400W at 25°C Heat Sink	808	nm
Wavelength Tolerance	2400W at 25°C Heat Sink	+/-3	nm
Spectral Width	2400W 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	0.024	Ω
Operating Voltage	25°C Heat Sink, 2400W	24.0	V

ABSOLUTE MAXIMUM RATINGS

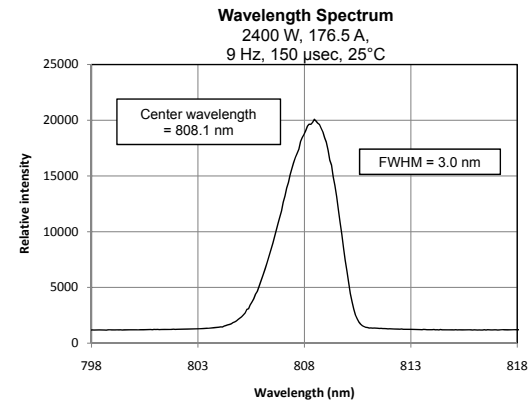
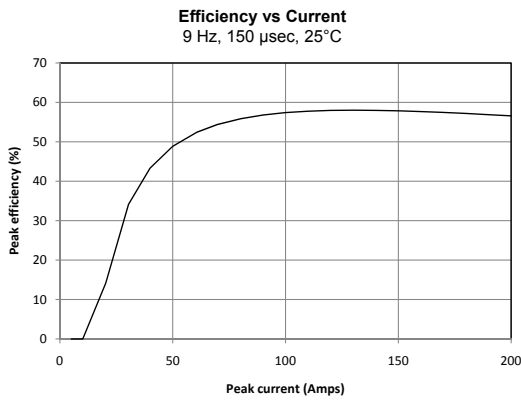
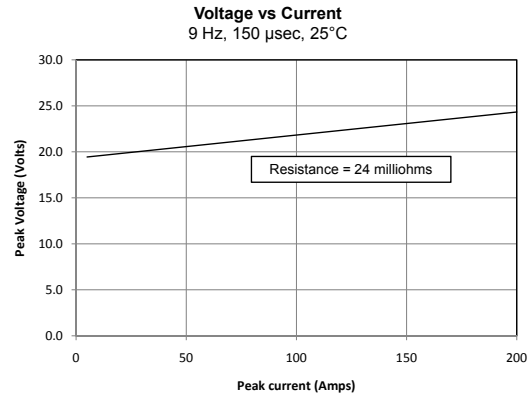
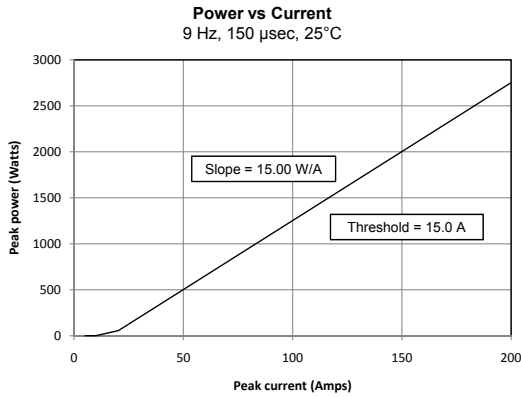
Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

NOTES

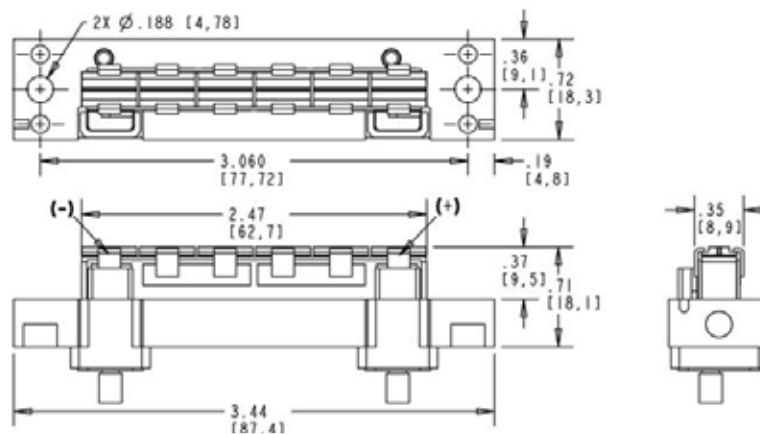
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- (3) Fast axis and slow axis lensing options are available for most NG-CEO heat exchanger designs.

