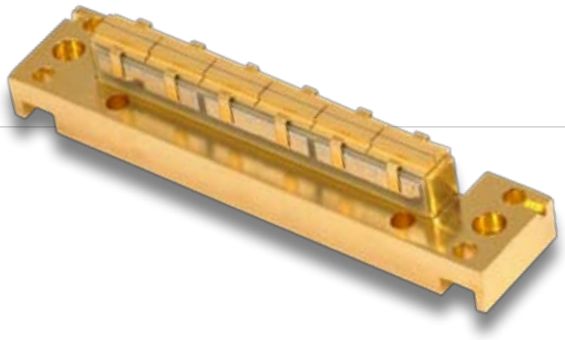
# SHOOTER PACKAGE

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.

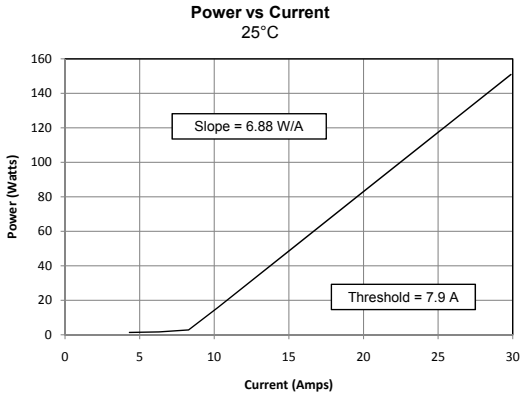
(2) A dry nitrogen environment should be provided by the user when storing and operating at temperatures below ambient dew point.

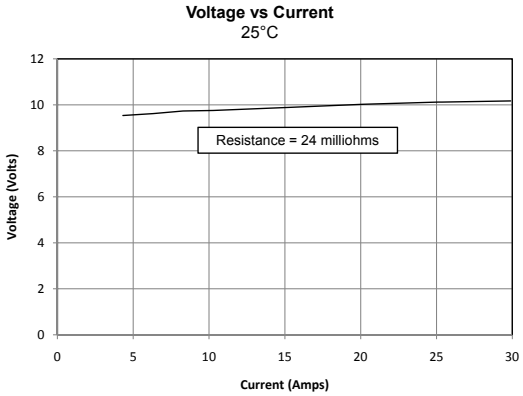
(3) Fast axis and slow axis lensing options are available for most NG-CEO heat exchanger designs.

