



# DFB laser diodes from 1100 nm to 1300 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 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 range from 1100 nm to 1300 nm. Overleaf data for lasers fabricated for injection seeding of fiber lasers used to provide a guiding star for large telescopes with adaptive optics.

general ratings (T = 25 °C)	symbol	unit	typical
optical output power	$P_{\text{out}}$	mW	20
typical maximum operating voltage	$V_{\text{op}}$	V	2
forward current	$I_f$	mA	70
side mode suppression ratio (SMSR)		dB	> 35

On request, lasers with specifically optimized properties, such as higher output power, are available.

laser packaging options
TO5.6 header with or without cap
TO5 header with TEC and NTC
butterfly housing with SM or PM fiber

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

760 - 830 nm
830 - 920 nm
920 - 1100 nm
<b>1100 - 1300 nm</b>
1300 - 1450 nm
1450 - 1650 nm
1650 - 1850 nm
1850 - 1900 nm
1900 - 2200 nm
2200 - 2600 nm
2600 - 2900 nm
2900 - 4000 nm
4000 - 4600 nm
4600 - 5300 nm
6000 - 14000 nm

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

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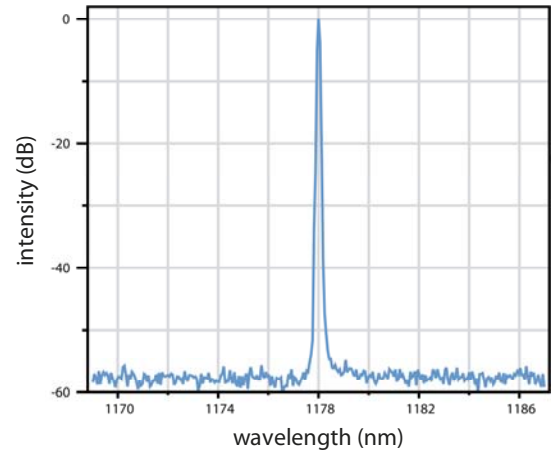


# nanoplus DFB laser diodes at 1178 nm

A wide variety of gas molecules exhibit characteristic absorption lines in the near infrared. DFB lasers emitting at 1178 nm are highly suited for injection seeding of high power fiber lasers as required, e.g. for guiding the adaptive optics of large telescopes. For this application, highly stable laterally and longitudinally single mode lasers are required.

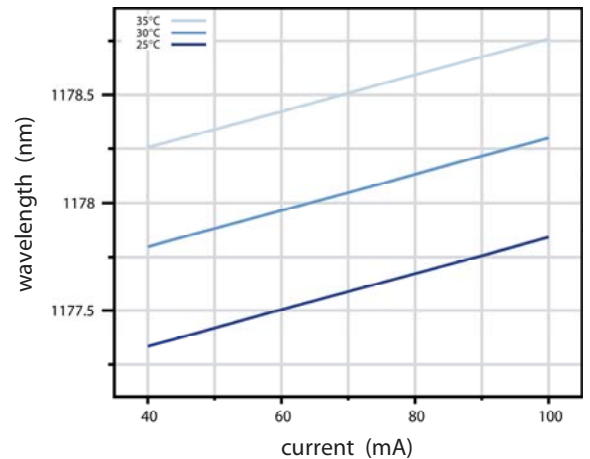
This data sheet reports performance data of nanoplus DFB lasers at this wavelength. Similar performance data are obtained in the entire wavelength range from 1100 nm to 1300 nm. For examples of performance data of nanoplus lasers in other wavelength ranges, please see [www.nanoplus.us](http://www.nanoplus.us) or contact [victor.perez@nanoplus.com](mailto:victor.perez@nanoplus.com)

**Fig. 1**  
Room temperature cw spectrum of a nanoplus DFB laser diode operating at 1178 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 1178 nm based DFBs by current variation at different temperatures



electrooptical characteristics (T = 25 °C)	symbol	unit	min	typ	max
peak wavelength	$\lambda$	nm	1177	1178	1179
threshold current	$I_{th}$	mA	12	15	25
temperature tuning coefficient	$C_T$	nm / K	0.07	0.09	0.1
current tuning coefficient	$C_I$	nm / mA	0.007	0.01	0.02
slow axis (FWHM)		degrees	12	15	20
fast axis (FWHM)		degrees	45	50	55
emitting area	W x H	$\mu\text{m} \times \mu\text{m}$	1.8 x 1.8	2 x 2	2.5 x 2.3
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 [victor.perez@nanoplus.com](mailto:victor.perez@nanoplus.com)