

# 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  $\mu\text{s}$ , Duty = 1%

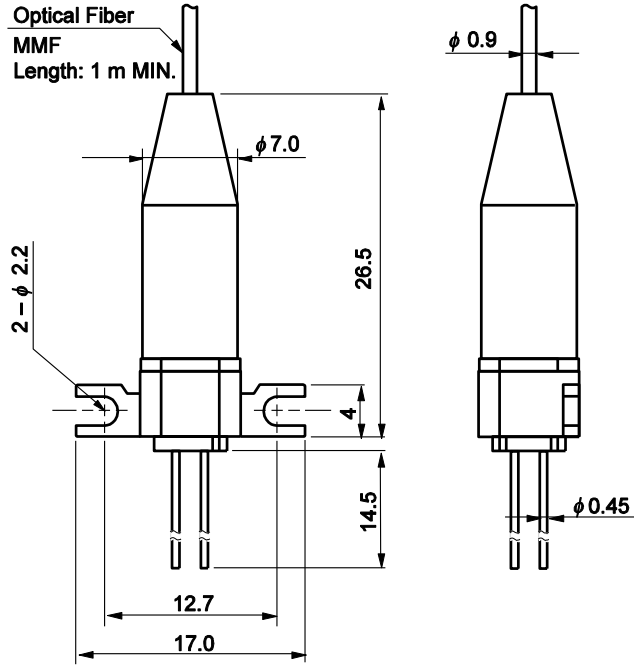


The mark <R> shows major revised points.

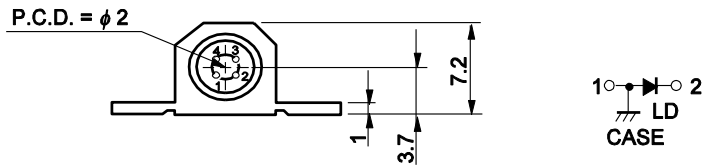
The revised points can be easily searched by copying an "<R>" in the PDF file and specifying it in the "Find what:" field.

**NX7538BF-AA**

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



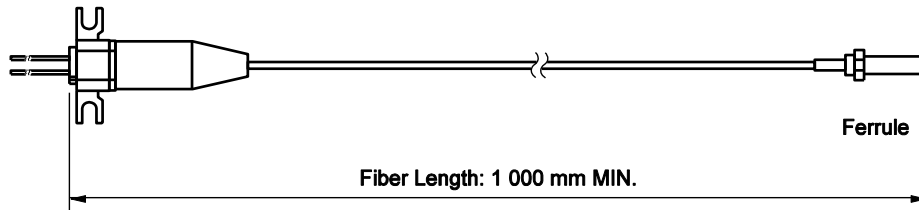
**PIN CONNECTIONS**



**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   |

&lt;R&gt;



## NX7538BF-AA

## ORDERING INFORMATION

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

ABSOLUTE MAXIMUM RATINGS (T<sub>c</sub> = 25°C, unless otherwise specified)

| Parameter                            | Symbol            | Ratings      | Unit |
|--------------------------------------|-------------------|--------------|------|
| Pulsed Forward Current <sup>*1</sup> | I <sub>FP</sub>   | 600          | mA   |
| Reverse Voltage                      | V <sub>R</sub>    | 2.0          | V    |
| Operating Case Temperature           | T <sub>c</sub>    | -20 to +60   | °C   |
| Storage Temperature                  | T <sub>stg</sub>  | -40 to +85   | °C   |
| Lead Soldering Temperature           | T <sub>slid</sub> | 350 (3 sec.) | °C   |
| Relative Humidity (noncondensing)    | RH                | 85           | %    |

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

ELECTRO-OPTICAL CHARACTERISTICS (T<sub>c</sub> = 25°C)