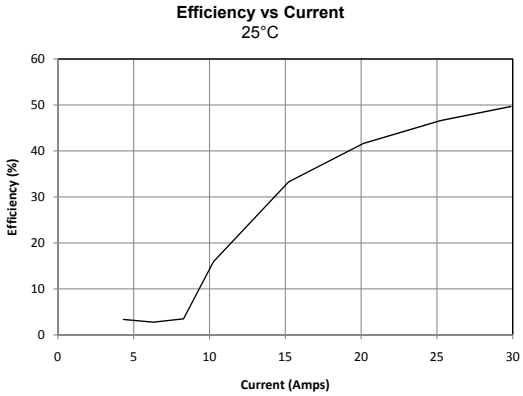
# 120W CW

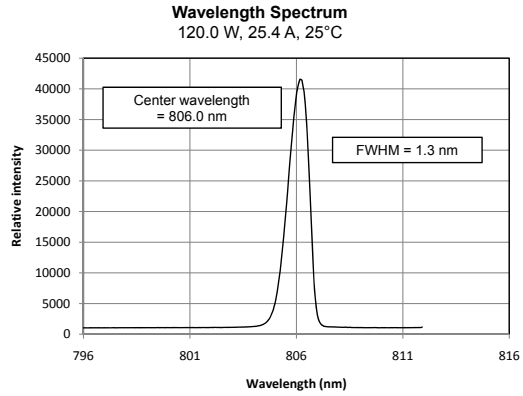
NORTHROP GRUMMAN

## OPTICAL CHARACTERISTICS (SAMPLE)

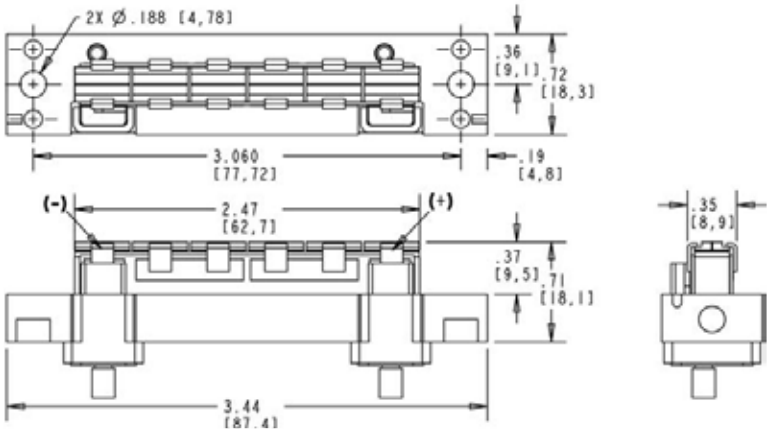



## MECHANICAL CHARACTERISTICS



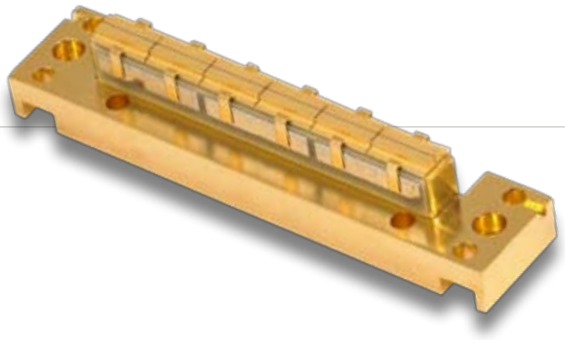



# SHOOTER PACKAGE

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.

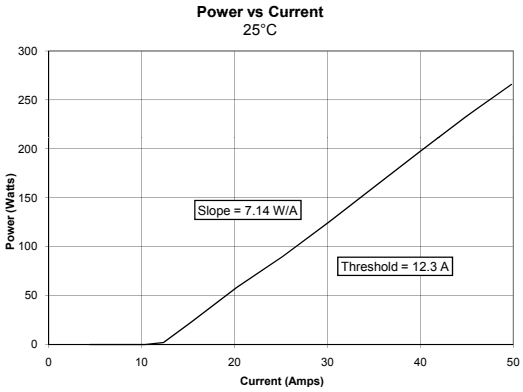
(2) A dry nitrogen environment should be provided by the user when storing and operating at temperatures below ambient dew point.

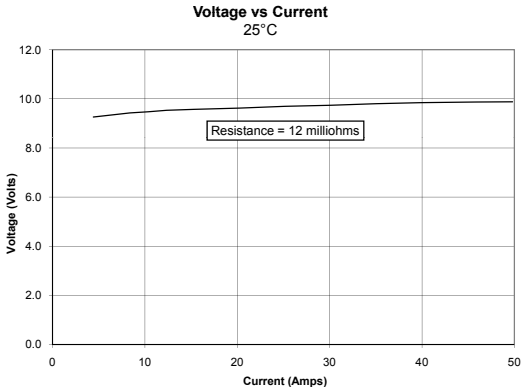
(3) Fast axis and slow axis lensing options are available for most NG-CEO heat exchanger designs.

