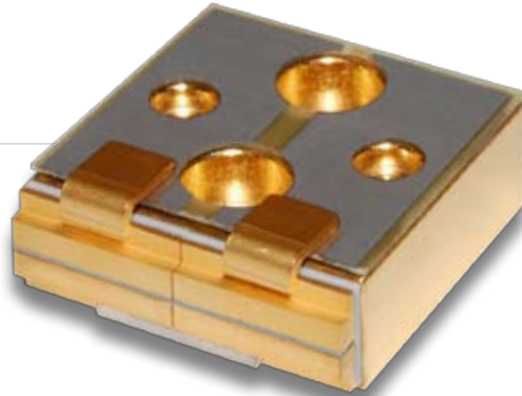


PART NUMBER: ARR186P400  
2-BAR AA PACKAGE

### FEATURES AND BENEFITS



- Assembled With Hard Solder & Expansion Matched Materials
- Ideal For Long Pulse And/Or High Duty Cycle Applications
- Standard Bar Pitch Options Include 400  $\mu\text{m}$ , 800  $\mu\text{m}$ , & 1200  $\mu\text{m}$
- Available Wavelengths: 790-1550nm
- Multi-wavelength Configurations Available
- AA Package Also Available With Up To 16 Bars For A Maximum Output Power Of 3.2 kW

### OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	175A at 25°C Heat Sink	400	W
Operating Current	400W at 25°C Heat Sink	175	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	2.50	W/A
Electrical-Optical Efficiency	400W at 25°C Heat Sink	57	%
Center Wavelength	400W at 25°C Heat Sink	808	nm
Wavelength Tolerance	400W at 25°C Heat Sink	+/-3	nm
Spectral Width	400W 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	0.004	$\Omega$
Operating Voltage	25°C Heat Sink, 400W	4.0	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

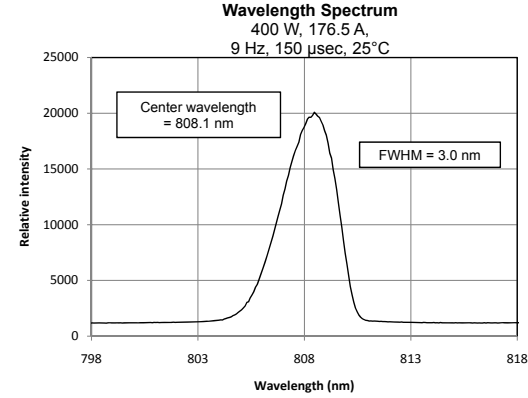
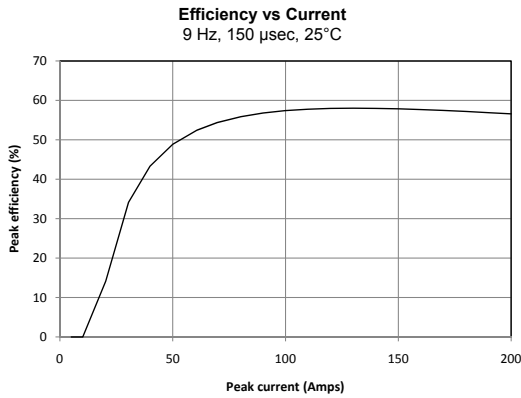
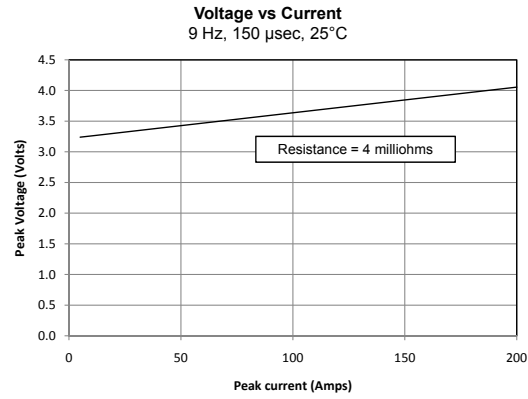
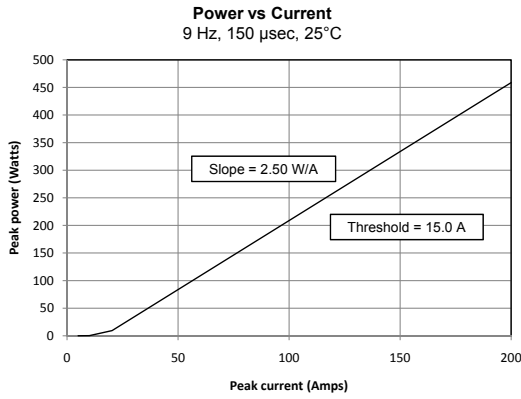
### NOTES

- (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.

