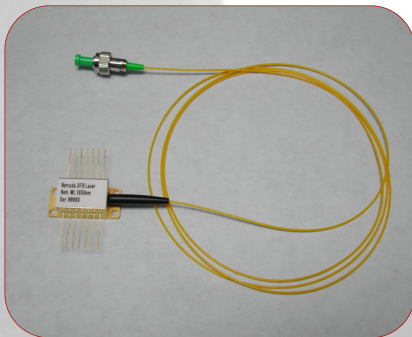
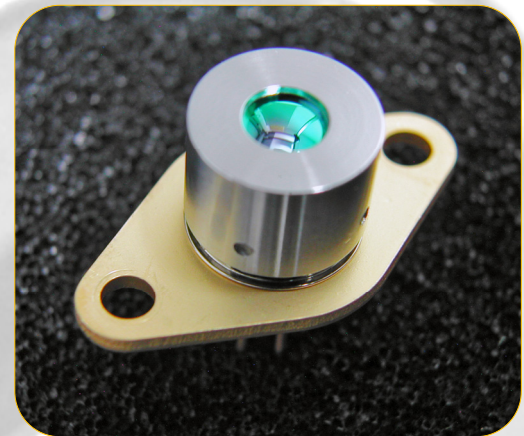


## Mid-IR DFB Lasers for Spectroscopy

NORCADA designs and manufactures single mode semiconductor distributed feedback (DFB) lasers for industrial sensing and environmental monitoring applications. Our DFB lasers come with two main styles of hermetic packaging configurations designed for excellent temperature stability and wavelength tuning.

### Product Features

- Integrated DFB grating provides single frequency operation
- Frequency tuning can be accomplished by adjusting either laser drive current or temperature.
- Tuning range up to 6 nm without mode hopping
- Temperature tuning control: 0.1 nm / °C
- Drive current tuning control: 0.04 nm / mA
- Typical output power range: 2-8 mW



### Packaging Options

- TO-39 or TO-66 package
- Glass or Sapphire window with 7° slope
- Hermetically sealed Integrated thermoelectric cooler (TEC)
- Mounted lens for collimation
- Butterfly package with fibre coupled output

### Available Wavelengths

**2000nm—3500nm**

### Applications

- Molecular spectroscopy
- Industrial gas sensing (TDLAS)
- Environmental monitoring

### Typical wavelengths for trace gas sensing applications

$\lambda$ (nm)	2004	2260	2326	2334	2475	2740	3270
Gas	CO <sub>2</sub>	N <sub>2</sub> O	CO	CO / CH <sub>4</sub>	HF	H <sub>2</sub> O	CH <sub>4</sub>

## Norcada DFB Laser Diodes at 2326nm

Norcada's DFB lasers in the 2000-3500nm range are perfectly suited for sensing of a wide variety of gas molecules that exhibit characteristic absorption lines in this region. A good example of this is our 2326nm DFB laser, which is ideal for trace level detection of CO that has several strong absorption peaks near 2326nm.

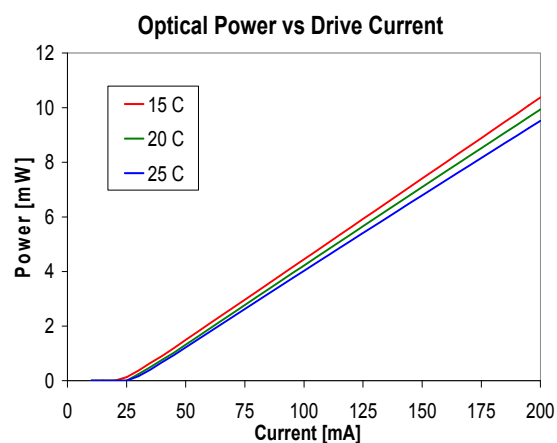


Fig. 1 LV curve for 2326nm DFB laser

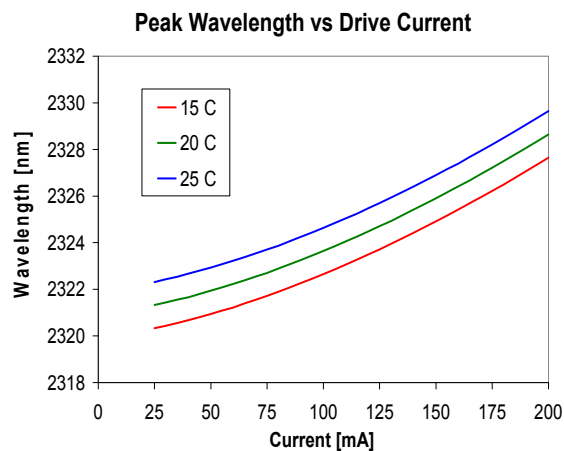


Fig. 2 Wavelength vs current for 2326nm DFB laser

Fig. 1 and Fig. 2 show the laser characteristics at 2326nm wavelength. Other wavelengths in the 2000-3500nm range also exhibit excellent performance characteristics.

Please contact Norcada for further details about our Mid-IR DFB lasers.

### General Ratings and Operating Conditions for 2326nm DFB Laser Diodes

Parameters ( T = 25°C )	Units	Min.	Typ.	Max.
Threshold Current	mA		30	
Optical power	mW	5	8	10
Center Wavelength	nm	2325	2326	2327
Temperature Tuning	nm/°C		0.1	
Current Tuning	nm/mA	0.03	0.04	0.06
Beam profile (slow axis)	degrees		18	
Beam profile (fast axis)	degrees		25	
Side mode suppression (SMSR)	dB	30		
Storage Temperature	°C	-40		80
Case (Instrument) Operating Temperature	°C	-20		40
Laser Diode Forward Current	mA			200