2400W 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 HW 9001-1000 Rev0000

SHOOTER PACKAGE

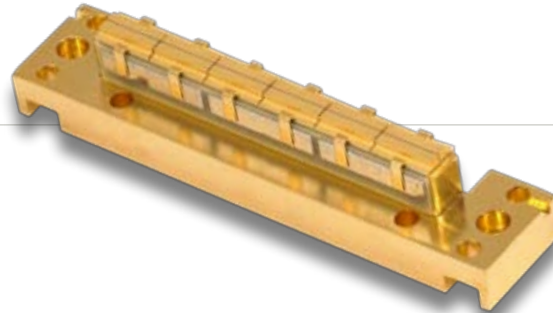
LASER DIODE ARRAY

3600W QCW

NORTHROP GRUMMAN

PART NUMBER: ARR166P3600
18-BAR 6-SHOOTER 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
- Shooter Package Available With Up To 48 Bars And A Maximum Output Power Of 9.6 kW

OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	175A at 25°C Heat Sink	3600	W
Operating Current	3600W at 25°C Heat Sink	175	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	22.5	W/A
Electrical-Optical Efficiency	3600W at 25°C Heat Sink	57	%
Center Wavelength	3600W at 25°C Heat Sink	808	nm
Wavelength Tolerance	3600W at 25°C Heat Sink	+/-3	nm
Spectral Width	3600W 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	0.036	Ω
Operating Voltage	25°C Heat Sink, 3600W	36.0	V

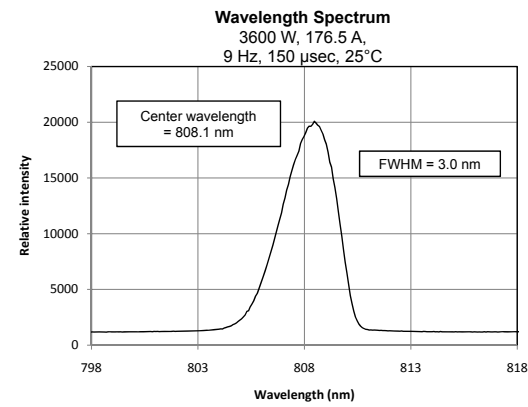
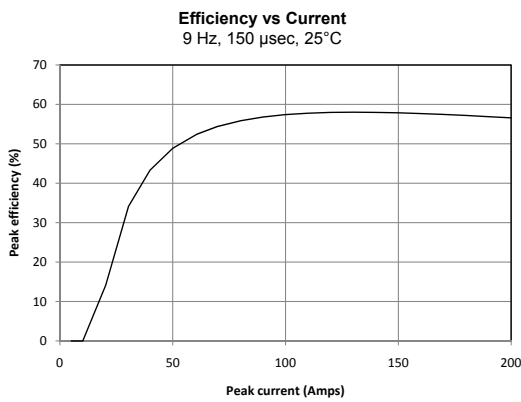
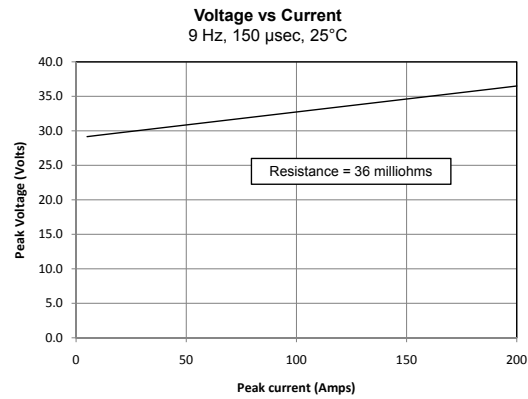
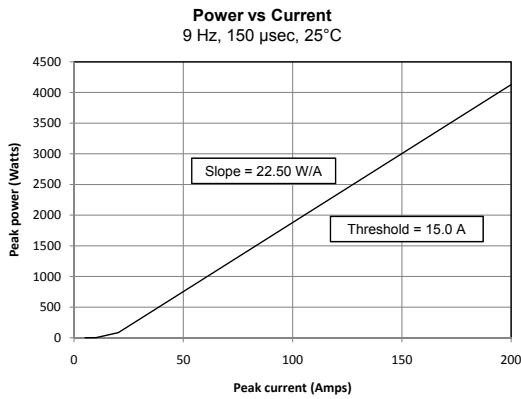
ABSOLUTE MAXIMUM RATINGS