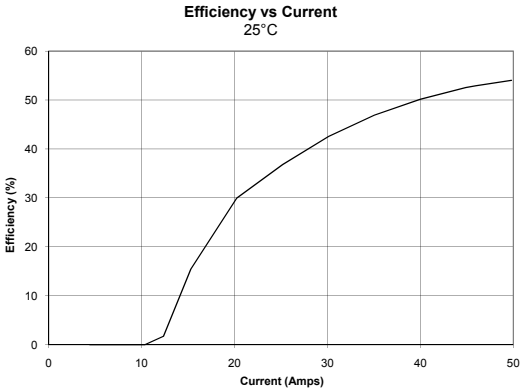
# 240W CW

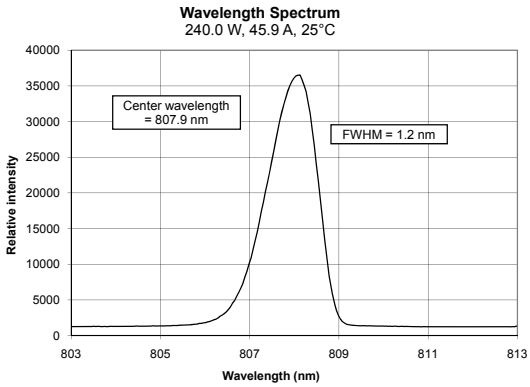
NORTHROP GRUMMAN

## OPTICAL CHARACTERISTICS (SAMPLE)

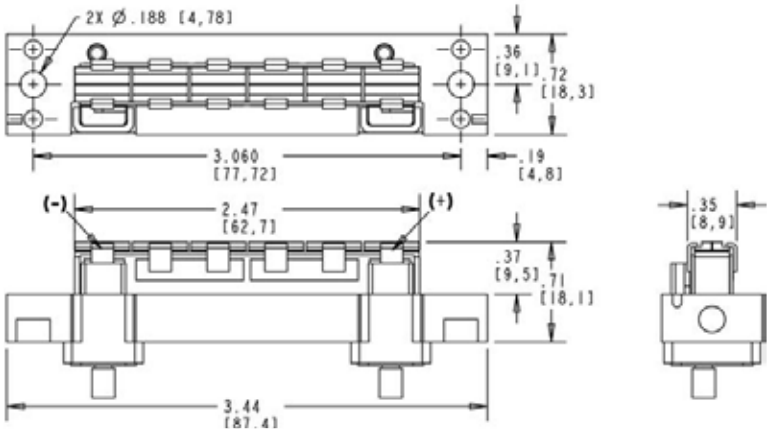



## MECHANICAL CHARACTERISTICS



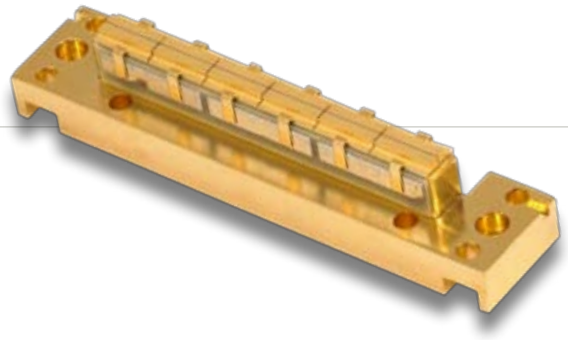



# SHOOTER PACKAGE

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 | 7.50 | 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.

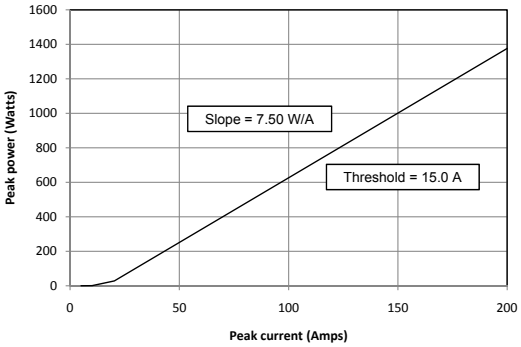
(3) Fast axis and slow axis lensing options are available for most NG-CEO heat exchanger designs.

# 1200W QCW

NORTHROP GRUMMAN

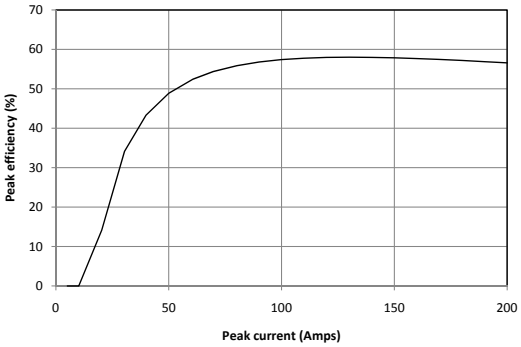
## OPTICAL CHARACTERISTICS (SAMPLE)

