



**NEC's 1550 nm InGaAsP MQW FP
PULSED LASER DIODE
IN COAXIAL PACKAGE
FOR OTDR APPLICATION (60 mW MIN)**

NX7528BF-AA

FEATURES

- **HIGH OUTPUT POWER:**
 $P_f = 80 \text{ mW}$ at $I_{FP} = 400 \text{ mA}$
 Pulse Conditions: Pulse width (PW) = 10ms, Duty = 1%
- **LONG WAVELENGTH:**
 $\lambda_c = 1550 \text{ nm}$

DESCRIPTION

NEC's NX7528BF-AA is a 1550 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 is designed for light sources of Optical Time Domain Reflectometer(OTDR).

ELECTRO-OPTICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$)

| PART NUMBER | | | NX7528BF-AA | | |
|-------------|--|-------|-------------|------|------|
| SYMBOLS | PARAMETERS AND CONDITIONS | UNITS | MIN | TYP | MAX |
| V_{FP} | Forward Voltage, $I_{FP} = 400 \text{ mA}$, PW = 10 μs , Duty = 1% | V | | 2.5 | 4.0 |
| I_{TH} | Threshold Current | mA | | 45 | 50 |
| P_f | Optical Output Power from Fiber, $I_{FP} = 400 \text{ mA}$, PW = 10 μs , Duty = 1% | mW | 60 | 80 | |
| λ_c | Center Wavelength, $I_{FP} = 400 \text{ mA}$, PW = 10 μs , Duty = 1%, RMS (-20 dB) | nm | 1530 | 1550 | 1570 |
| σ | Spectral Width, $I_{FP} = 400 \text{ mA}$, PW = 10 μs , Duty = 1%, RMS (-20 dB) | nm | | 6.0 | 10.0 |
| t_r | Rise Time, 10-90% | ns | | | 1.0 |
| t_f | Fall Time, 90-10% | ns | | | 1.0 |

ELECTRO-OPTICAL CHARACTERISTICS ($T_c = 0 \text{ to } +60^\circ\text{C}$)

| PART NUMBER | | | NX7528BF-AA | | |
|--------------------------|--|----------------------|-------------|------|------|
| SYMBOLS | PARAMETERS AND CONDITIONS | UNITS | MIN | TYP | MAX |
| I_{TH} | Threshold Current | mA | | | 75 |
| P_f | Optical Output Power from Fiber, $I_{FP} = 400 \text{ mA}$, PW = 10 μs , Duty = 1% | mW | 40 | | |
| λ_c | Center Wavelength, $I_{FP} = 400 \text{ mA}$, PW = 10 μs , Duty = 1%, RMS (-20 dB) | nm | 1520 | | 1585 |
| $\Delta\lambda/\Delta T$ | Temperature Dependency of Center Wavelength | nm/ $^\circ\text{C}$ | | 0.35 | |
| σ | Spectral Width, $I_{FP} = 400 \text{ mA}$, PW = 10 μs , Duty = 1%, RMS (-20 dB) | nm | | | 10.0 |

ABSOLUTE MAXIMUM RATINGS¹

(T_C = 25°C, unless otherwise specified)

| SYMBOLS | PARAMETERS | UNITS | RATINGS |
|------------------|-------------------------------------|-------|------------|
| I _{FP} | Pulsed Forward Current ² | mA | 600 |
| V _R | Reverse Voltage | V | 2.0 |
| T _C | Operating Case Temperature | °C | -20 to +60 |
| T _{STG} | Storage Temperature | °C | -40 to +85 |
| T _{SLD} | Lead Soldering Temperature (10 sec) | °C | 260 |
| RH | Relative Humidity (noncondensing) | % | 85 |

Notes:

1. Operation in excess of any one of these parameters may result in permanent damage.
2. Pulse Condition: Pulse Width (PW) = 10 μs, Duty = 1%.

ORDERING INFORMATION

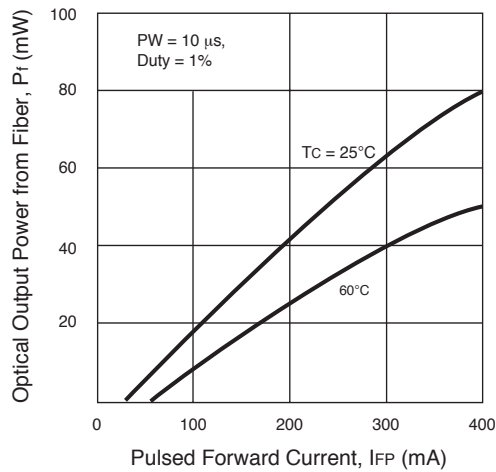
| PART NUMBER | FLANGE TYPE |
|-----------------|-------------------|
| NX7528BF-AA-AZ* | Flat Mount Flange |

*Note:

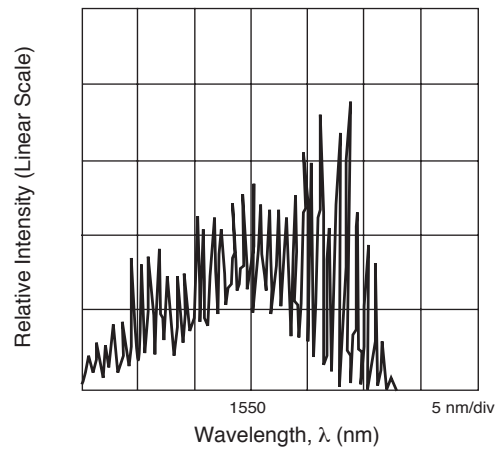
Please refer to the last page of this data sheet. "Compliance with EU Directives" for Pb-Free RoHS Compliance Information.