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

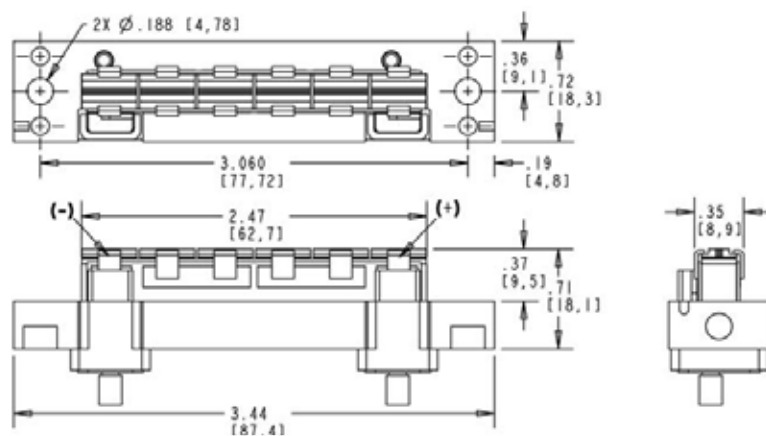
NOTES

- (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 Rev0000

SHOOTER PACKAGE

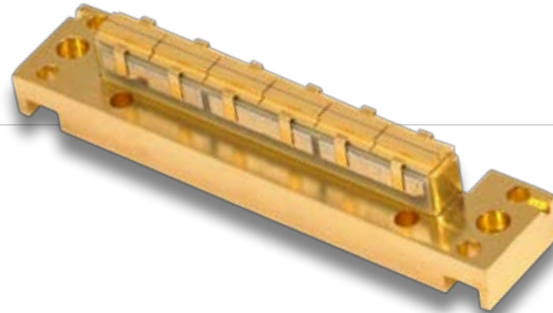
LASER DIODE ARRAY

4800W QCW

NORTHROP GRUMMAN

PART NUMBER: ARR166P4800
24-BAR 6-SHOOTER 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
- Shooter Package Available With Up To 48 Bars And A Maximum Output Power Of 9.6 kW

OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	175A at 25°C Heat Sink	4800	W
Operating Current	4800W at 25°C Heat Sink	175	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	30.0	W/A
Electrical-Optical Efficiency	4800W at 25°C Heat Sink	57	%
Center Wavelength	4800W at 25°C Heat Sink	808	nm
Wavelength Tolerance	4800W at 25°C Heat Sink	+/-3	nm
Spectral Width	4800W 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	0.048	Ω
Operating Voltage	25°C Heat Sink, 4800W	48.0	V