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

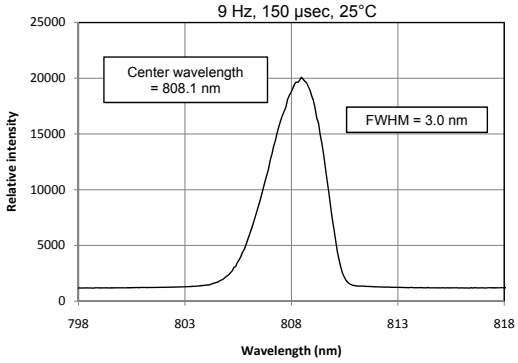



**Voltage vs Current**
9 Hz, 150 µsec, 25°C

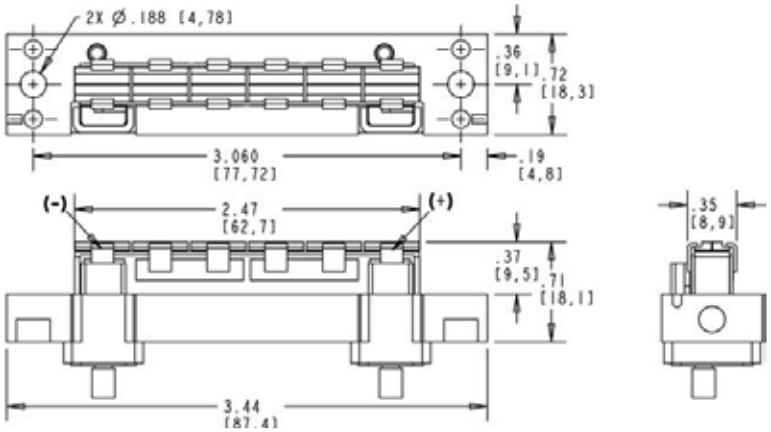

**Efficiency vs Current**
9 Hz, 150 µsec, 25°C




**Wavelength Spectrum**
1200 W, 176.5 A,
9 Hz, 150 µsec, 25°C




## MECHANICAL CHARACTERISTICS



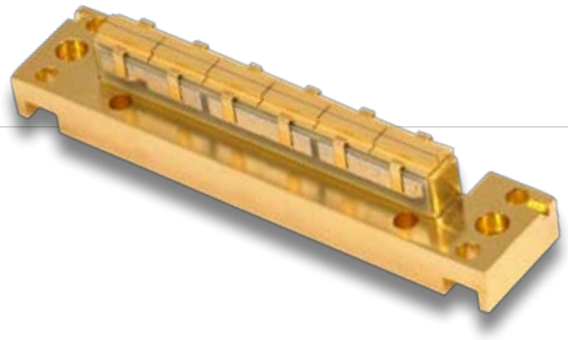



# SHOOTER PACKAGE

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.

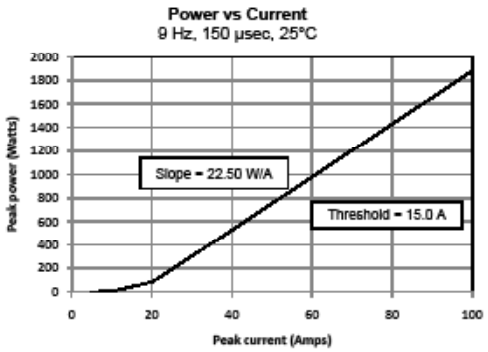
(2) A dry nitrogen environment should be provided by the user when storing and operating at temperatures below ambient dew point.

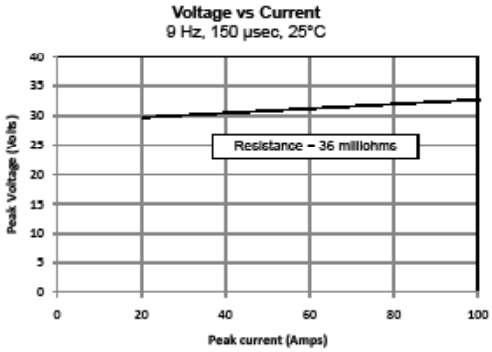
(3) Fast axis and slow axis lensing options are available for most NG-CEO heat exchanger designs.

