

NX7538BF-AA

Data Sheet

LASER DIODE

R08DS0007EJ0300

Rev.3.00

1 550 nm InGaAsP MQW-FP LASER DIODE COAXIAL MODULE FOR OTDR APPLICATION

Sep 19, 2010

DESCRIPTION

<R>

The NX7538BF-AA is a 1 550 nm Multiple Quantum Well (MQW) structured Fabry-Perot (FP) laser diode coaxial module with single mode fiber. This module is specified to operate under pulsed condition and designed for light source of Optical Time Domain Reflectometer (OTDR).

FEATURES

- High output power $P_r = 80 \text{ mW} @ I_{FP} = 400 \text{ mA}^{*1}$
- Long wavelength $\lambda_c = 1 550 \text{ nm}$

*1 Pulse Conditions: Pulse width (PW) = 10 μs , Duty = 1%

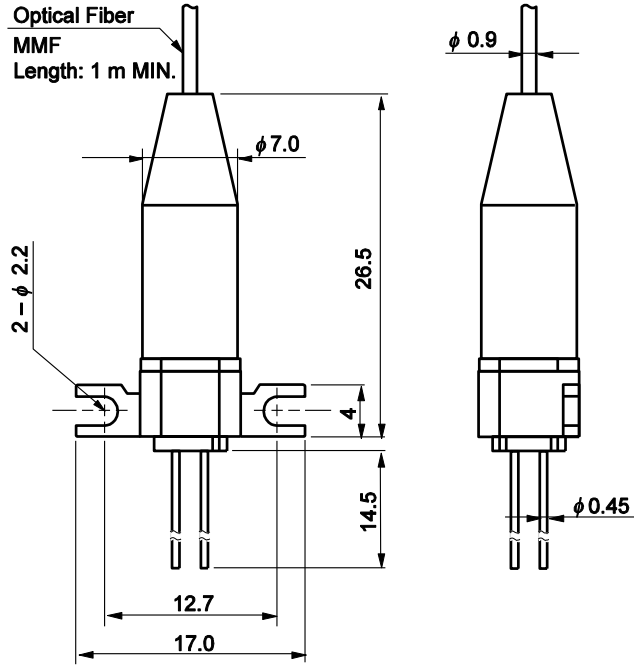


The mark <R> shows major revised points.

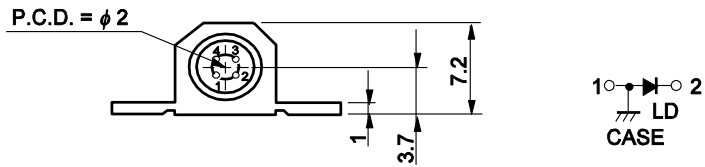
The revised points can be easily searched by copying an "<R>" in the PDF file and specifying it in the "Find what:" field.

NX7538BF-AA

<R> **PACKAGE DIMENSIONS (UNIT: mm)**



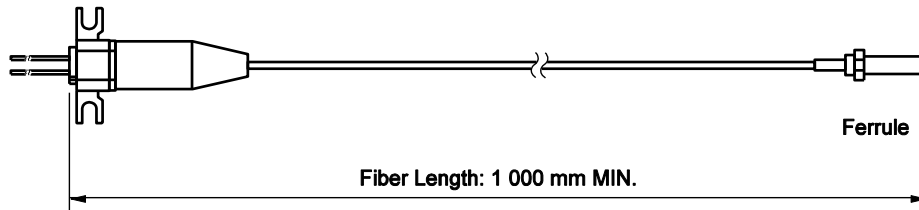
PIN CONNECTIONS



NX7538BF-AA**OPTICAL FIBER CHARACTERISTICS**

| Parameter | Specification | Unit |
|-------------------------------------|----------------|------|
| Mode Field Diameter | 9.3±0.5 | μm |
| Cladding Diameter | 125±2 | μm |
| Maximum Cladding Noncircularity | 2 | % |
| Maximum Core/Cladding Concentricity | 1.6 | % |
| Outer Diameter | 0.9±0.1 | mm |
| Cut-off Wavelength | 1 140 to 1 280 | nm |
| Minimum Fiber Bending Radius | 30 | mm |
| Fiber Length | 1 000 MIN. | mm |

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NX7538BF-AA**ORDERING INFORMATION**

| Part Number | Flange Type |
|-------------|-------------------|
| NX7538BF-AA | flat mount flange |

ABSOLUTE MAXIMUM RATINGS (T_c = 25°C, unless otherwise specified)

| Parameter | Symbol | Ratings | Unit |
|--------------------------------------|-------------------|--------------|------|
| Pulsed Forward Current ^{*1} | I _{FP} | 600 | mA |
| Reverse Voltage | V _R | 2.0 | V |
| Operating Case Temperature | T _c | -20 to +60 | °C |
| Storage Temperature | T _{stg} | -40 to +85 | °C |
| Lead Soldering Temperature | T _{slid} | 350 (3 sec.) | °C |
| Relative Humidity (noncondensing) | RH | 85 | % |

*1 Pulse Condition: Pulse Width (PW) = 10 μs, Duty = 1%

ELECTRO-OPTICAL CHARACTERISTICS (T_c = 25°C)

