

# DFB laser diodes from 2600 nm to 3000 nm

## nanoplus single mode laser diodes

nanoplus is the only manufacturer world-wide 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 patented distributed feedback laser diodes deliver single mode emission with well defined optical properties enabling a wide range of applications.

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

- ✓ very high spectral purity
- ✓ narrow linewidth
- ✓ 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 range from 2600 nm to 3000 nm. In this wavelength regime e. g.  $\text{H}_2\text{O}$ ,  $\text{HF}$ ,  $\text{CO}_2$  can be detected with particularly high sensitivity, since the detection sensitivity typically increases at long wavelengths. Overleaf data for DFB lasers optimized for  $\text{H}_2\text{O}$  detection is shown as an example.

general ratings (T = 25 °C)	symbol	unit	typical
optical output power	$P_{\text{out}}$	mW	2
reverse voltage	$V_r$	V	1.8
forward current	$I_f$	mA	100
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

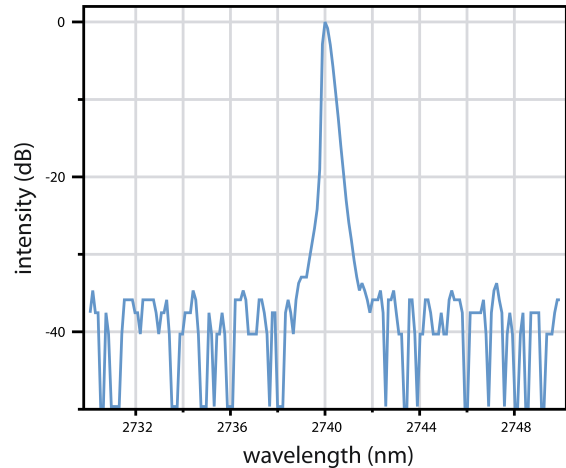
TO5 with TEC and NTC

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

## nanoplus DFB laser diodes at 2740 nm

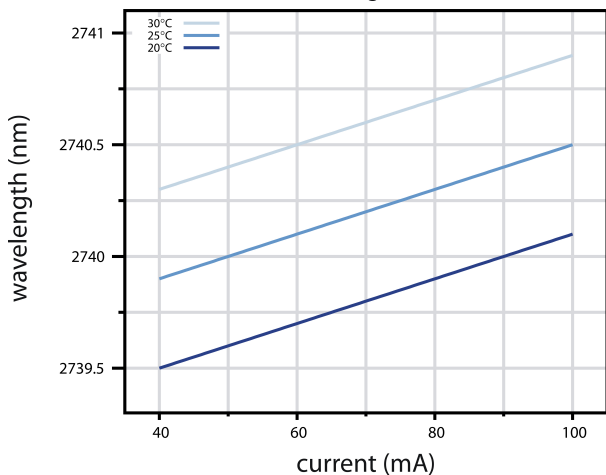
A wide variety of gas molecules exhibit characteristic absorption lines in the near infrared. DFB lasers emitting at 2740 nm are perfectly suited for highly sensitive detection of small H<sub>2</sub>O concentrations. For this application, highly stable laterally and longitudinally single mode lasers 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 2600 nm to 3000 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*  
Room temperature cw spec-  
trum of a nanoplus DFB laser  
diode operating at 2740 nm

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



*Fig. 2*  
Mode hop free tuning of a  
nanoplus 2740 nm DFB laser  
diode by current variation at  
different temperatures

electrooptical characteristics (T = 25 °C)	symbol	unit	min	typ	max
peak wavelength	$\lambda$	nm	2739	2740	2741
threshold current	$I_{th}$	mA	30	50	80
slope efficiency	$e$	mW / mA	0.05	0.08	0.12
temperature tuning coefficient	$C_T$	nm / K	0.15	0.20	0.27
current tuning coefficient	$C_I$	nm / mA	0.01	0.02	0.03
slow axis (FWHM)		degrees	20	30	40
fast axis (FWHM)		degrees	40	50	60
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)