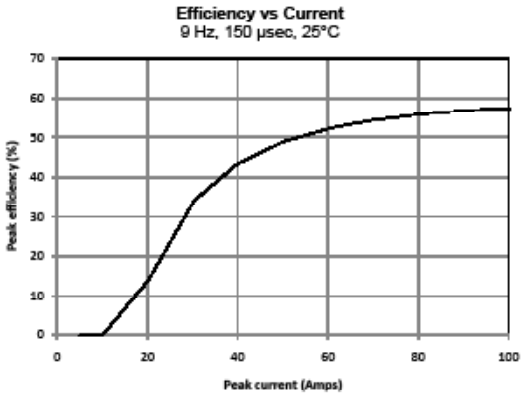
# 1800W QCW

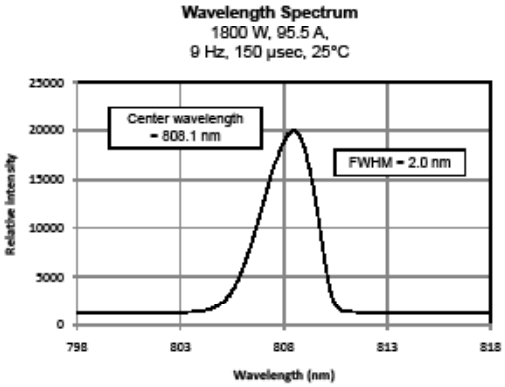
NORTHROP GRUMMAN

## OPTICAL CHARACTERISTICS (SAMPLE)

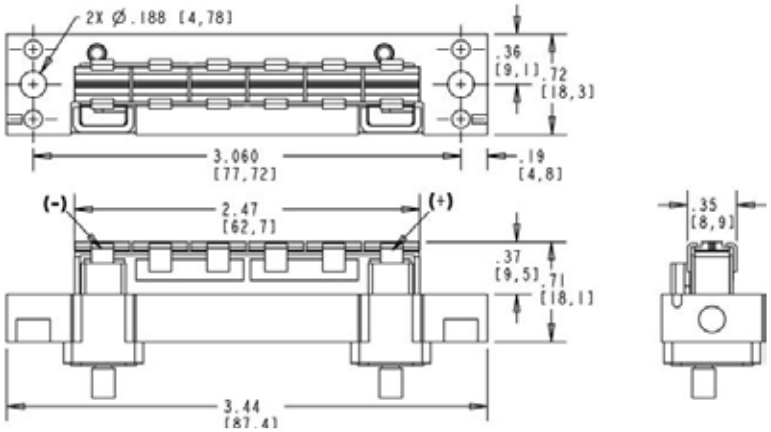



## MECHANICAL CHARACTERISTICS



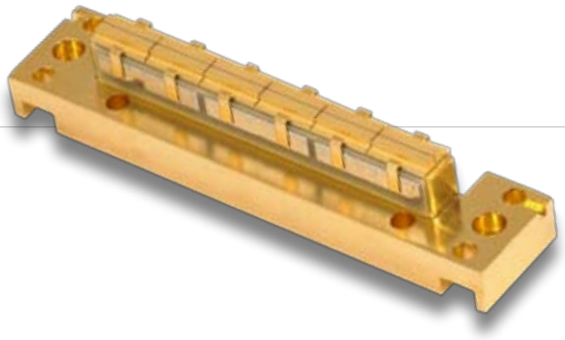



# SHOOTER PACKAGE

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

(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.

LASER DIODE ARRAY

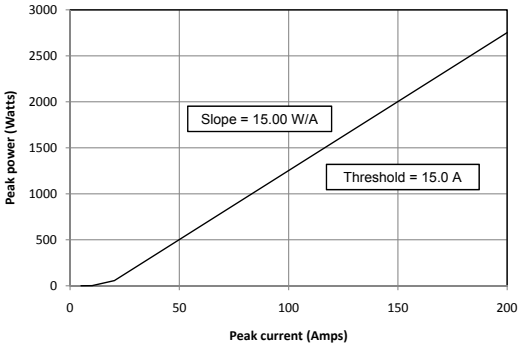
# SHOOTER PACKAGE

# 2400W QCW

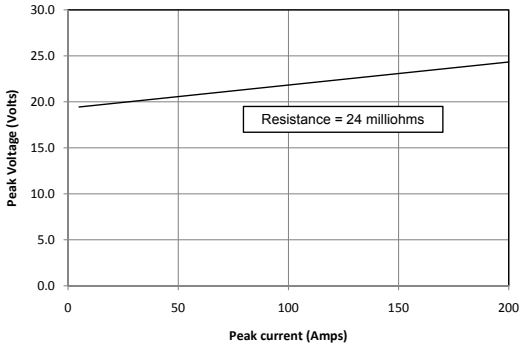
NORTHROP GRUMMAN

## OPTICAL CHARACTERISTICS (SAMPLE)

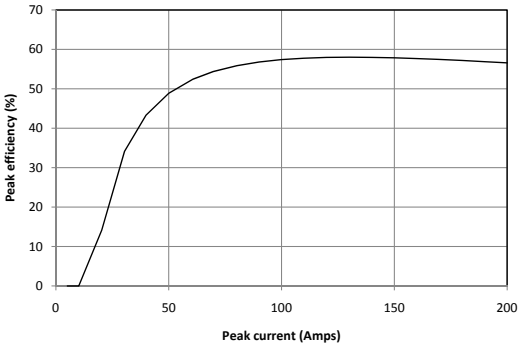
**Power vs Current**
9 Hz, 150 µsec, 25°C