TYPICAL PERFORMANCE CURVES (T_C = 25°C, unless otherwise specified)

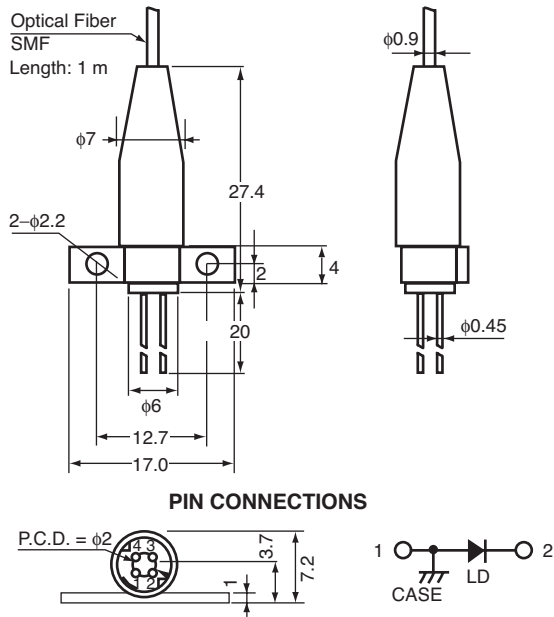
OPTICAL OUTPUT POWER FROM FIBER vs. PULSED FORWARD CURRENT



SPECTRUM

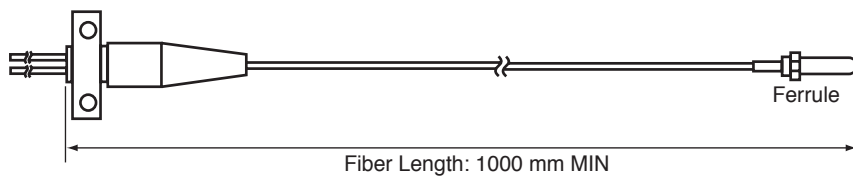


OUTLINE DIMENSIONS (Units in mm)



OPTICAL FIBER CHARACTERISTICS

| PARAMETER | UNIT | SPECIFICATION |
|-------------------------------------|------|---------------|
| Mode Field Diameter | μm | 9.3±0.5 |
| Cladding Diameter | μm | 125±2 |
| Maximum Cladding Noncircularity | % | 2 |
| Maximum Core/Cladding Concentricity | % | 1.6 |
| Outer Diameter | mm | 0.9±0.1 |
| Cut-off Wavelength | nm | 1140 to 1280 |
| Minimum Fiber Bending Radius | mm | 30 |
| Fiber Length | mm | 1000 MIN |



Life Support Applications

These NEC products are not intended for use in life support devices, appliances, or systems where the malfunction of these products can reasonably be expected to result in personal injury. The customers of CEL using or selling these products for use in such applications do so at their own risk and agree to fully indemnify CEL for all damages resulting from such improper use or sale.

CEL California Eastern Laboratories, Your source for NEC RF, Microwave, Optoelectronic, and Fiber Optic Semiconductor Devices.
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DATA SUBJECT TO CHANGE WITHOUT NOTICE

03/03/2003

Subject: Compliance with EU Directives

CEL certifies, to its knowledge, that semiconductor and laser products detailed below are compliant with the requirements of European Union (EU) Directive 2002/95/EC Restriction on Use of Hazardous Substances in electrical and electronic equipment (RoHS) and the requirements of EU Directive 2003/11/EC Restriction on Penta and Octa BDE.

CEL Pb-free products have the same base part number with a suffix added. The suffix –A indicates that the device is Pb-free. The –AZ suffix is used to designate devices containing Pb which are exempted from the requirement of RoHS directive (*). In all cases the devices have Pb-free terminals. All devices with these suffixes meet the requirements of the RoHS directive.

This status is based on CEL’s understanding of the EU Directives and knowledge of the materials that go into its products as of the date of disclosure of this information.

| Restricted Substance per RoHS | Concentration Limit per RoHS (values are not yet fixed) | Concentration contained in CEL devices | |
|-------------------------------|---|--|-----|
| | | -A | -AZ |
| Lead (Pb) | < 1000 PPM | Not Detected | (*) |
| Mercury | < 1000 PPM | Not Detected | |
| Cadmium | < 100 PPM | Not Detected | |
| Hexavalent Chromium | < 1000 PPM | Not Detected | |
| PBB | < 1000 PPM | Not Detected | |
| PBDE | < 1000 PPM | Not Detected | |

If you should have any additional questions regarding our devices and compliance to environmental standards, please do not hesitate to contact your local representative.

Important Information and Disclaimer: Information provided by CEL on its website or in other communications concerning the substance content of its products represents knowledge and belief as of the date that it is provided. CEL bases its knowledge and belief on information provided by third parties and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. CEL has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. CEL and CEL suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

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