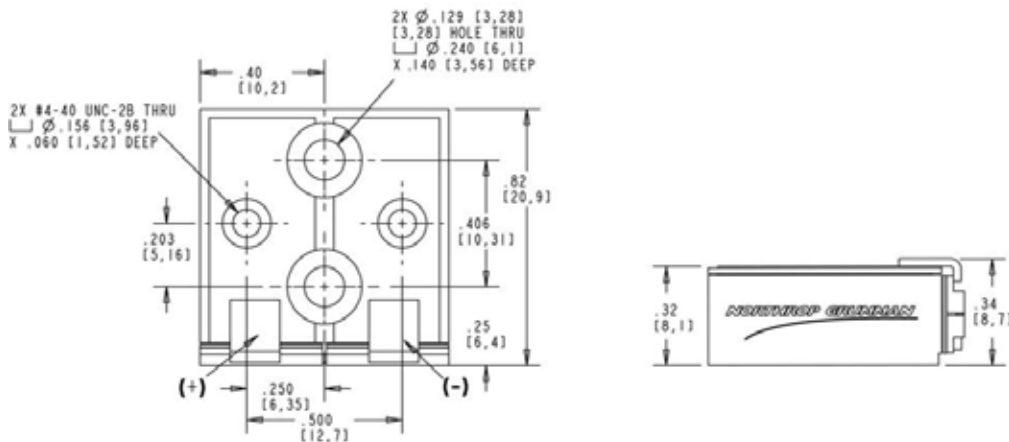
400W QCW

**NORTHROP GRUMMAN**

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 ⚠**

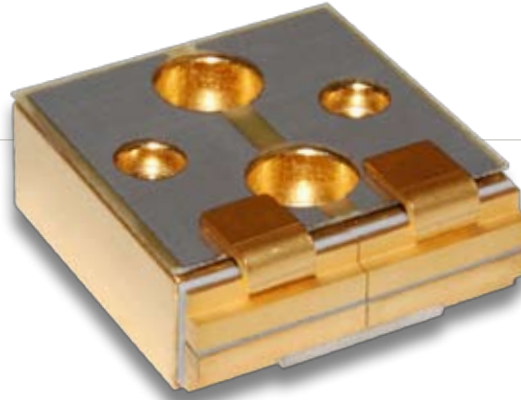
ELECTROSTATIC DISCHARGE SENSITIVE DEVICE  
REQUIRING SPECIAL HANDLING

REV. A 10/09

PART NUMBER: ARR186P600

6-BAR AA PACKAGE

## FEATURES AND BENEFITS



- Assembled With Hard Solder & Expansion Matched Materials
- Ideal For Long Pulse And/Or High Duty Cycle Applications
- Standard Bar Pitch Options Include 400  $\mu\text{m}$ , 800  $\mu\text{m}$ , & 1200  $\mu\text{m}$
- Available Wavelengths: 790-1550nm
- Multi-wavelength Configurations Available
- AA Package Also Available With Up To 16 Bars For A Maximum Output Power Of 3.2 kW

## OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	95A at 25°C Heat Sink	600	W
Operating Current	600W at 25°C Heat Sink	95	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	7.50	W/A
Electrical-Optical Efficiency	600W at 25°C Heat Sink	58	%
Center Wavelength	600W at 25°C Heat Sink	808	nm
Wavelength Tolerance	600W at 25°C Heat Sink	+/-3	nm
Spectral Width	600W 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	0.012	$\Omega$
Operating Voltage	25°C Heat Sink, 600W	10.8	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

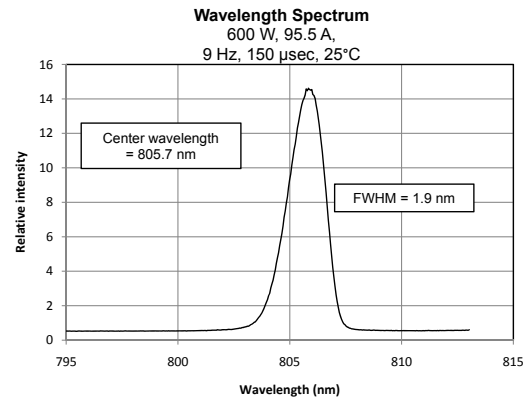
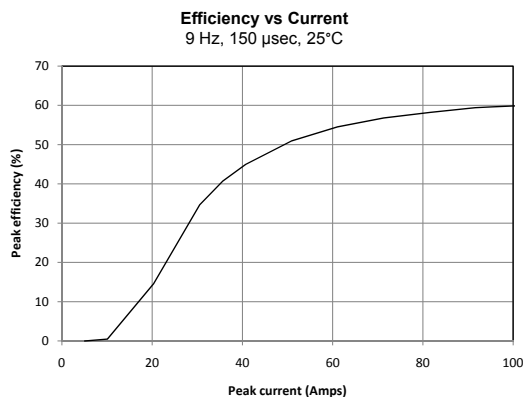
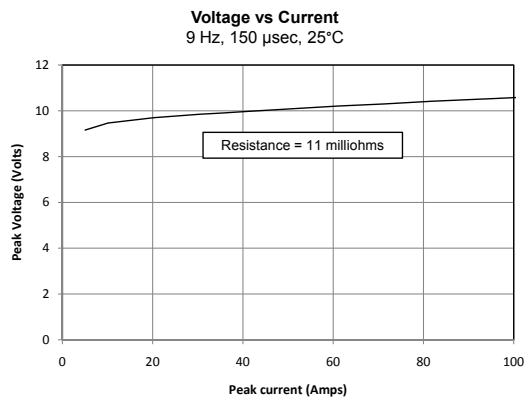
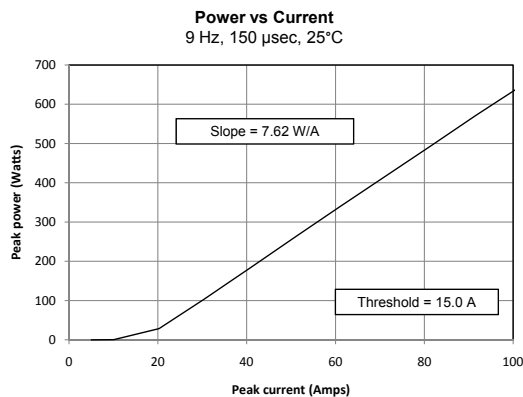
## NOTES

- (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.