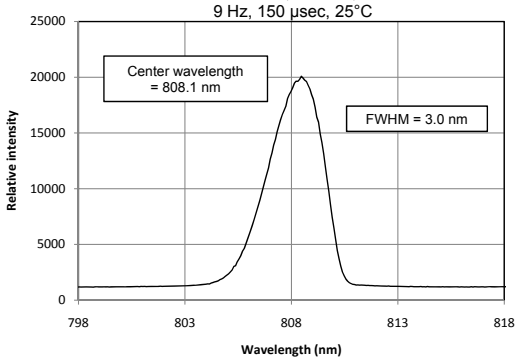

**Voltage vs Current**
9 Hz, 150 µsec, 25°C



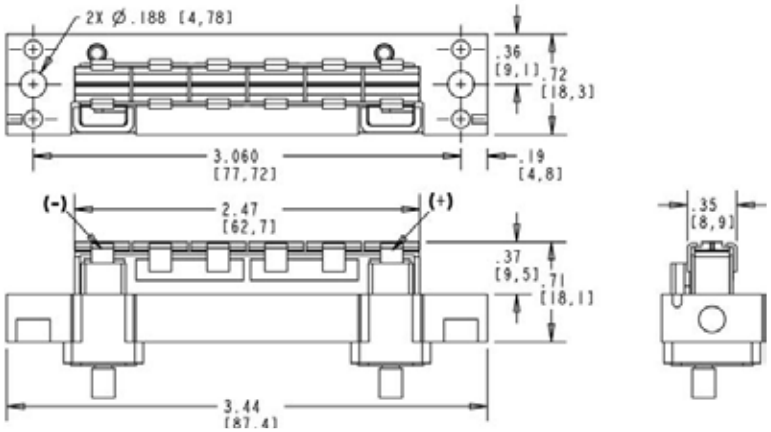

**Efficiency vs Current**
9 Hz, 150 µsec, 25°C




**Wavelength Spectrum**
2400 W, 176.5 A,
9 Hz, 150 µsec, 25°C




## MECHANICAL CHARACTERISTICS



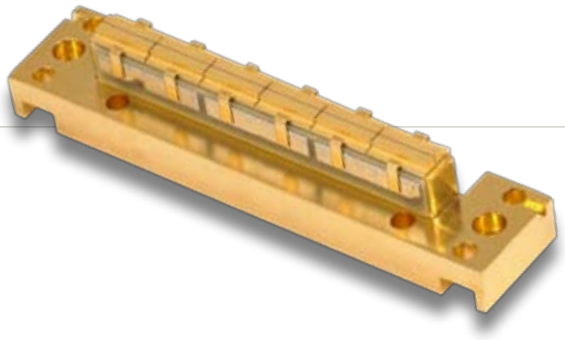



# SHOOTER PACKAGE

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.

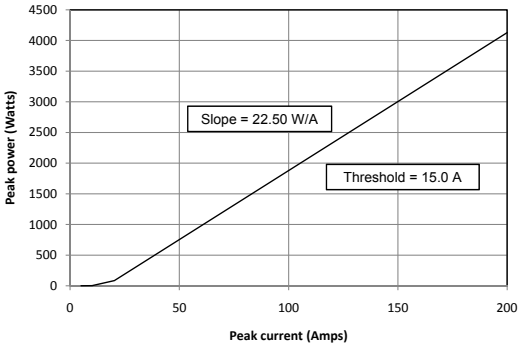
(3) Fast axis and slow axis lensing options are available for most NG-CEO heat exchanger designs.

# 3600W QCW

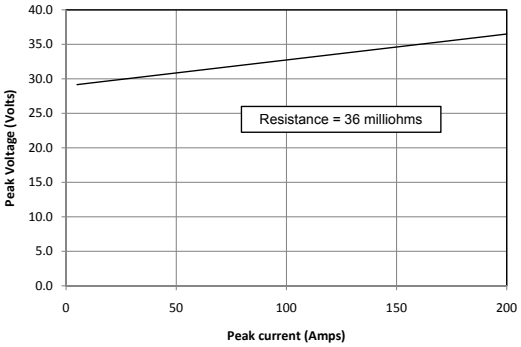
NORTHROP GRUMMAN

## OPTICAL CHARACTERISTICS (SAMPLE)

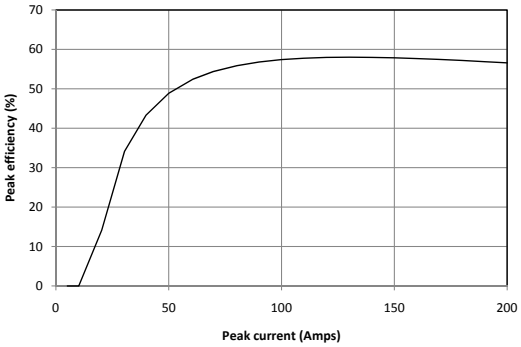
**Power vs Current**
9 Hz, 150 µsec, 25°C



