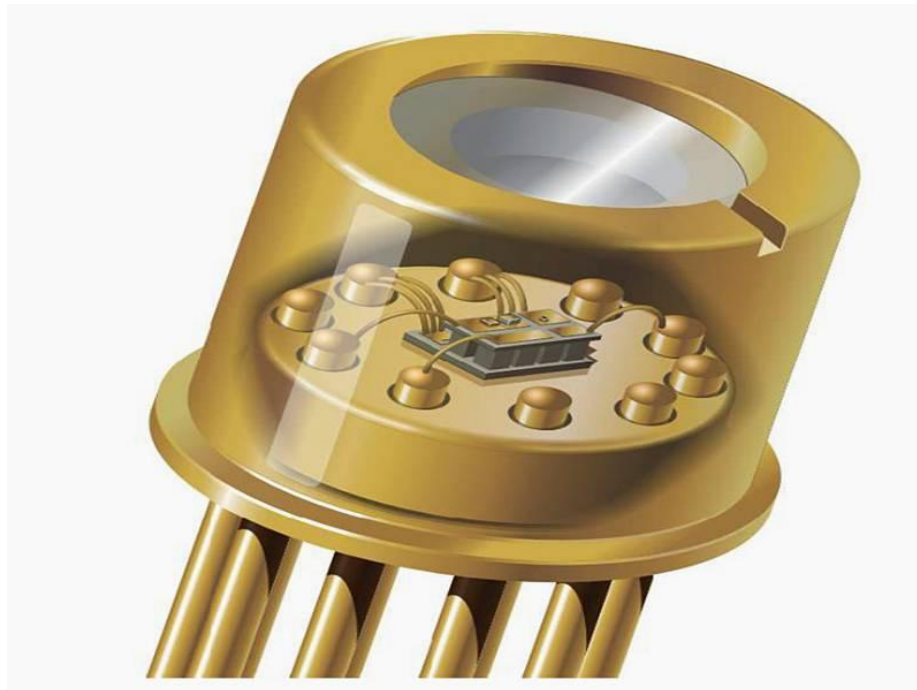


## 760nm high power single mode DFB laser

### 40mW (TO5 package oxygen detection)



#### ● Product Description

With optimized optical properties, the 760nm single-mode DFB is ideal for demanding sensing system applications. The innovative chip design has suppressed high-order longitudinal and transverse modes while providing linear polarization stability. The laser has high output power, narrow linewidth and good consistency and is currently favored by domestic

scientific research customers. We currently have in stock wavelength 760nm DFB for TDLAS oxygen detection, 795nm VCSEL for Rb atomic clock experiments, and 852nm VCSEL for CS atomic cooling.

- **Product features**

Ultra-high output power 、 Narrow linewidth 、 Internal TEC and thermistor 、 2 nm TEC tunability