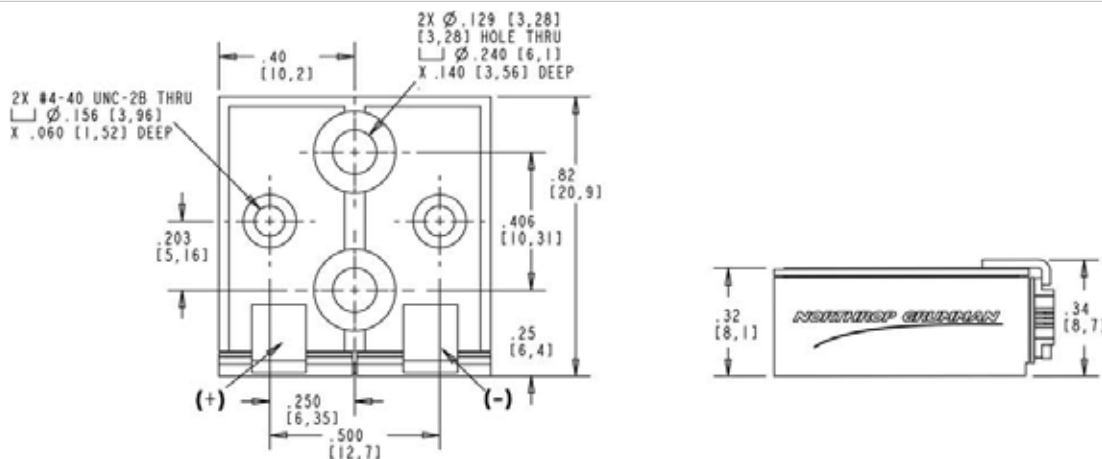
600W QCW

**NORTHROP GRUMMAN**

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



PART NUMBER: ARR186P800

8-BAR AA PACKAGE

### FEATURES AND BENEFITS

- Assembled With Hard Solder & Expansion Matched Materials
- Ideal For Long Pulse And/Or High Duty Cycle Applications
- Standard Bar Pitch Options Include 400  $\mu\text{m}$ , 800  $\mu\text{m}$ , & 1200  $\mu\text{m}$
- Available Wavelengths: 790-1550nm
- Multi-wavelength Configurations Available
- AA Package Also Available With Up To 16 Bars For A Maximum Output Power Of 3.2 kW

### OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	95A at 25°C Heat Sink	800	W
Operating Current	800W at 25°C Heat Sink	95	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	10.0	W/A
Electrical-Optical Efficiency	800W at 25°C Heat Sink	58	%
Center Wavelength	800W at 25°C Heat Sink	808	nm
Wavelength Tolerance	800W at 25°C Heat Sink	+/-3	nm
Spectral Width	800W 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	0.016	$\Omega$
Operating Voltage	25°C Heat Sink, 800W	14.4	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

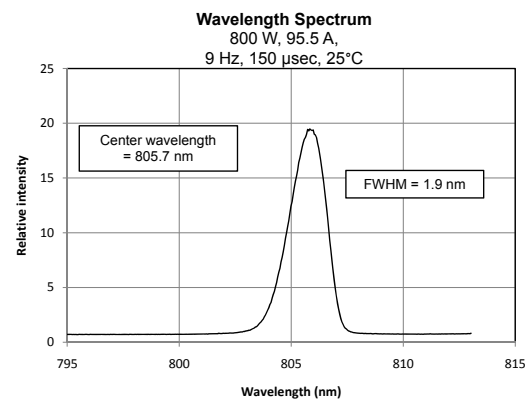
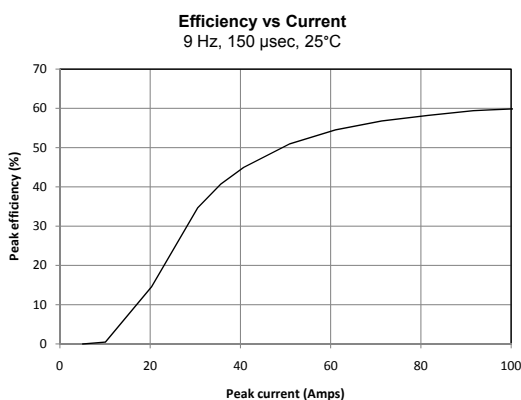
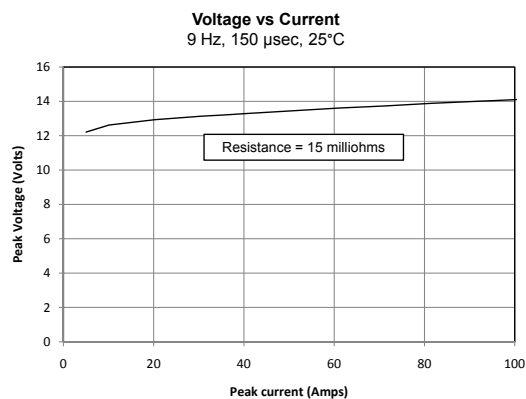
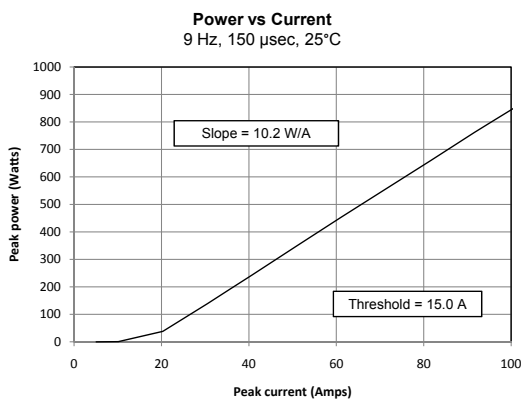
- (1) These specifications apply for operation at 808nm. Other wavelengths available upon request.
- (2) A dry nitrogen environment should be provided by the user when storing and operating at temperatures below ambient dew point.
- (3) Fast axis and slow axis lensing options are available for most NG-CEO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