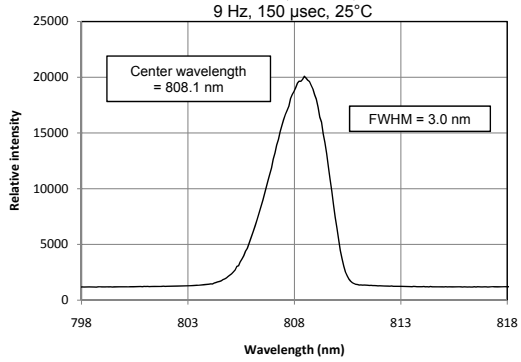

**Voltage vs Current**
9 Hz, 150 µsec, 25°C



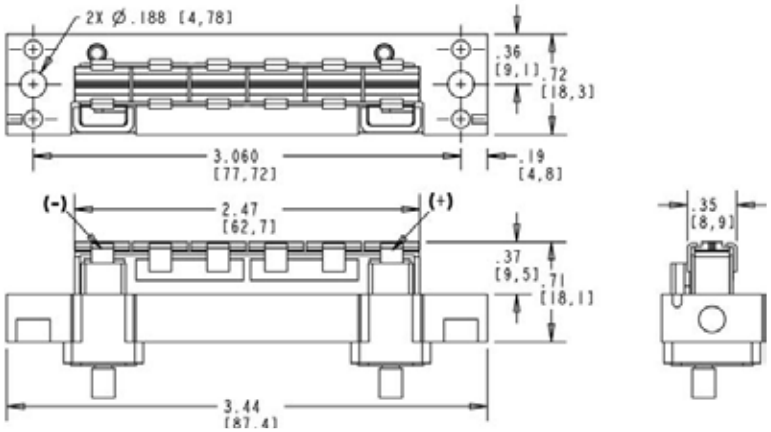

**Efficiency vs Current**
9 Hz, 150 µsec, 25°C




**Wavelength Spectrum**
3600 W, 176.5 A,
9 Hz, 150 µsec, 25°C




## MECHANICAL CHARACTERISTICS



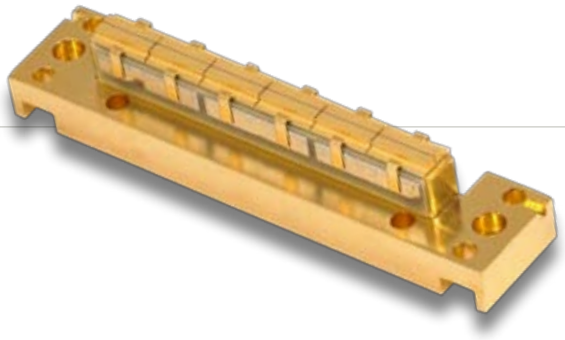



# SHOOTER PACKAGE

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

(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.

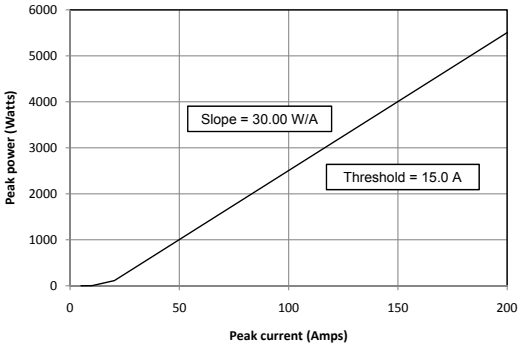
(3) Fast axis and slow axis lensing options are available for most NG-CEO heat exchanger designs.

# 4800W QCW

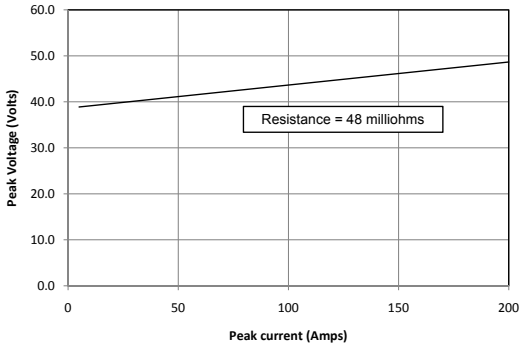
NORTHROP GRUMMAN

## OPTICAL CHARACTERISTICS (SAMPLE)

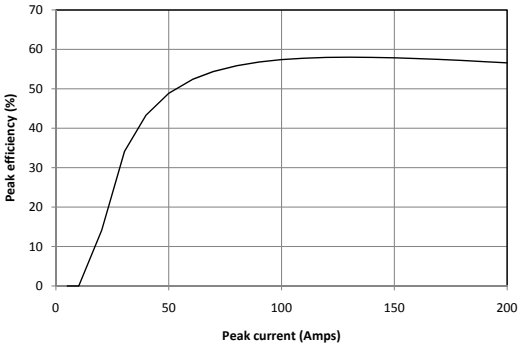
**Power vs Current**
9 Hz, 150 µsec, 25°C