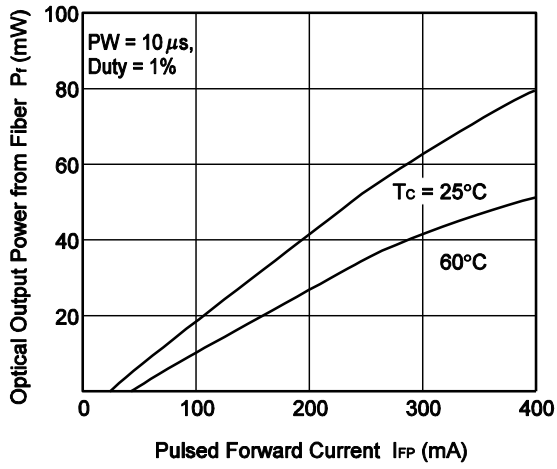
| Parameter                       | Symbol          | Conditions   | MIN.  | TYP.  | MAX.  | Unit |
|---------------------------------|-----------------|--|-------|-------|-------|------|
| Forward Voltage                 | V <sub>FP</sub> | I <sub>FP</sub> = 400 mA,<br>PW = 10 μs, Duty = 1%        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

ELECTRO-OPTICAL CHARACTERISTICS (T<sub>c</sub> = 0 to +60°C)

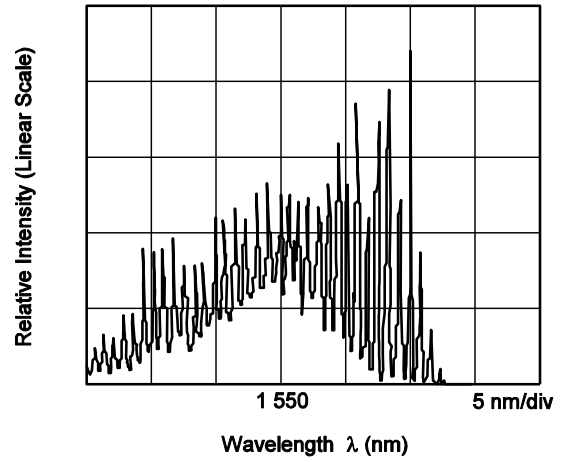
| Parameter                                   | Symbol          | Conditions   | MIN.  | TYP. | MAX.  | Unit  |
|---|-----------------|--|-------|------|-------|-------|
| Threshold Current                           | I <sub>th</sub> |  |       |      | 75    | mA    |
| Optical Output Power from Fiber             | P <sub>f</sub>  | I <sub>FP</sub> = 400 mA,<br>PW = 10 μs, Duty = 1%               | 40    |      |       | mW    |
| Center Wavelength                           | λ <sub>c</sub>  | RMS (-20 dB), I <sub>FP</sub> = 400 mA,<br>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 <sub>FP</sub> = 400 mA,<br>PW = 10 μs, Duty = 1% |       |      | 10    | nm    |

**TYPICAL CHARACTERISTICS (T<sub>c</sub> = 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 <sup>*1</sup> | PX10160E     |

\*1 Published by the former NEC Electronics Corporation.

**SAFETY INFORMATION ON THIS PRODUCT**



**SEMICONDUCTOR LASER**



|                                     |   |
|-------------------------------------|---|
| <p><b>Warning</b> 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"> <li>• Do not look directly into the laser beam.</li> <li>• Avoid exposure to the laser beam, any reflected or collimated beam.</li> </ul>  |
| <p><b>Caution</b> 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"> <li>• 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"> <li>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.</li> <li>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.</li> </ol> </li> <li>• Do not burn, destroy, cut, crush, or chemically dissolve the product.</li> <li>• Do not lick the product or in any way allow it to enter the mouth.</li> </ul> |
| <p><b>Caution</b> Optical Fiber</p> | <p>A glass-fiber is attached on the product. Handle with care.</p> <ul style="list-style-type: none"> <li>• When the fiber is broken or damaged, handle carefully to avoid injury from the damaged part or fragments.</li> </ul>  |

|                         |                               |
|-------------------------|-------------------------------|
| <b>Revision History</b> | <b>NX7538BF-AA Data Sheet</b> |
|-------------------------|-------------------------------|

| 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 <b>PACKAGE DIMENSIONS</b> |

|   |
|---|
| All trademarks and registered trademarks are the property of their respective owners. |
|---|





Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.