

| |
|----------------|
| 750 - 830 nm |
| 830 - 920 nm |
| 920 - 1100 nm |
| 1100 - 1300 nm |
| 1300 - 1450 nm |
| 1450 - 1650 nm |
| 1650 - 1850 nm |
| 1850 - 1900 nm |
| 1900 - 2200 nm |
| 2200 - 2600 nm |
| 2600 - 2900 nm |

DFB laser diodes from 750 nm to 830 nm

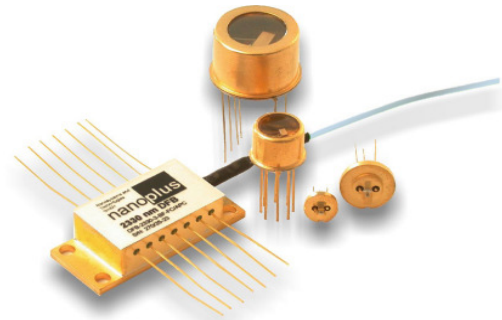
nanoplus single mode laser diodes

nanoplus is the only manufacturer world-wide routinely providing single mode laser diodes at any wavelength from 750 nm to 2900 nm. Our patented distributed feedback laser diodes deliver single mode emission with well defined optical properties enabling a wide range of applications. At wavelengths from 7 to 12 μm , nanoplus manufactures quantum cascade lasers.

nanoplus lasers operate reliably in more than 5000 installations worldwide, including chemical and metallurgical industries, gas pipelines, power plants, medical systems, airborne and satellite applications.

key features

- ✓ very high spectral purity
- ✓ narrow linewidth typically < 3 MHz
- ✓ excellent reliability
- ✓ wide variety of packaging options
- ✓ customer-specific designs available



application areas

- ✓ high performance gas sensing for process and environmental control
- ✓ precision metrology
- ✓ atomic clocks
- ✓ spectroscopy
- ✓ space technology

nanoplus lasers with excellent performance are specifically designed and characterized to fit your needs. This data sheet summarizes typical properties of nanoplus DFB lasers in the 750 to 830 nm range. Overleaf data for lasers used for high performance O₂ sensing are given as an example.

| general ratings (T = 25 °C) | symbol | unit | typical |
|------------------------------------|------------------|------|---------|
| optical output power | P _{out} | mW | 5 |
| reverse Voltage | V _r | V | 3 |
| forward Current | I _f | mA | 30 |
| side mode suppression ratio (SMSR) | | dB | > 32 |

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 |

For dimensions and accessories, please see www.nanoplus.com
 Further packaging options available on request.

device protected by
 US patent 6.671.306
 US patent 6.846.689
 EU patent EP0984535

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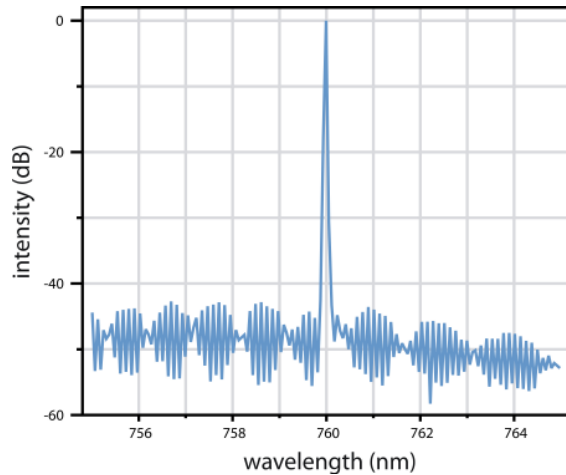
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nanoplus DFB laser diodes at 760 nm

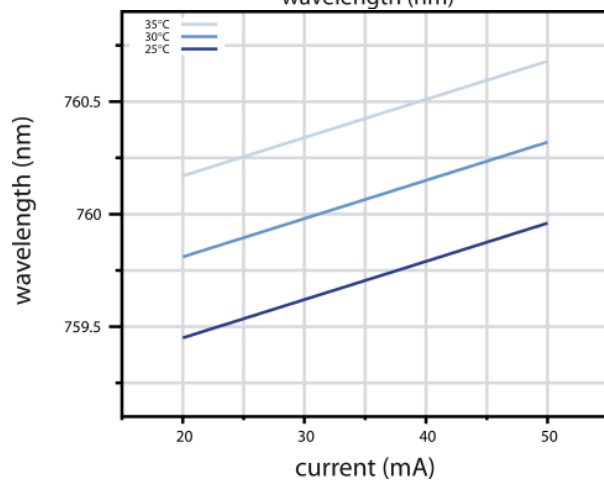
A wide variety of gas molecules, defects in solids etc. exhibit characteristic absorption lines in the near infrared. At about 760 nm for example, there is a strong absorption line of O₂, which can be used for laser based sensing with very high sensitivity. This data sheet reports performance data of laterally and longitudinally single mode nanoplus DFB lasers at this wavelength. Similar performance data are obtained in the entire wavelength range from 750 nm to 830 nm. For examples of performance data of nanoplus lasers in other wavelength ranges, please see www.nanoplus.com or contact sales@nanoplus.com.

Fig. 1
Room temperature cw spectrum of a nanoplus DFB laser diode operating at 760 nm



In many applications, temperature and/or current variations are used to adjust the laser emission precisely to the target wavelength, here on and off the O₂ absorption.

Fig. 2
Mode hop free tuning of 760 nm based DFBs by current variation at different temperatures



| electrooptical characteristics (T = 25 °C) | symbol | unit | min | typ | max |
|--|-----------|----------------------------------|-----------|---------|---------|
| peak wavelength | λ | nm | 759 | 760 | 761 |
| threshold current | I_{th} | mA | 10 | 15 | 30 |
| slope efficiency | e | mW / mA | 0.2 | 0.5 | 0.6 |
| temperature tuning coefficient | C_T | nm / K | 0.03 | 0.04 | 0.05 |
| current tuning coefficient | C_I | nm / mA | 0.010 | 0.020 | 0.025 |
| slow axis (FWHM) | | degrees | 30 | 35 | 40 |
| fast axis (FWHM) | | degrees | 50 | 60 | 65 |
| emitting area | W x H | $\mu\text{m} \times \mu\text{m}$ | 1.2 x 1.3 | 1.5 x 2 | 2 x 2.2 |
| 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

