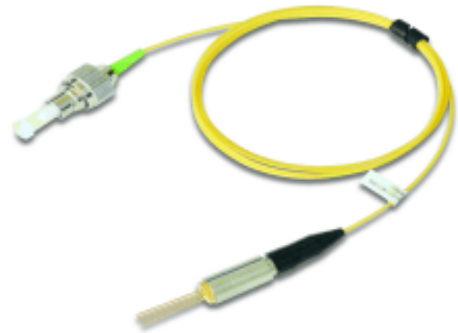


Coaxial Analog CWDM Module with Pigtail

Description

LTxxxx CWDM series Coaxial Laser use InGaAsP/InP MQW chip. The DFB laser integrated an InGaAs monitor PD, it can be used with appropriate feedback control circuitry to set optical power level for the DFB laser, As the current changed above the threshold, the optical power will change accordingly.

They are widely applied in the CATV or CDMA system. The laser diode is mounted into a coaxial package with single mode fiber pigtail. FC/UPC, FC/APC, SC/UPC or SC/APC connector can be selected.



Features

- 1270~1610 nm CWDM uncooled DFB-LD
- Low noise, low distortion, high linearity
- Coaxial Pigtail Package
- operating temperature range: -20°C to 80°C

Application

- CDMA/GSM transmission system
- WDM system
- Other analog transmission system

Absolute Maximum Ratings^[1]

| Parameter | Symbol | Min | Max | Units | Notes |
|--------------------------------------|-----------|-----|--------|-------|---------------------|
| Reverse Voltage(LD) | V_{RL} | --- | 2 | V | |
| Forward Current(LD) | I_{FL} | --- | 120 | mA | |
| Reverse Voltage(MPD) | V_{RMP} | --- | 15 | V | |
| Forward Current(MPD) | I_{FMP} | --- | 2 | mA | |
| Operating Temperature ^[1] | T_C | -20 | +80 | □ | Case temperature |
| Storage Temperature | T_{STG} | -40 | +85 | □ | Ambient temperature |
| Relative Humidity | RH | --- | 80 | % | |
| Lead Soldering Temperature/Time | T_S | --- | 260/10 | □/S | |
| Fiber Yield Strength | | --- | 1 | kgf | |
| Fiber Bend Radius | | 30 | --- | mm | |

Note 1: Beyond the scope of absolute maximum ratings can cause permanent damage to the device. If it has been a long time to use the device in the absolute maximum ratings may affect device reliability.

Electric and Optical Characteristics

 (All measurements are at Case temperature of $25 \pm 3^\circ\text{C}$ @1550nm unless stated otherwise.)

| Parameter | Symbol | Min | Typical | Max | Units | Notes |
|-----------------------------------|-----------------|-----------|---------|------|---------------|---|
| Fiber Output Power ^[1] | Po | 1.5 | --- | 3.6 | mW | CW, If=Ith+20mA |
| Slope Efficiency | η | 0.075 | --- | 0.18 | W/A | CW |
| Center Wavelength | λ | Code List | | | nm | CW, If=Ith+20mA |
| Spectral Width(-20dB) | $\Delta\lambda$ | --- | 0.2 | 1 | nm | CW, If=Ith+20mA |
| Side-Mode Suppression Ratio | SMSR | 30 | --- | --- | dB | CW,If=Ith+20mA |
| Modulation Bandwidth | BW | 2.5 | --- | --- | GHz | -3dB |
| | | 5.0 | --- | --- | | -3dB, with FPC |
| Tracking Error | TE | -1.5 | --- | 1.5 | dB | I_M hold@ $P_0=2\text{mW}, 25^\circ\text{C}, \text{CW}$, $T_c = -20 \sim +80^\circ\text{C}$ |
| Optical Isolation | ISO | 30 | --- | --- | dB | With Single Stage Isolator |
| | | 45 | --- | --- | | With Double Stage Isolator |
| Return Loss | RL | 40 | --- | --- | dB | SC/UPC or FC/UPC connector |
| | | 50 | --- | --- | | SC/APC or FC/APC connector |
| Threshold Current | I_{th} | --- | 8 | 15 | mA | CW |
| Operating Voltage | V_F | --- | 1.2 | 1.6 | V | CW |
| Monitor Current | I_M | 100 | --- | 1500 | μA | CW, If=Ith+20mA, $V_{RMP}=1\text{V}$ |
| Monitor Dark Current | I_D | --- | --- | 100 | nA | CW, $V_{RMP}=5\text{V}$ |
| Photodiode Capacitance | C | --- | --- | 10 | pF | $V_{RMP}=5\text{V}, f=1\text{MHz}$ |
| 3rd Order | IMD3 | --- | -65 | -60 | dBc | [2],CW |
| Inter-modulation Distortion | | --- | --- | -55 | | [3],CW |
| Relative Intensity Noise | RIN | --- | --- | -135 | dB/Hz | CW |
| Pigtail Length | L | 900 | 1000 | 1100 | mm | Outline Dimensions [X] |