ABSOLUTE MAXIMUM RATINGS

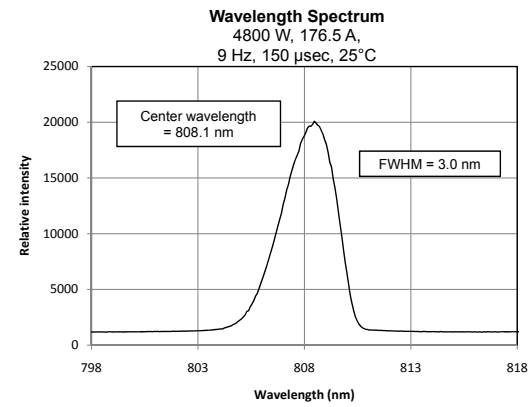
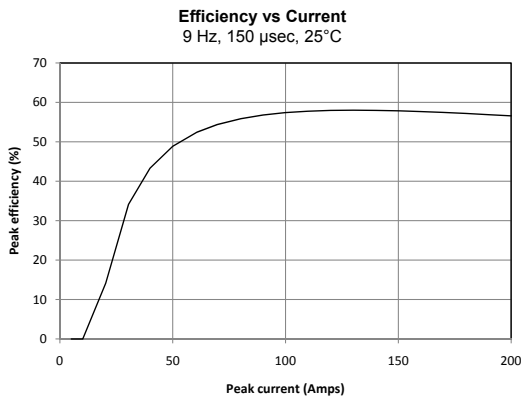
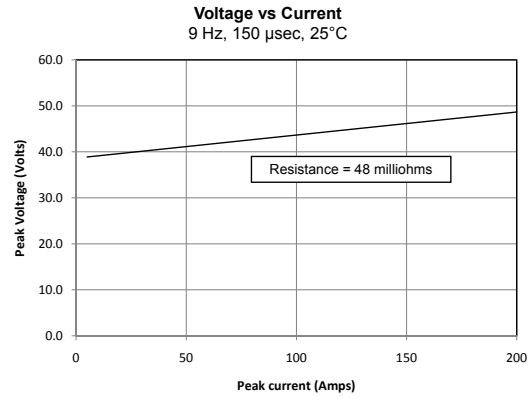
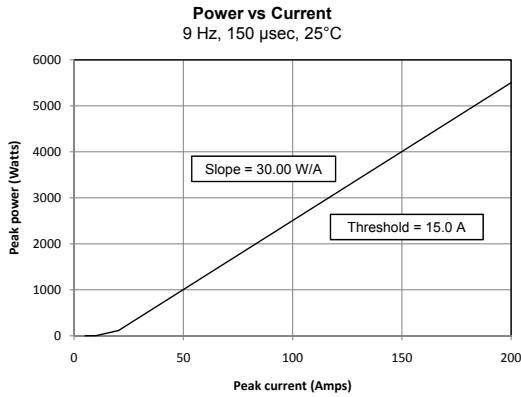
Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

NOTES

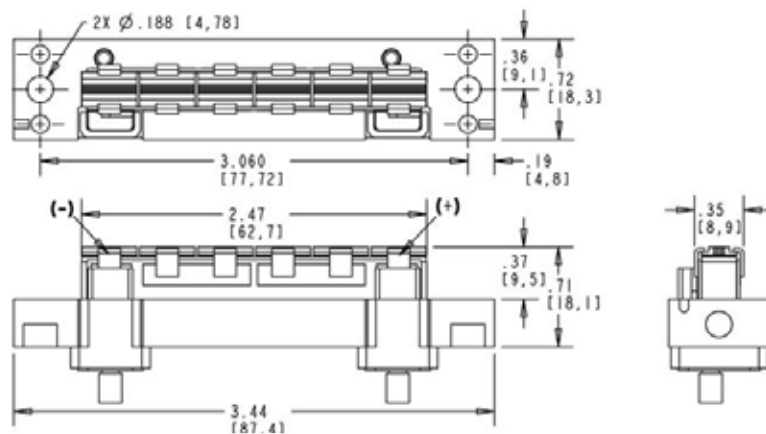
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4800W QCW

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)

SHOOTER PACKAGE

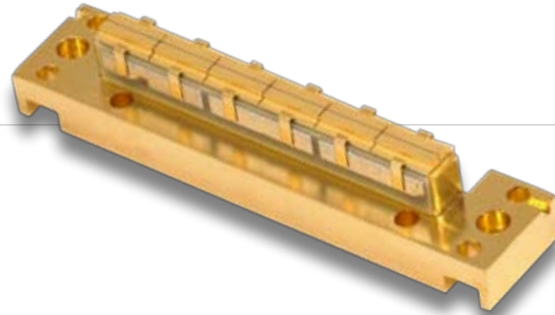
LASER DIODE ARRAY

9600W QCW

NORTHROP GRUMMAN

PART NUMBER: ARR166P9600
48-BAR 6-SHOOTER 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
- Shooter Package Available With Up To 48 Bars And A Maximum Output Power Of 9.6 kW

OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	175A at 25°C Heat Sink	9600	W
Operating Current	9600W at 25°C Heat Sink	175	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	60.0	W/A
Electrical-Optical Efficiency	9600W at 25°C Heat Sink	57	%
Center Wavelength	9600W at 25°C Heat Sink	808	nm
Wavelength Tolerance	9600W at 25°C Heat Sink	+/-3	nm
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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	0.096	Ω
Operating Voltage	25°C Heat Sink, 9600W	96.0	V