- **Part Number**

MP-DFB-760-40-A81-T05

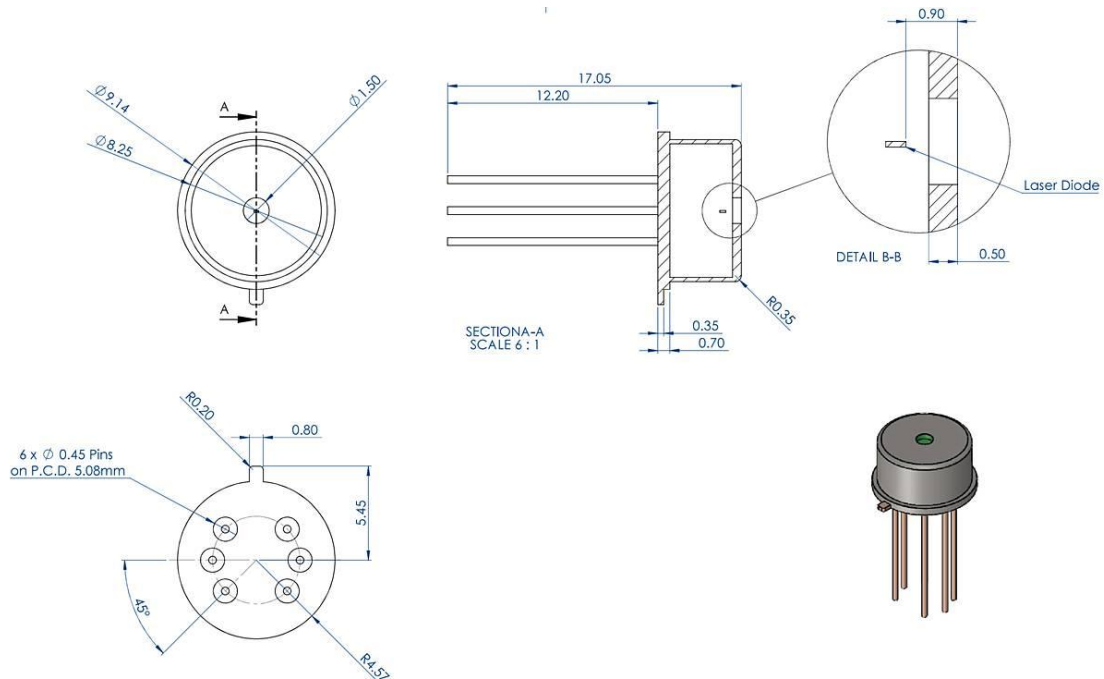
- **Application area**

TDLAS oxygen analysis detection、 Optical coherence experiment

- **Core parameters**

| Wavelength | Power | Package |
|------------|-------|---------|
| 760nm      | 40mW  | T05     |

## ● Dimension Drawing



## ● General Parameters

### Technical Parameters

| Parameter           | Symbol          | Min. | Typ.  | Max. | Unit | Remarks                                                   |
|---------------------|-----------------|------|-------|------|------|-----------------------------------------------------------|
| Incident Wavelength | $\lambda_R$     | 760  | 760.5 | 761  | nm   | T = 20°C,<br>I <sub>TEC</sub> = 0, P <sub>OP</sub> = 35mw |
| Threshold Current   | I <sub>TH</sub> |      | 40    |      | mA   | T = 20°C                                                  |

|                                       |             |    |      |      |       |                                                           |
|---------------------------------------|-------------|----|------|------|-------|-----------------------------------------------------------|
| Output Power                          | $P_{opt}$   | 10 | 20   | 30   | mW    | $T = 0 \dots 50^{\circ}C$                                 |
| Threshold Voltage                     | $U_{TH}$    |    | 1.80 |      | V     |                                                           |
| Laser Current                         | $I_{OP}$    |    |      | 130  | mA    | $P_{opt} = 35mw$                                          |
| Laser Voltage                         | $U_{OP}$    |    | 2.0  |      | V     | $P_{opt} = 35mw$                                          |
| Electro-optical Conversion Efficiency | $\eta_{WP}$ |    | 12   |      | %     | $P_{opt} = 20mw$                                          |
| Slope Efficiency                      | $\eta_s$    |    | 0.74 |      | W/A   | $T = 20^{\circ}C$                                         |
| 3dB Modulation Bandwidth              | v3dB        |    | 3    |      | MHz   | $P_{opt} = 20\text{ mW}$<br>(due to ESD protection diode) |
| Relative Intensity Noise              | RIN         |    | -130 | -120 | dB/Hz | $P_{opt} = 0.3\text{ mW @ } 1\text{ GHz}$                 |
| Wavelength Tuning Current             |             |    | 0.01 |      | nm/mA |                                                           |

|                                     |                      |     |      |      |        |                                                                        |
|-------------------------------------|----------------------|-----|------|------|--------|------------------------------------------------------------------------|
| Wavelength<br>Tuning<br>Temperature |                      |     | 0.1  |      | nm/deg |                                                                        |
| Thermal<br>Resistance               | $R_{\text{thermal}}$ | 3   |      | 5    | K/mW   |                                                                        |
| Side Mode<br>Suppression            |                      | 30  |      |      | dB     |                                                                        |
| Beam<br>Divergence                  | $\theta$             | 10  |      | 25   | °      | $P_{\text{opt}} = 35 \text{ mW}$<br>full 1/e <sup>2</sup><br>bandwidth |
| Spectral<br>Bandwidth               | $\Delta\nu$          |     | 3    |      | MHz    | $P_{\text{opt}} = 35 \text{ mW}$                                       |
| TEC Current                         | $I_{\text{TEC}}$     |     |      | 1000 | mA     | Requires<br>proper<br>heatsink                                         |
| NTC Thermistor<br>Resistance        |                      | 9.5 | 10.0 | 10.5 | kΩ     | T= 25°C                                                                |

|             |  |                                         |    |  |
|-------------|--|-----------------------------------------|----|--|
| NTC         |  |                                         |    |  |
| Temperature |  | $10/\exp[3892 \cdot (1/298K-1/T_{OP})]$ | kΩ |  |
| Dependence  |  |                                         |    |  |