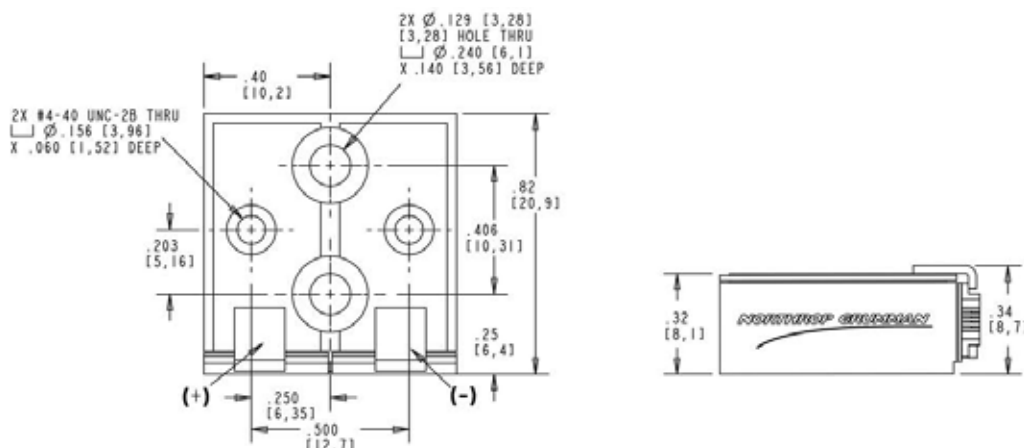
800W QCW

**NORTHROP GRUMMAN**

OPTICAL CHARACTERISTICS (SAMPLE)



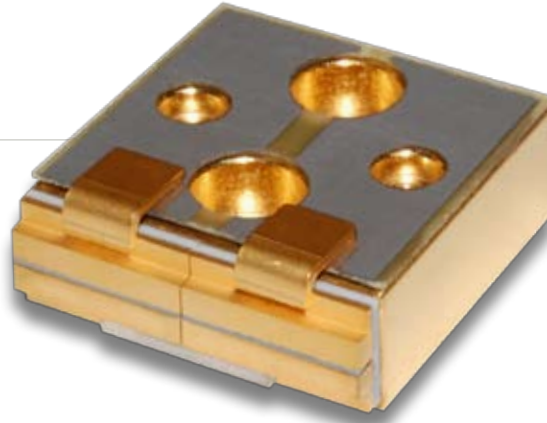
MECHANICAL CHARACTERISTICS



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**WARNING**  
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



PART NUMBER: ARR186P1200  
12-BAR AA PACKAGE

### FEATURES AND BENEFITS

- Assembled With Hard Solder & Expansion Matched Materials
- Ideal For Long Pulse And/Or High Duty Cycle Applications
- Standard Bar Pitch Options Include 400  $\mu\text{m}$ , 800  $\mu\text{m}$ , & 1200  $\mu\text{m}$
- Available Wavelengths: 790-1550nm
- Multi-wavelength Configurations Available
- AA Package Also Available With Up To 16 Bars For A Maximum Output Power Of 3.2 kW

### OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	95A at 25°C Heat Sink	1200	W
Operating Current	1200W at 25°C Heat Sink	95	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	15.0	W/A
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	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	0.024	$\Omega$
Operating Voltage	25°C Heat Sink, 1200W	21.6	V

### ABSOLUTE MAXIMUM RATINGS

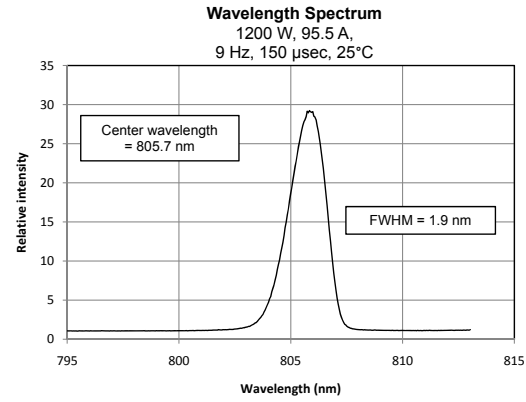
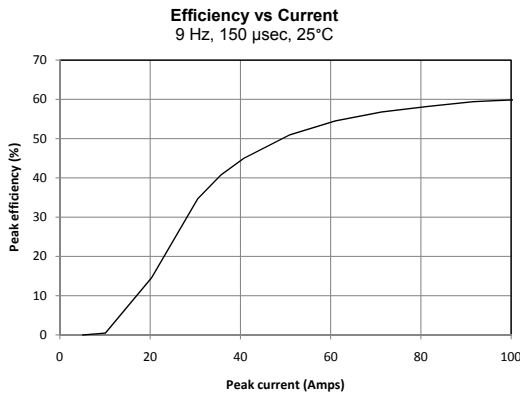
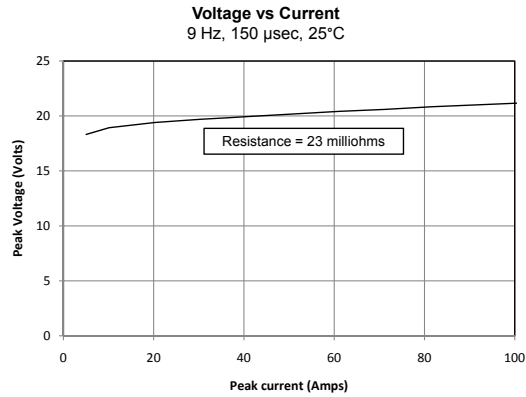
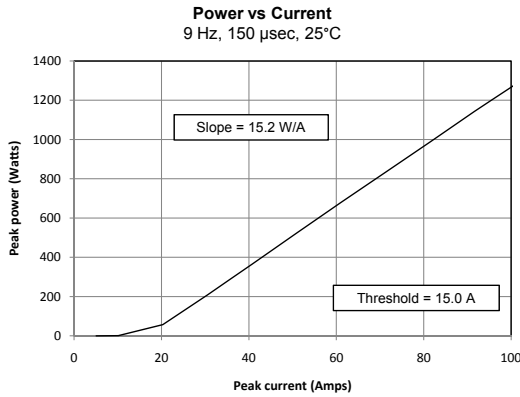
Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

