

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
<b>2900 - 3500 nm</b>

# DFB laser diodes from 2900 nm to 3500 nm

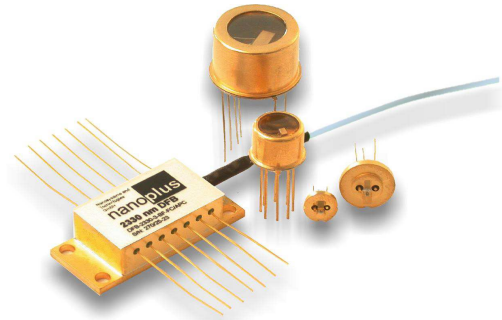
## nanoplus single mode laser diodes

nanoplus is the only manufacturer worldwide routinely providing single mode laser diodes at any wavelength from 750 nm to 2900 nm, and now up to 3500 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 5 to 14  $\mu\text{m}$ , nanoplus manufactures quantum cascade lasers.

nanoplus lasers operate reliably in more than 10.000 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
- ✓ 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 2900 nm to 3500 nm range. In this wavelength range e.g.  $\text{CH}_4$ ,  $\text{C}_2\text{H}_6$ ,  $\text{C}_2\text{H}_2$ ,  $\text{C}_3\text{H}_8$  and other hydrocarbons can be detected with particularly high sensitivity, since the detection sensitivity typically increases at long wavelengths. Overleaf data for DFB lasers optimized for  $\text{C}_3\text{H}_8$  detection is shown as an example.

general ratings (T = 25 °C)	symbol	unit	typical
optical output power	$P_{\text{out}}$	mW	>1
reverse voltage	$V_r$	V	1.8
forward current	$I_f$	mA	140
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 with TEC and NTC, sealed

other packaging options will follow soon, or may be discussed on request

For dimensions and accessories, please see [www.nanoplus.com](http://www.nanoplus.com)

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

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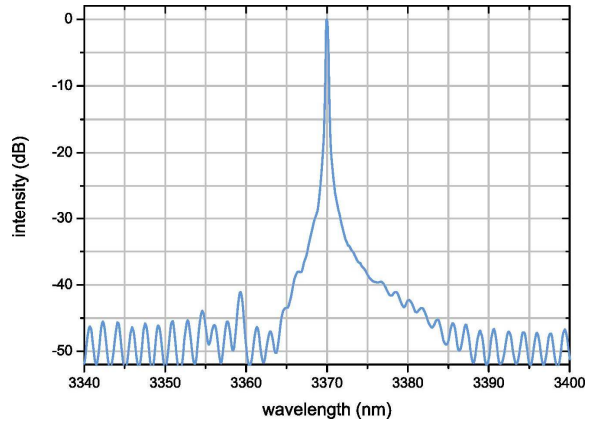
Rev. DFB3370.02

# nanoplus DFB laser diodes at 3370 nm

A wide variety of gas molecules, defects in solids etc. exhibit characteristic absorption lines in the near infrared. DFB lasers emitting at 3370 nm are perfectly suited for highly sensitive detection of small  $C_3H_8$  concentrations. For this application, highly stable laterally and longitudinally single mode lasers are required.

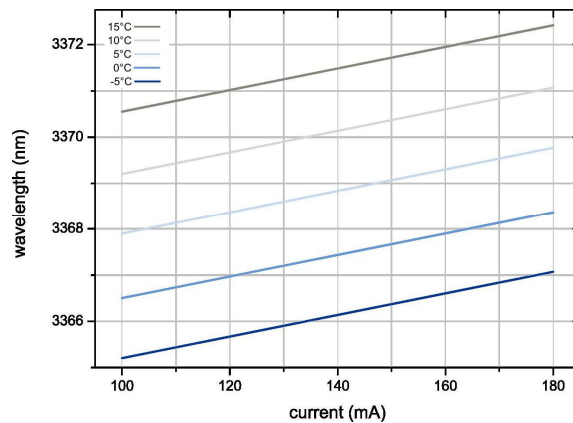
This data sheet reports performance data of nanoplus DFB lasers at this wavelength. Similar performance data are obtained in the entire wavelength range from 2900 nm to 3500 nm. For examples of performance data of nanoplus lasers in other wavelength ranges, please see [www.nanoplus.com](http://www.nanoplus.com) or contact [sales@nanoplus.com](mailto:sales@nanoplus.com).

**Fig. 1**  
 Near room temperature cw spectrum of a nanoplus DFB laser diode operating at 3370 nm



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

**Fig. 2**  
 Mode hop free tuning of 3370 nm based DFBs by current variation at different temperatures



electro-optical characteristics (T = 10 °C)	symbol	unit	min	typ	max
peak wavelength	$\lambda$	nm	3369	3370	3371
threshold current	$I_{th}$	mA	70	90	110
slope efficiency	e	mW / mA	0.02	0.04	0.05
temperature tuning coefficient	$C_T$	nm / K	0.24	0.28	0.32
current tuning coefficient	$C_I$	nm / mA	0.02	0.02	0.03
slow axis (FWHM)		degrees	18	24	30
fast axis (FWHM)		degrees	50	60	70
emitting area	W x H	$\mu\text{m} \times \mu\text{m}$	4 x 1	5 x 1.5	6 x 2
storage temperatures	$T_s$	°C	- 40	+ 20	+ 80
operational temperature at case	$T_c$	°C	- 10	+ 10	+ 20

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