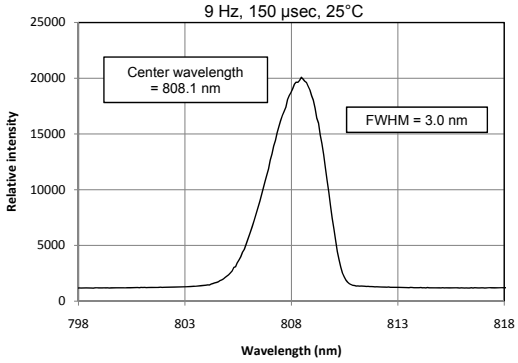

**Voltage vs Current**
9 Hz, 150 µsec, 25°C



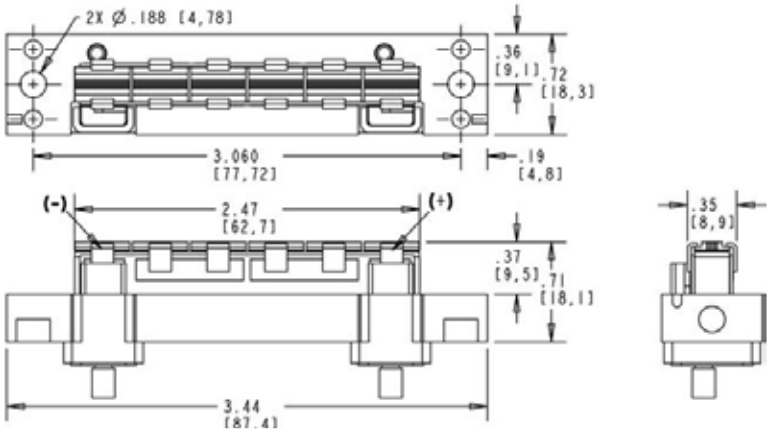

**Efficiency vs Current**
9 Hz, 150 µsec, 25°C




**Wavelength Spectrum**
4800 W, 176.5 A,
9 Hz, 150 µsec, 25°C




## MECHANICAL CHARACTERISTICS



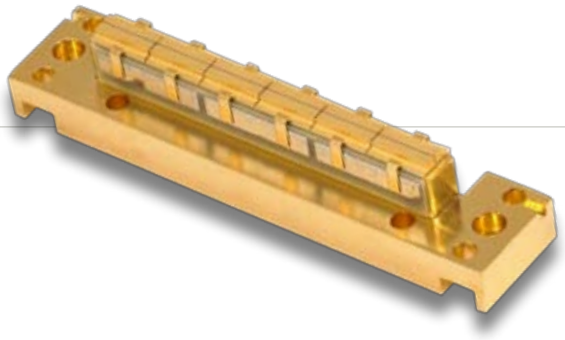



# SHOOTER PACKAGE

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 |
| Spectral Width | 9600W 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 | 0.096 | Ω |
| Operating Voltage | 25˚C Heat Sink, 9600W | 96.0 | 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.

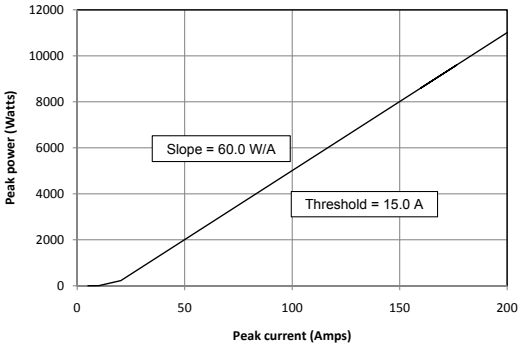
(3) Fast axis and slow axis lensing options are available for most NG-CEO heat exchanger designs.

# 9600W QCW

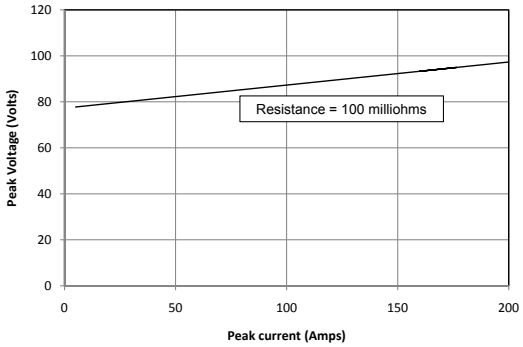
NORTHROP GRUMMAN

## OPTICAL CHARACTERISTICS (SAMPLE)

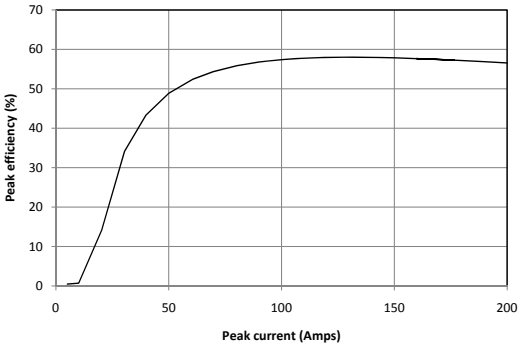
**Power vs Current**
9 Hz, 150 µsec, 25°C



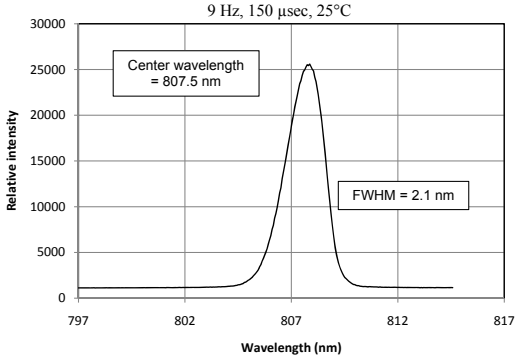

**Voltage vs Current**
9 Hz, 150 µsec, 25°C




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




**Wavelength Spectrum**
9600 W, 176.5 A,
9 Hz, 150 µsec, 25°C




## MECHANICAL CHARACTERISTICS