

|                       |
|-----------------------|
| 760 - 840 nm          |
| 840 - 1100 nm         |
| 1100 - 1700 nm        |
| <b>1700 - 2400 nm</b> |
| 2400 - 3000 nm        |
| 3000 - 6000 nm        |

# FP laser diodes from 1700 nm to 2400 nm

## nanoplus multi mode laser diodes

nanoplus is the only manufacturer worldwide routinely providing single and multi mode lasers at any wavelength from 760 to 6000 nm. At wavelengths up to 14  $\mu\text{m}$ , QCLs complete nanoplus' laser portfolio. Our Fabry Perot laser diodes deliver multi mode emission with well defined optical properties enabling a wide range of applications including e.g. security measures and range finding. In conjunction with an external cavity they are ideally suited for all spectroscopic tasks where a wide wavelength tuning range and a narrow linewidth is required.

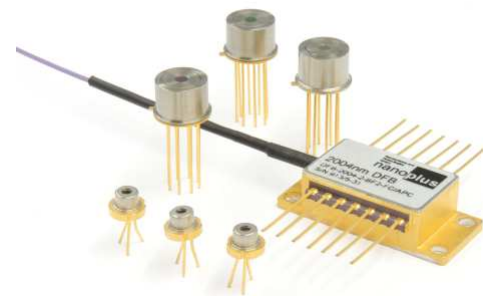
nanoplus lasers operate reliably in tens of thousands of installations worldwide, including chemical and metallurgical industries, gas pipelines, power plants, medical systems, airborne and satellite applications.

### key features

- ✓ excellent reliability
- ✓ broad emission spectrum
- ✓ wide variety of packaging options

### application areas

- ✓ range finding
- ✓ security
- ✓ spectroscopy
- ✓ illumination



nanoplus FP lasers with excellent performance are specifically designed and characterized to fit your needs. This data sheet summarizes typical properties of nanoplus FP lasers in the 1700 nm to 2400 nm range. In this wavelength range e.g. CO, CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub> can be detected with particularly high sensitivity.

| general ratings (T = 25 °C) | symbol           | unit | typical |
|-----------------------------|------------------|------|---------|
| optical output power        | P <sub>out</sub> | mW   | 10      |
| reverse Voltage             | V <sub>r</sub>   | V    | 2       |
| forward Current             | I <sub>f</sub>   | mA   | 120     |

On request, lasers with specifically optimized properties, e.g. higher output power, are available.

### laser packaging options

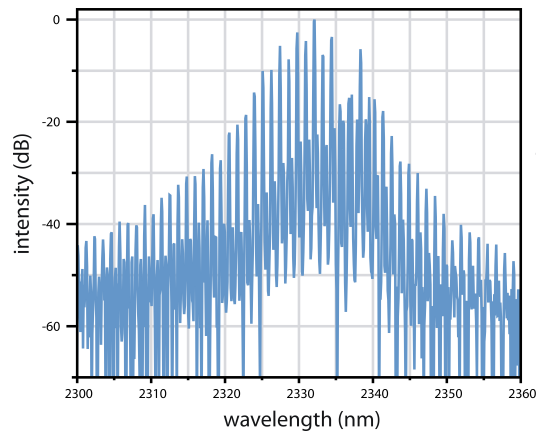
- TO5.6 header with or without cap
- TO9 header with or without cap
- TO5 with TEC and NTC
- butterfly housing with FC/APC fibre (available up to 2.33  $\mu\text{m}$ )

For dimensions and accessories, please see [www.nanoplus.com](http://www.nanoplus.com)  
Further packaging options available on request.

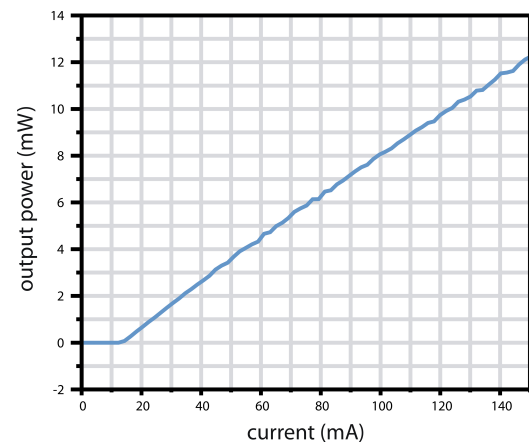
# nanoplus FP laser diodes

nanoplus FP laser diodes in the range from 1700 nm up to 2400 nm are ideally suited for all spectroscopic tasks where a broad laser emission spectrum and a short coherence length is required. The variety of applications for which these FP laser diodes are key elements include range finding systems, security measures and many more. In combination with external cavity setups the laser diodes can be operated as sources for widely tunable external cavity lasers for ultra sensitive laser based gas sensing of e.g. CO, CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub>.

For examples of performance data of nanoplus lasers in other wavelength ranges, please see [www.nanoplus.com](http://www.nanoplus.com) or contact [sales@nanoplus.com](mailto:sales@nanoplus.com)



*Fig. 1*  
 Room temperature cw spectrum of a nanoplus FP laser diode operating at 2330 nm



*Fig. 2*  
 Output power versus current characteristics of a 2330 nm FP laser diode at room temperature

| electrooptical characteristics (T = 25 °C) | symbol    | unit                             | min   | typ       | max   |
|--|-----------|----------------------------------|-------|-----------|-------|
| peak wavelength                            | $\lambda$ | nm                               | 2310  | 2330      | 2350  |
| threshold current                          | $I_{th}$  | mA                               | 10    | 15        | 30    |
| slope efficiency                           | e         | mW / mA                          | 0.05  | 0.1       | 0.15  |
| slow axis (FWHM)                           |           | degrees                          | 17    | 20        | 25    |
| fast axis (FWHM)                           |           | degrees                          | 35    | 40        | 45    |
| emitting area                              | W x H     | $\mu\text{m} \times \mu\text{m}$ | 3 x 1 | 4.5 x 1.5 | 5 x 2 |
| storage temperatures                       | $T_s$     | °C                               | - 40  | + 20      | + 80  |
| operational temperature at case            | $T_c$     | °C                               | - 20  | + 25      | + 50  |

We will be happy to answer further questions. Please contact us at [sales@nanoplus.com](mailto:sales@nanoplus.com)