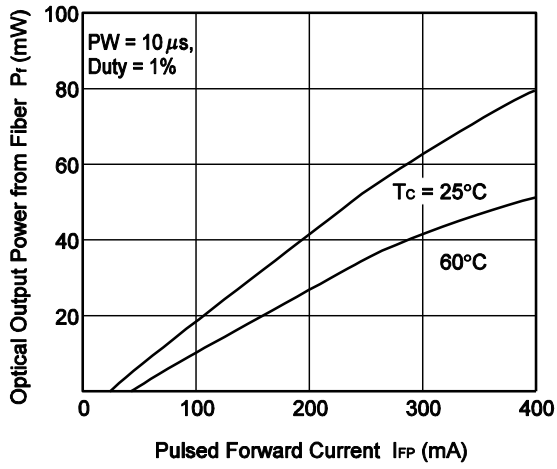
| Parameter | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---------------------------------|-----------------|--|-------|-------|-------|------|
| Forward Voltage | V _{FP} | I _{FP} = 400 mA, PW = 10 μs, Duty = 1% | | 2.5 | 4.0 | V |
| Threshold Current | I _{th} | | | 45 | 50 | mA |
| Optical Output Power from Fiber | P _f | I _{FP} = 400 mA, PW = 10 μs, Duty = 1% | 60 | 80 | | mW |
| Center Wavelength | λ _c | RMS (-20 dB), I _{FP} = 400 mA, PW = 10 μs, Duty = 1% | 1 530 | 1 550 | 1 570 | nm |
| Spectral Width | σ | RMS (-20 dB), I _{FP} = 400 mA, PW = 10 μs, Duty = 1% | | 6.0 | 10.0 | nm |
| Rise Time | t _r | 10-90% | | | 2.0 | ns |
| Fall Time | t _f | 90-10% | | | 2.0 | ns |

ELECTRO-OPTICAL CHARACTERISTICS (T_c = 0 to +60°C)

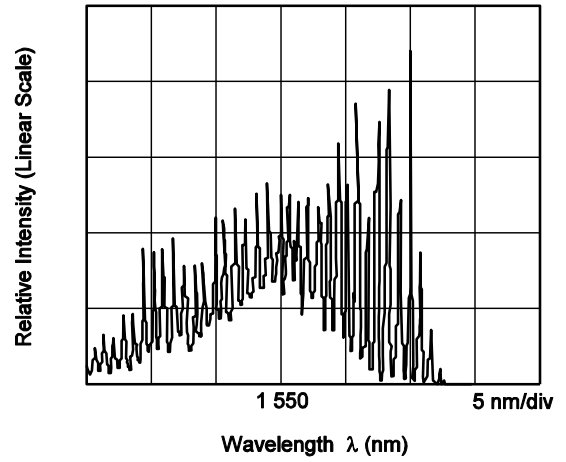
| Parameter | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|-----------------|--|-------|------|-------|-------|
| Threshold Current | I _{th} | | | | 75 | mA |
| Optical Output Power from Fiber | P _f | I _{FP} = 400 mA, PW = 10 μs, Duty = 1% | 40 | | | mW |
| Center Wavelength | λ _c | RMS (-20 dB), I _{FP} = 400 mA, PW = 10 μs, Duty = 1% | 1 520 | | 1 585 | nm |
| Temperature Dependency of Center Wavelength | Δλ/ΔT | | | 0.35 | | nm/°C |
| Spectral Width | σ | RMS (-20 dB), I _{FP} = 400 mA, PW = 10 μs, Duty = 1% | | | 10 | nm |

TYPICAL CHARACTERISTICS (T_c = 25°C, unless otherwise specified)

OPTICAL OUTPUT POWER FROM FIBER vs. PULSED FORWARD CURRENT



SPECTRUM



Remark The graphs indicate nominal characteristics.

REFERENCE

| Document Name | Document No. |
|---|--------------|
| Opto-Electronics Devices Pamphlet ^{*1} | PX10160E |

*1 Published by the former NEC Electronics Corporation.

SAFETY INFORMATION ON THIS PRODUCT



SEMICONDUCTOR LASER



| | |
|-------------------------------------|---|
| <p>Warning Laser Beam</p> | <p>A laser beam is emitted from this diode during operation. The laser beam, visible or invisible, directly or indirectly, may cause injury to the eye or loss of eyesight.</p> <ul style="list-style-type: none"> • Do not look directly into the laser beam. • Avoid exposure to the laser beam, any reflected or collimated beam. |
| <p>Caution GaAs Products</p> | <p>This product uses gallium arsenide (GaAs). GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points.</p> <ul style="list-style-type: none"> • Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below. <ol style="list-style-type: none"> 1. Commission a disposal company able to (with a license to) collect, transport and dispose of materials that contain arsenic and other such industrial waste materials. 2. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal. • Do not burn, destroy, cut, crush, or chemically dissolve the product. • Do not lick the product or in any way allow it to enter the mouth. |
| <p>Caution Optical Fiber</p> | <p>A glass-fiber is attached on the product. Handle with care.</p> <ul style="list-style-type: none"> • When the fiber is broken or damaged, handle carefully to avoid injury from the damaged part or fragments. |

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| Revision History | NX7538BF-AA Data Sheet |
|-------------------------|-------------------------------|

| Rev. | Date | Description | |
|------|--------------|-------------|---|
| | | Page | Summary |
| - | Jul 2006 | - | Previous No. : PL10606EJ02V0DS |
| 3.00 | Sep 19, 2010 | p.1 | Modification of photograph |
| | | p.2, 3 | Modification of PACKAGE DIMENSIONS |

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