

# 1654nm pigtailed VCSEL laser test CH4



## ● Product Description

Idealphotonics' new 1654nm VCSEL laser uses the newly invented high contrast grating layer (HCG). HCG is about 50 times thinner than the traditional distributed Bragg reflector (DBR), but has higher reflectivity and wider spectral width. Our laser has a tuning range of up to 8nm and a tuning frequency of up to 100kHz, making it an ideal choice for testing CH4 gas.

## ● Part Number

PL-VCSEL-1654nm-3-SA

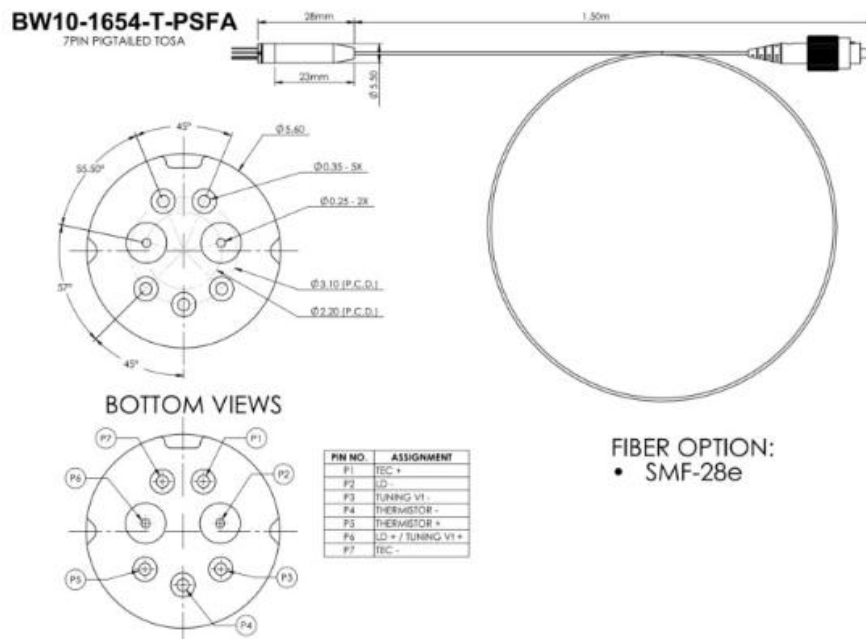
## ● Product features

TO-56 package, 7Pin、Single-mode fiber, FC/APC connector、With TEC, temperature stable、CW continuous output power、Single-mode VCSEL (~1654nm) fast wavelength tuning、Built-in optical isolator, isolation ratio>20dB

## ● Application area

Optical gas sensing (CH<sub>4</sub>)、 Ranging、 Optical time domain reflectometer、  
 Optical communication system (U band)

## Dimensional Drawing



## Parameters

| Parameter                        | Symbol          | Value |         |      | Unit |
|----------------------------------|-----------------|-------|---------|------|------|
|                                  |                 | Min.  | Typical | Max. |      |
| Optical output peak power @ 25 ° | P               | -6    |         | 3    | dBm  |
| Operating current                | I <sub>op</sub> | 0     | 25      | 35   | mA   |
| Operating TEC temperature range  | T <sub>op</sub> | 5     | 20      | 35   | °C   |
| Threshold current                | I <sub>th</sub> |       | 14      | 16   | mA   |
| Laser driver voltage             | V <sub>cc</sub> | 0     | 1.5     | 2.5  | V    |
| Resistance                       | R <sub>s</sub>  |       | 20      |      | Ω    |
| Center wavelength                | λ               |       | 1654    |      | nm   |
| Tuning range                     | Δλ              | 4     | 8       |      | nm   |

|                                                                                 |                   |      |       |            |       |
|---------------------------------------------------------------------------------|-------------------|------|-------|------------|-------|
| Guaranteed start wavelength at 25 °C, I <sub>op</sub> and V <sub>tune</sub> =0V |                   | 1654 |       |            | nm    |
| Guaranteed stop wavelength at 25 °C, I <sub>op</sub> and V <sub>tune</sub> =max |                   |      |       | 1653       | nm    |
| Maximum tuning response frequency                                               | f <sub>max</sub>  | 100  |       |            | kHz   |
| Side mode suppression ratio                                                     | SMSR              | 30   | 40    |            | dB    |
| Linewidth (-3 dB FWHM), CW I <sub>bias</sub> =I <sub>op</sub>                   | σ                 |      |       | 300        | MHz   |
| Relative intensity noise                                                        | RIN               |      | Test  | -128       | dB/Hz |
| Tuning voltage                                                                  | V <sub>tune</sub> | 0    | Sheet | Test Sheet | V     |
| Tuning current                                                                  | I <sub>tune</sub> | 0    | -     | 100        | μA    |
| TEC voltage                                                                     | V <sub>TEC</sub>  |      | 0.35  | 1.5        | V     |
| TEC current                                                                     | I <sub>TEC</sub>  |      | 0.05  | 0.6        | A     |

#### Absolute Maximum Parameters

| Parameter             | Symbol           | Value         | Unit |
|-----------------------|------------------|---------------|------|
| Storage temperature   | T <sub>stg</sub> | -20 to +85    | °C   |
| Operating temperature | T <sub>c</sub>   | -5 to +70     | °C   |
| VCSEL forward current | I <sub>LD</sub>  | 25            | mA   |
| VCSEL reverse voltage | V <sub>LD</sub>  | 3             | V    |
| Soldering temperature | T <sub>sld</sub> | 350 (10 sec.) | °C   |

#### Ordering Information

**Name:** 1654nm pigtailed VCSEL laser

**Model:** PL-VCSEL-1654nm-3-SA

**Operating wavelength:** 1654nm

**Output power:** 3dB

**Fiber type:** SMF-28e

**Connector:** FC/APC