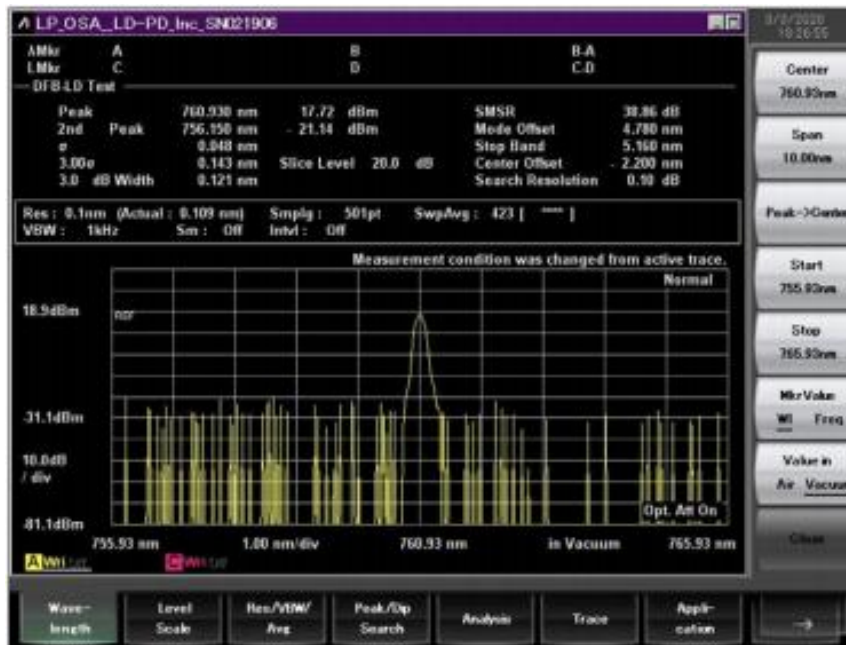


## Absolute Maximum Values

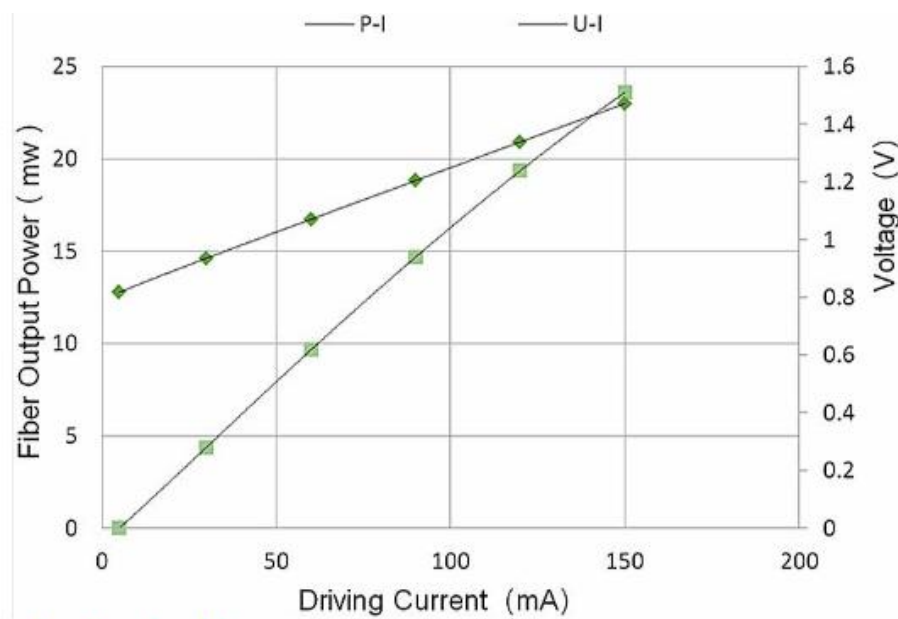
|                       |             |
|-----------------------|-------------|
| Storage Temperature   | -40...125°C |
| Operating Temperature | -20...80°C  |
| Electrical Power Loss | 500 mW      |
| Forward Laser Current | 130mA       |
| Reverse Current       | 10 mA       |
| Soldering Temperature | 270C°       |