Notes: [1]: For 2~3.6mW products by increasing the operating current to achieve 4mW products.

 [2]:Test conditions: $P_f = 2.0 \text{ mW}$, $T_c = 25^\circ\text{C}$, 2 channel modulated carriers 800MHz and 801MHz, Zero link loss, RF 0dBm input and output tested.

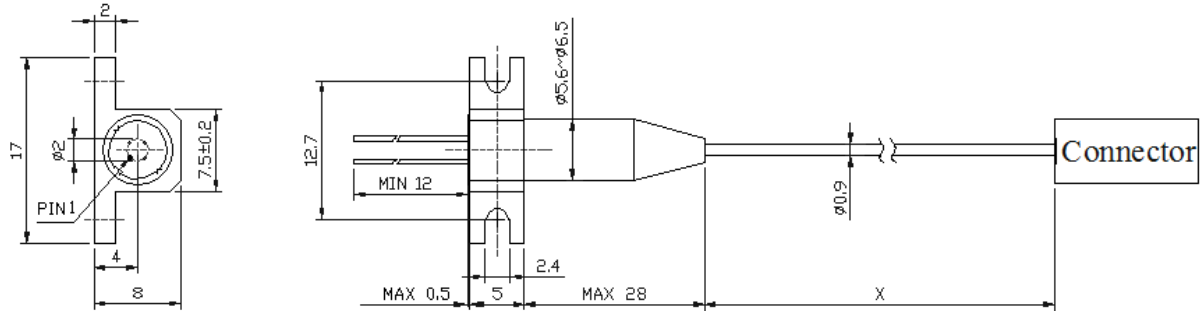
 [3] Test conditions: $P_f = 2.0 \text{ mW}$, $T_c = 25^\circ\text{C}$, 2 channel modulated carriers 1.9GHz and 1.901GHz, Zero link loss, OMI=20% tested.

Pigtail parameters

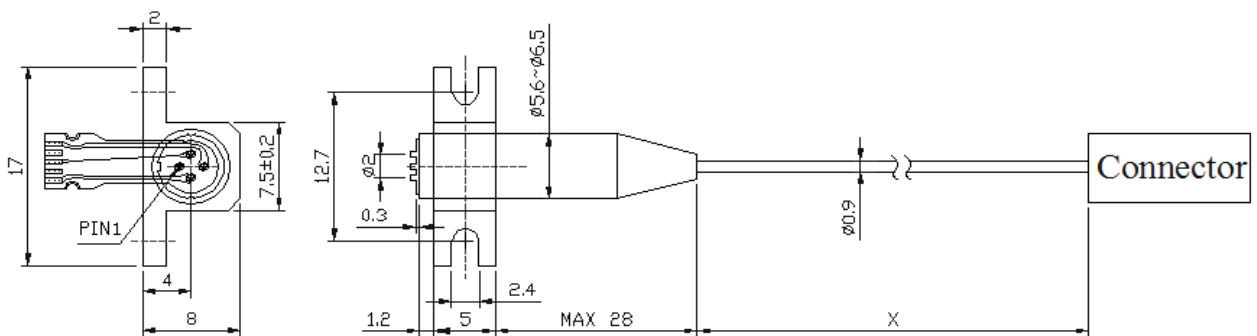
| Parameter | Symbol |
|---------------------|--|
| Optical connector | FC/UPC,FC/APC, SC/UPC or SC/APC (IEC874/7) |
| Mode field diameter | $9.5 \pm 1 \mu\text{m}$ |
| Cladding diameter | $125 \pm 2 \mu\text{m}$ |
| Outermost Jacket | $900 \pm 100 \mu\text{m}$ |
| Jacket color | Yellow or White |
| Pigtail Length | $1.0 \pm 0.1 \text{ m}$ |