### NOTES

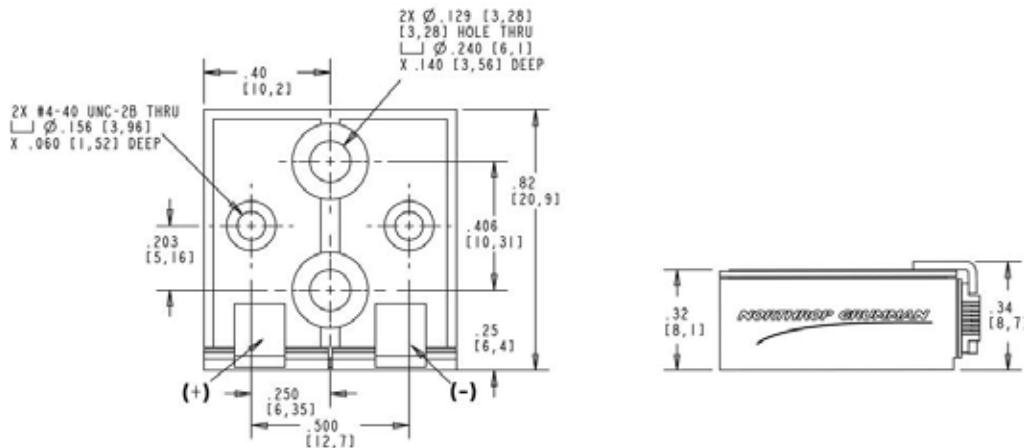
- (1) These specifications apply for operation at 808nm. Other wavelengths available upon request.
- (2) A dry nitrogen environment should be provided by the user when storing and operating at temperatures below ambient dew point.
- (3) Fast axis and slow axis lensing options are available for most NG-CEO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

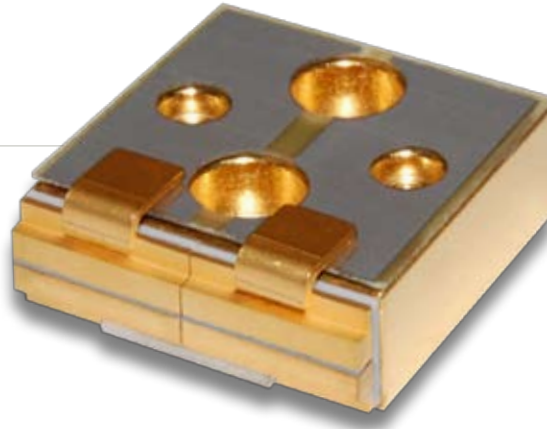
\* Diode laser  
5W & up, 780-1560nm  
CLASS IV

**WARNING**

ELECTROSTATIC DISCHARGE SENSITIVE DEVICE  
REQUIRING SPECIAL HANDLING

REV. A 10/09





PART NUMBER: ARR186P1600  
16-BAR AA PACKAGE

### FEATURES AND BENEFITS

- Assembled With Hard Solder & Expansion Matched Materials
- Ideal For Long Pulse And/Or High Duty Cycle Applications
- Standard Bar Pitch Options Include 400  $\mu\text{m}$ , 800  $\mu\text{m}$ , & 1200  $\mu\text{m}$
- Available Wavelengths: 790-1550nm
- Multi-wavelength Configurations Available
- AA Package Available With Up To 16 Bars For A Maximum Output Power Of 3.2 kW

### OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	95A at 25°C Heat Sink	1600	W
Operating Current	1600W at 25°C Heat Sink	95	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	20.0	W/A
Electrical-Optical Efficiency	1600W at 25°C Heat Sink	58	%
Center Wavelength	1600W at 25°C Heat Sink	808	nm
Wavelength Tolerance	1600W at 25°C Heat Sink	+/-3	nm
Spectral Width	1600W at 25°C Heat Sink	2.5	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	0.032	$\Omega$
Operating Voltage	25°C Heat Sink, 1600W	28.8	V