\*TEC Temperature must be below 70°C

## Spectral graph

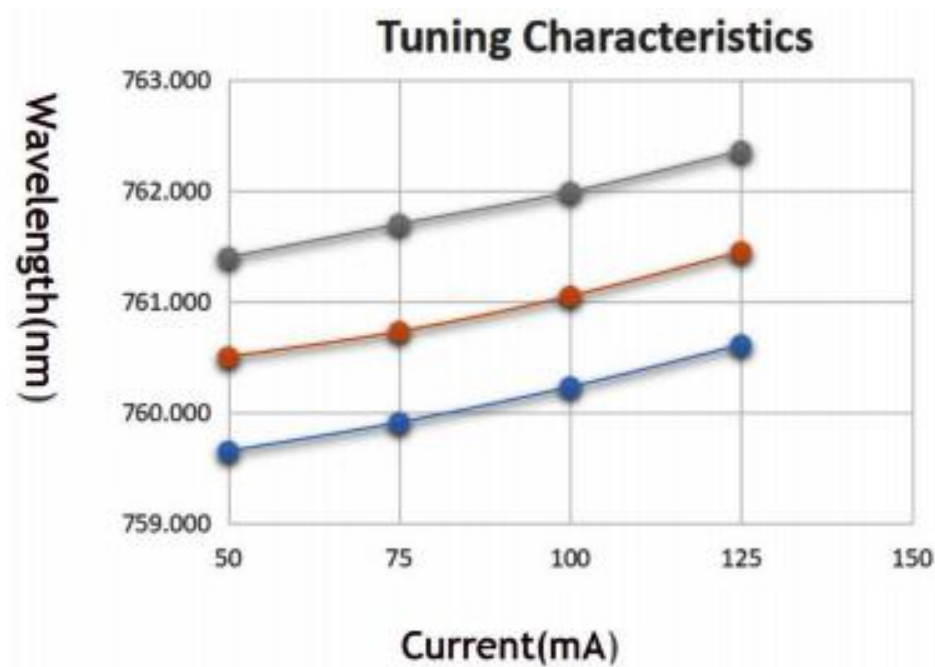


## L-I-V curve

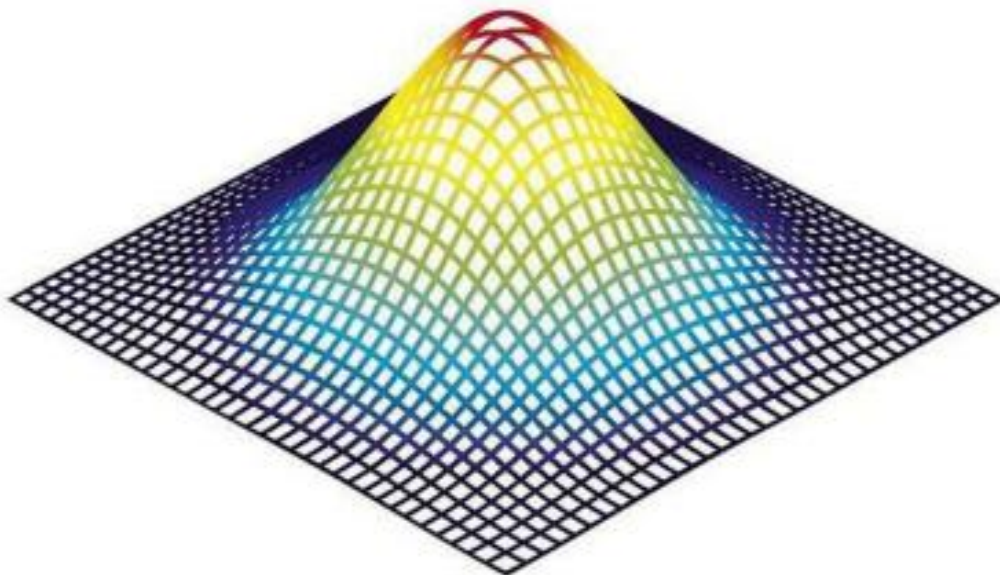




## Temperature/Wavelength under TEC Current Tuning



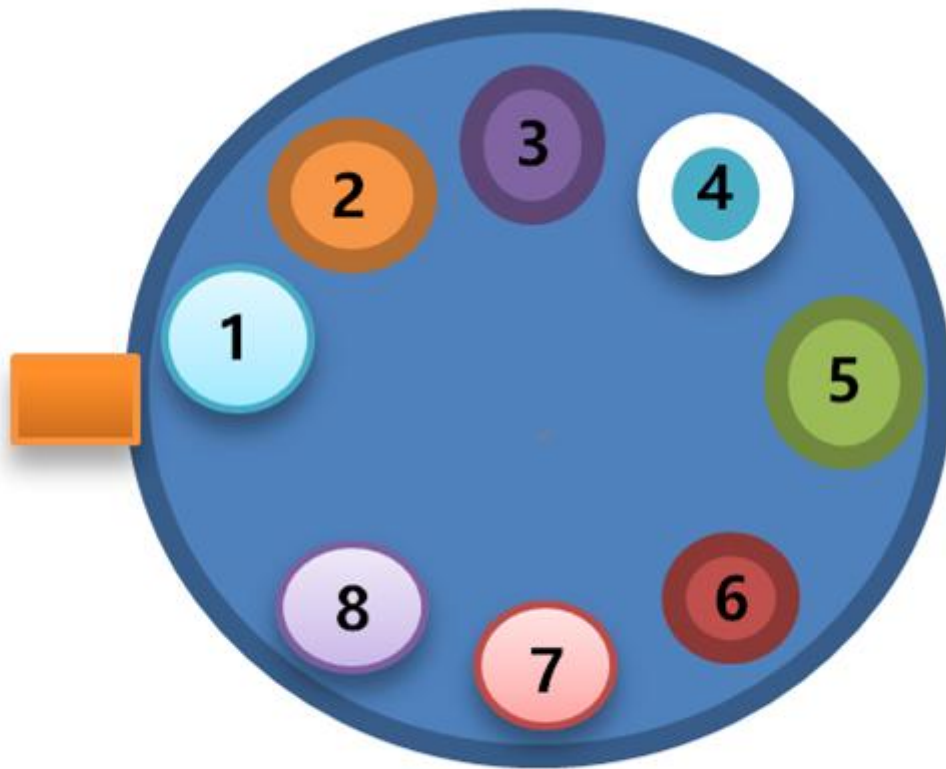
## Beam Quality Analysis





## Pin Definition

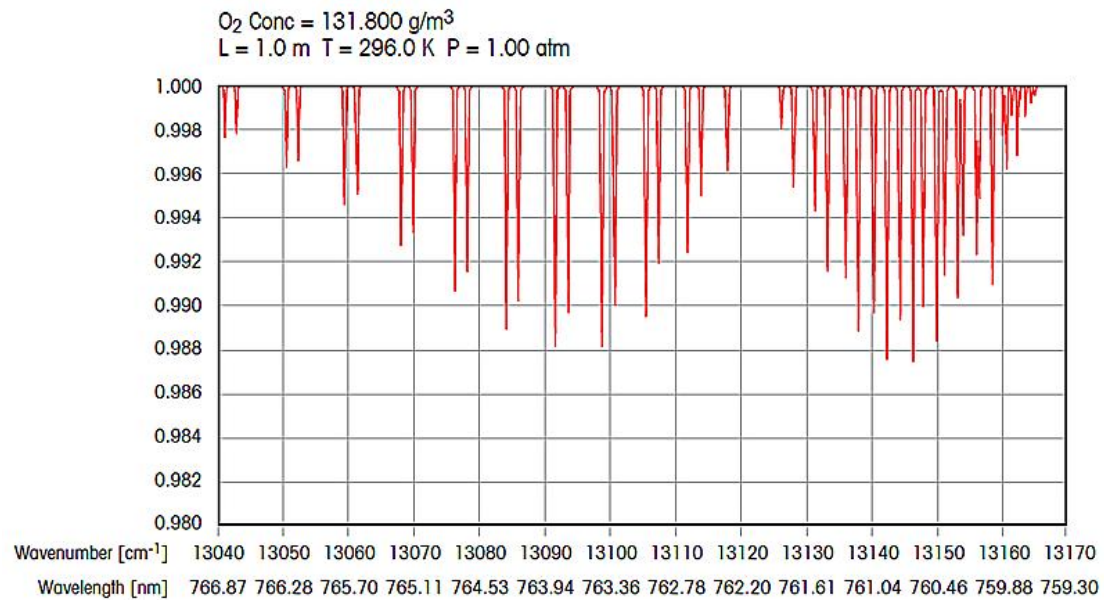
With TEC pin configuration



Bottom View

| SN# | PIN definition | SN# | PIN definition |
|-----|----------------|-----|----------------|
| 1   | LD+            | 5   | Thermistor     |
| 2   | LD-            | 6   | Thermistor     |
| 3   | Cooler-        | 7   | PD+            |
| 4   | Cooler+        | 8   | PD-            |

## Oxygen absorption lines



## Ordering Information

MP-DFB-□□□□-☆-A8▽-T05

□□□□: wavelength

0760: 760nm

1270: 1270nm

1532: 1532nm

1392: 1392nm

1512: 1512nm

1567: 1567nm

\*\*\*\*\*



1653.7: 1653.7nm

☆: output power

A: 10mW

B: 20mW

C: 30mW

D: 40mW

▽: wavelength tolerance

1:  $\pm 1\text{nm}$

2:  $\pm 2\text{nm}$