ABSOLUTE MAXIMUM RATINGS

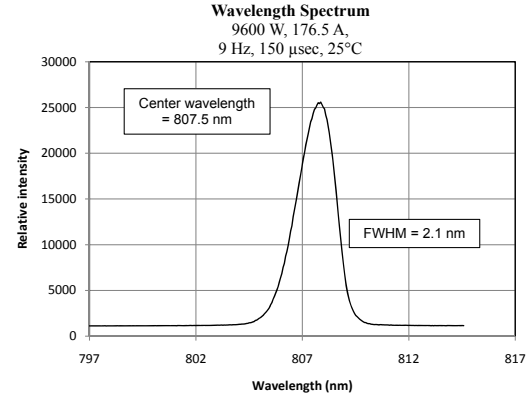
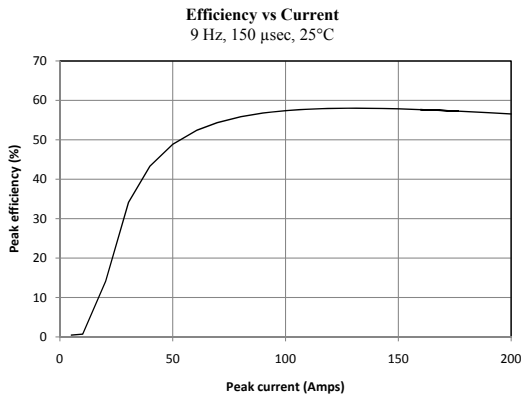
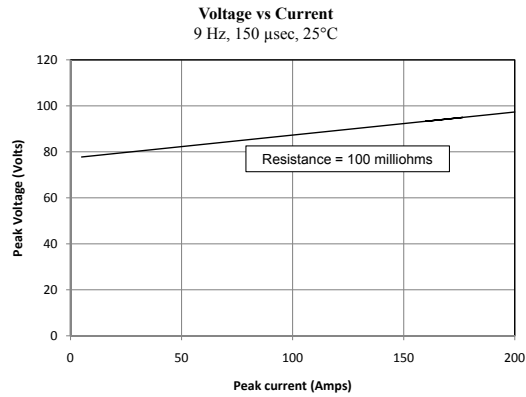
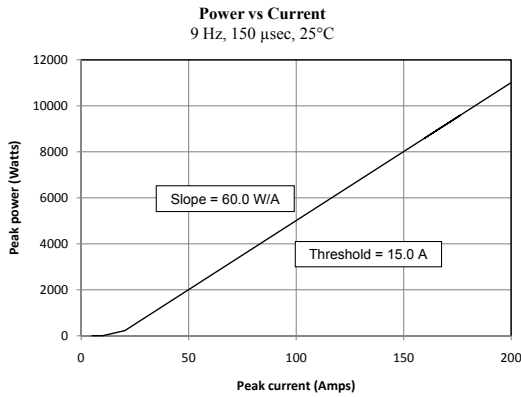
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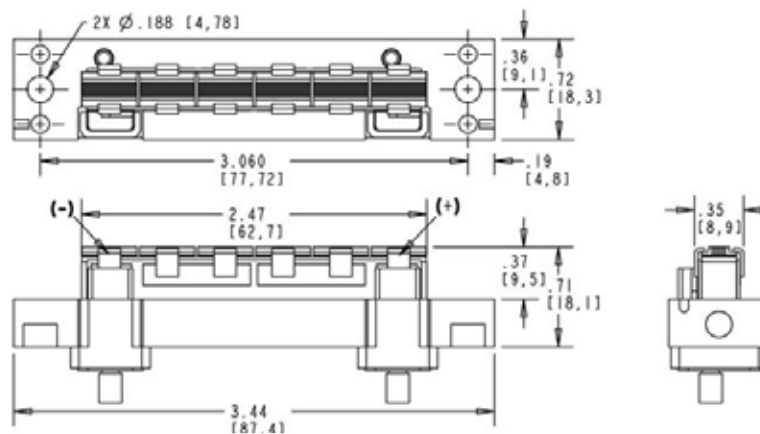
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9600W QCW

OPTICAL CHARACTERISTICS (SAMPLE)



MECHANICAL CHARACTERISTICS



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REV. A 10/09 9600W-1000-00000