### ABSOLUTE MAXIMUM RATINGS

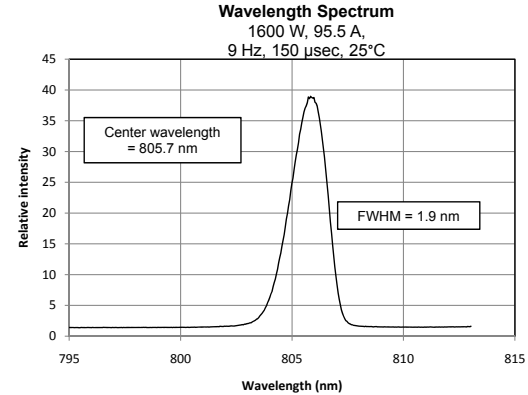
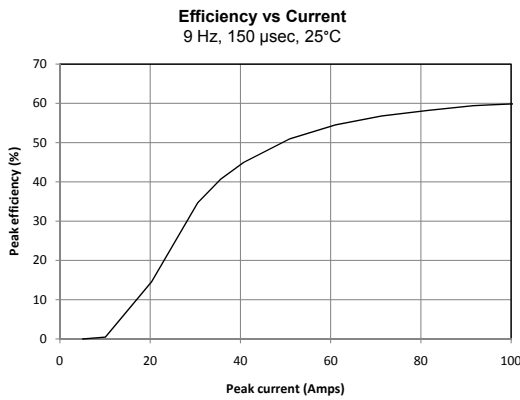
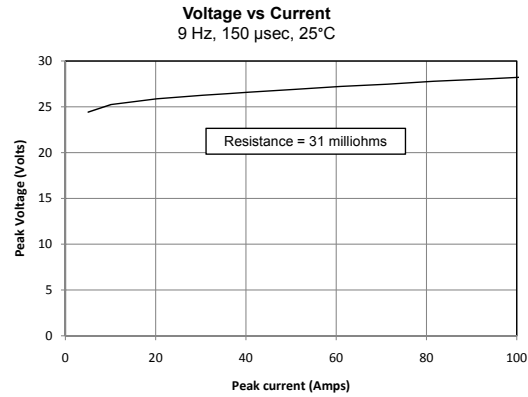
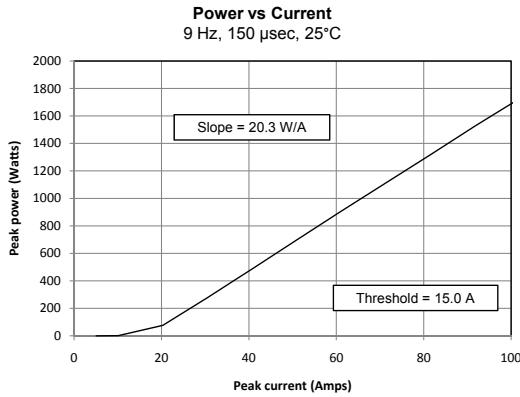
Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

### NOTES

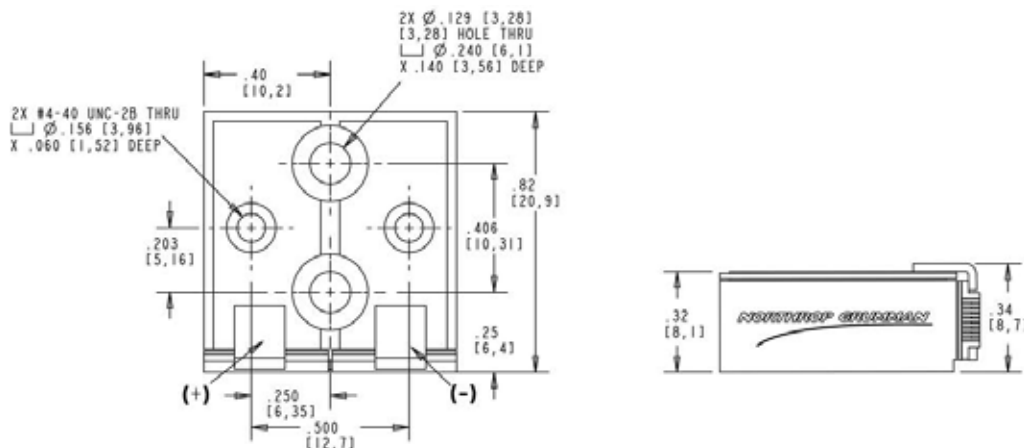
- (1) These specifications apply for operation at 808nm. Other wavelengths available upon request.
- (2) A dry nitrogen environment should be provided by the user when storing and operating at temperatures below ambient dew point.
- (3) Fast axis and slow axis lensing options are available for most NG-CEO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

1600W QCW

OPTICAL CHARACTERISTICS (SAMPLE)



MECHANICAL CHARACTERISTICS



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**DANGER**

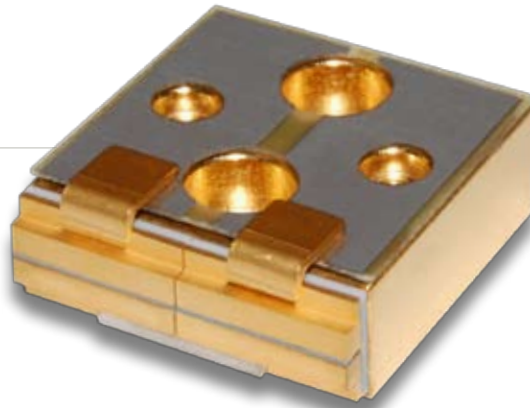
INVISIBLE LASER RADIATION  
AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION.