Outline Dimensions

All dimensions are $\pm 0.1\text{mm}$ unless otherwise specified (Unit: mm). For detail information please contact LinkPhotonic.

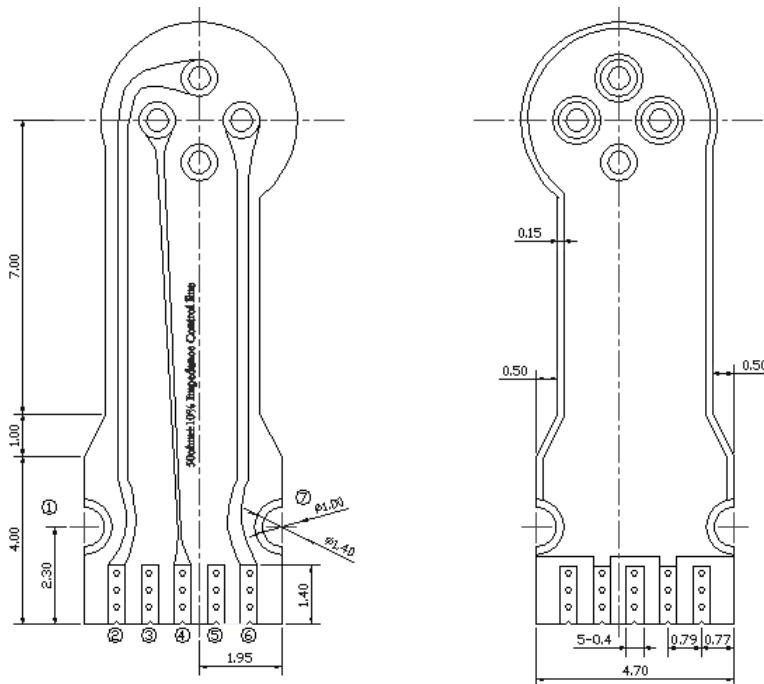


Package 1 without FPC



Package 1 with FPC

Outline of FPC and Pad Descriptions

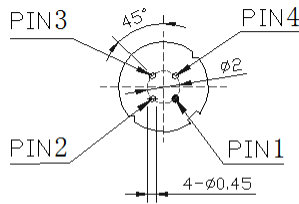


Top Side

Bottom Side

| Pin | |
|-----|----------------|
| 1 | GND (LD+/Case) |
| 2 | PD- |
| 3 | GND (LD+/Case) |
| 4 | LD- (RF in) |
| 5 | GND (LD+/Case) |
| 6 | PD+ |
| 7 | GND (LD+/Case) |