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

**WARNING**

ELECTROSTATIC DISCHARGE SENSITIVE DEVICE  
REQUIRING SPECIAL HANDLING

REV. A 10/09



PART NUMBER: ARR186P2400  
12-BAR AA PACKAGE

### FEATURES AND BENEFITS

- Assembled With Hard Solder & Expansion Matched Materials
- Ideal For Long Pulse And/Or High Duty Cycle Applications
- Standard Bar Pitch Options Include 400  $\mu\text{m}$ , 800  $\mu\text{m}$ , & 1200  $\mu\text{m}$
- Available Wavelengths: 790-1550nm
- Multi-wavelength Configurations Available
- AA Package Also Available With Up To 16 Bars For A Maximum Output Power Of 3.2 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	$\Omega$
Operating Voltage	25°C Heat Sink, 2400W	24.0	V

### ABSOLUTE MAXIMUM RATINGS

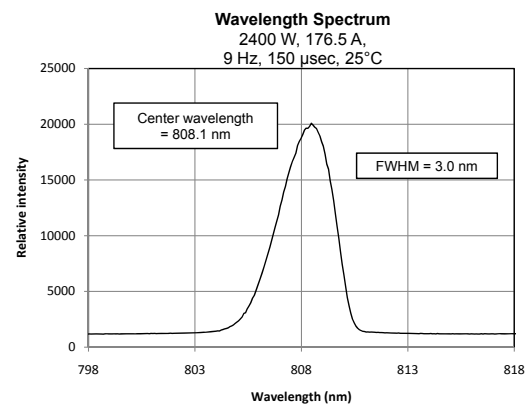
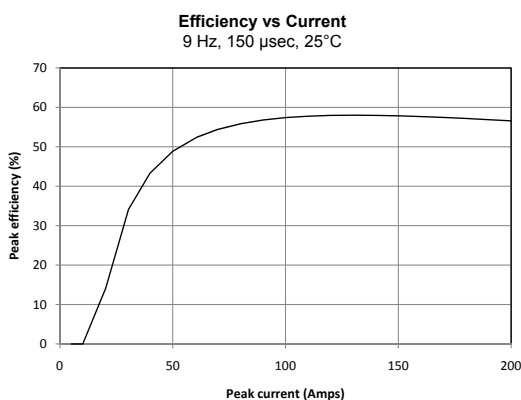
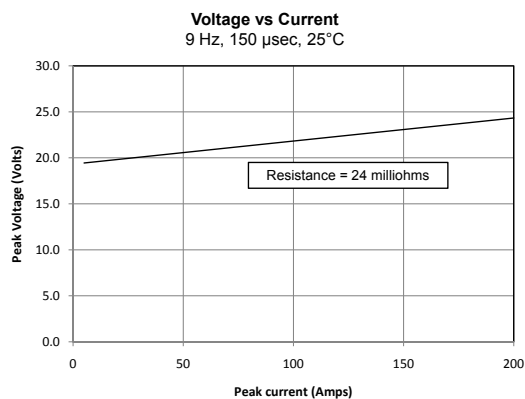
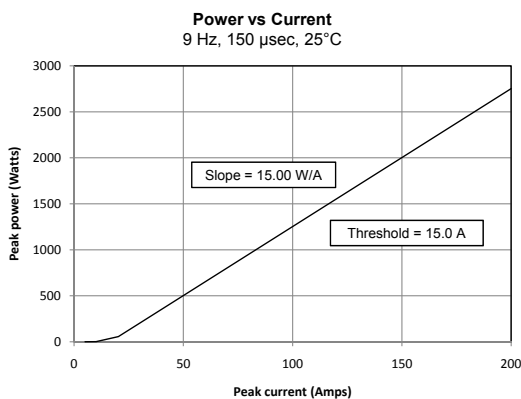
Parameter	Conditions
Reverse Current	0 A
Reverse Voltage	0 V
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C

### NOTES

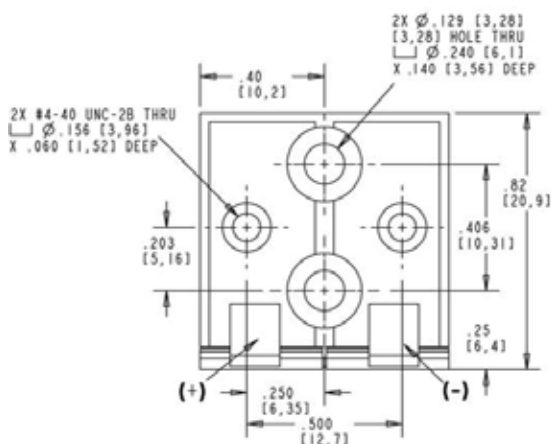
- (1) These specifications apply for operation at 808nm. Other wavelengths available upon request.
- (2) A dry nitrogen environment should be provided by the user when storing and operating at temperatures below ambient dew point.
- (3) Fast axis and slow axis lensing options are available for most NG-CEO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

2400W QCW

OPTICAL CHARACTERISTICS (SAMPLE)



MECHANICAL CHARACTERISTICS



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**DANGER**

INVISIBLE LASER RADIATION

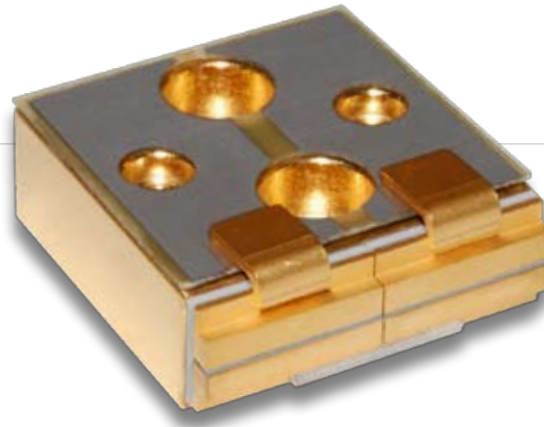
AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION.

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

**WARNING**

ELECTROSTATIC DISCHARGE SENSITIVE DEVICE  
REQUIRING SPECIAL HANDLING

REV: A 10/09



PART NUMBER: ARR186P3200  
16-BAR AA PACKAGE

### FEATURES AND BENEFITS

- Assembled With Hard Solder & Expansion Matched Materials
- Ideal For Long Pulse And/Or High Duty Cycle Applications
- Standard Bar Pitch Options Include 400  $\mu\text{m}$ , 800  $\mu\text{m}$ , & 1200  $\mu\text{m}$
- Available Wavelengths: 790-1550nm
- Multi-wavelength Configurations Available
- AA Package Available With Up To 16 Bars For A Maximum Output Power Of 3.2 kW

### OPTICAL CHARACTERISTICS

Parameter	Conditions	Typical	Units
QCW Power Output	175A at 25°C Heat Sink	3200	W
Operating Current	3200W at 25°C Heat Sink	175	A
Threshold Current	25°C Heat Sink	15	A
Slope Efficiency	25°C Heat Sink	20.0	W/A
Electrical-Optical Efficiency	3200W at 25°C Heat Sink	57	%
Center Wavelength	3200W at 25°C Heat Sink	808	nm
Wavelength Tolerance	3200W at 25°C Heat Sink	+/-3	nm
Spectral Width	3200W 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	0.032	$\Omega$
Operating Voltage	25°C Heat Sink, 3200W	32.0	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

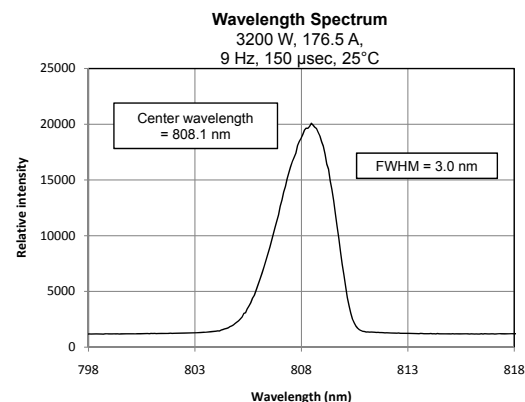
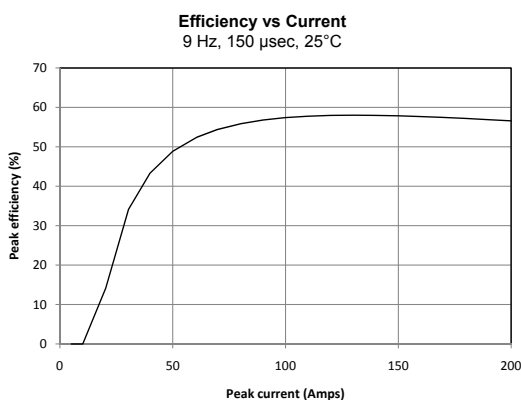
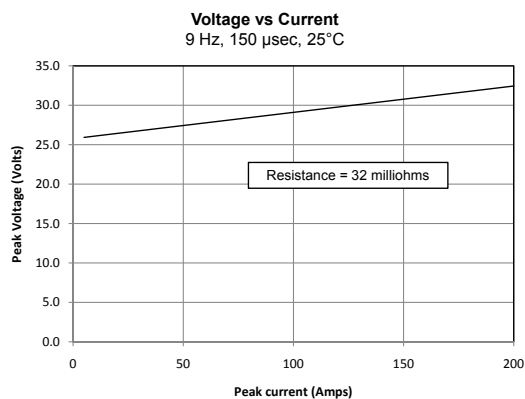
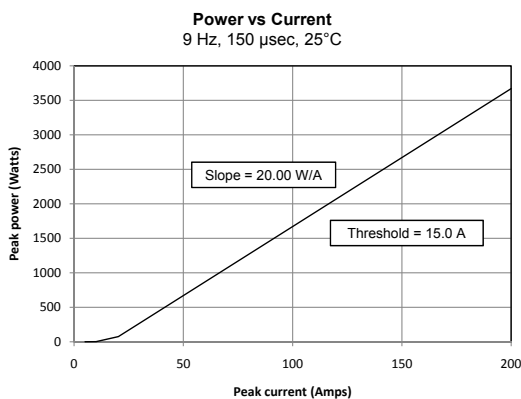
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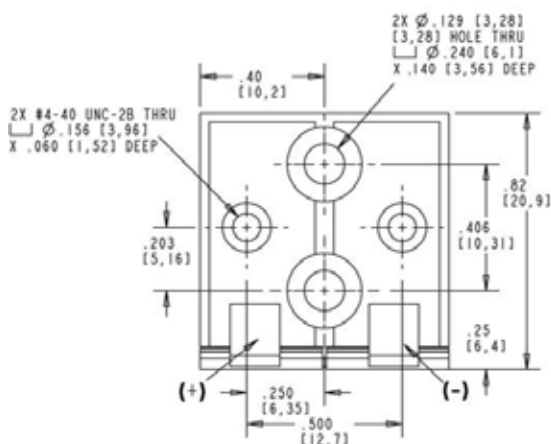
## 3200W QCW

**NORTHROP GRUMMAN**

### 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**

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REV. A 10/09