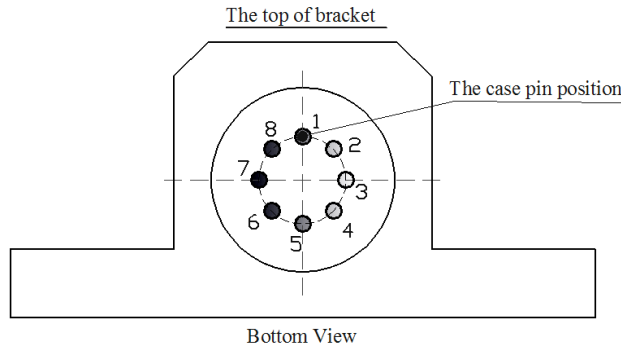
LD Pin Assignment



Bottom View

| Pin | |
|-----|------------|
| 1 | LD + /CASE |
| 2 | LD- |
| 3 | PD- |
| 4 | PD+ |

LD Pin Direction :



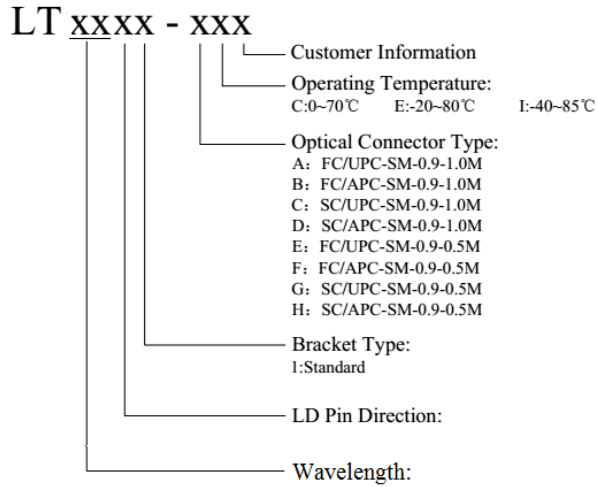
Note: 0: Any **direction** 9: with FPC

Precautions

Semiconductor chips are sensitive to electro-static damage. The module shall be packed with antistatic material for transportation. The working station and operators shall be grounded. Switching transients can cause electrical overstress (EOS) damage to the chips. EOS be may resulted from improper ESD handling, improper power sequencing, a faulty power supply or an intermittent connection.

- a. Operators should always use antistatic bands and clothing, electric conductive shoes, and other safety appliances while at work are highly recommended.
- b. Humidity in working environment should be controlled equal or above 40 percent RH.
- c. It is recommended that grounding mats be placed on the surfaces of assembly line workbench and the surrounding floor in working area, etc.
- d. When mounting this product in other parts or materials which can be electrically charged (printed wiring boards, plastic products, etc.), pay close attention to the static electricity in those parts.ESD may damage the product.

Ordering Information



Wavelength

The wavelength of CWDM DFB LD as Code List at 25±3nm.

| xx | Center of wavelenth | Δλ | xx | Center of wavelenth | Δλ |
|----|---------------------|------|----|---------------------|------|
| 27 | 1270nm | ±3nm | 45 | 1450nm | ±3nm |
| 29 | 1290nm | ±3nm | 47 | 1470nm | ±3nm |
| 31 | 1310nm | ±3nm | 49 | 1490nm | ±3nm |
| 33 | 1330nm | ±3nm | 51 | 1510nm | ±3nm |
| 35 | 1350nm | ±3nm | 53 | 1530nm | ±3nm |
| 37 | 1370nm | ±3nm | 55 | 1550nm | ±3nm |
| 39 | 1390nm | ±3nm | 57 | 1570nm | ±3nm |
| 41 | 1410nm | ±3nm | 59 | 1590nm | ±3nm |
| 43 | 1430nm | ±3nm | 61 | 1610nm | ±3nm |

Statement

The information provided herein is believed to be reliable, LinkPhotonic assumes no liability for inaccuracies or omissions. LinkPhotonic assumes no responsibility for the use of this information, and all such information shall be entirely at the user's own risk. Prices and specifications are subject to change without notice. No patent rights or licenses to any of the circuits described herein are implied or granted to any third party. LinkPhotonic does not authorize or warranty any LinkPhotonic product for use in life-support devices and/or systems. Copyright © 2014 LinkPhotonic Inc. All rights reserved.