

## DL-33X8AR Series

### Uncooled **1310 nm MQW-DFB LD** for CATV return path application

#### DESCRIPTION

DL-33X8AR series are designed for coupling a single mode optical fiber with 1310 nm MQW-DFB uncooled laser diode. DL-33X8AR series are the best kits as light source for CATV return path application.

#### FEATURES

- | 1310 nm Uncooled DFB Laser Diode with MOW Structure
- | High Reliability, Long Operation Life
- | Single Frequency Operation with High SMSR
- | -20 to 85°C operation without active cooling
- | Built-in InGaAs monitor photodiode
- | Low Inter-modulation Distortion
- | Built-in Isolator

#### CHARACTERISTICS

| ELECTRICAL AND OPTICAL CHARACTERISTICS (T <sub>C</sub> = 25°C) |  |   |      |                   |           |                |
|--|--|---|------|-------------------|-----------|----------------|
| Symbol   | Parameter  | Test Conditions   | Min. | Typ.              | Max.      | Unit           |
| I <sub>th</sub>  | Threshold Current  | CW, Room Temperature<br>CW, Over Temperature              |      | 10                | 15<br>45  | mA<br>mA       |
| I <sub>op</sub>  | Operation Current  | CW, Room Temperature<br>CW, Over Temperature              |      |                   | 45<br>100 | mA<br>mA       |
| V <sub>op</sub>  | Operating Voltage  | CW, I <sub>F</sub> =I <sub>op</sub>                       |      | 1.2               | 1.5       | V              |
| P <sub>f</sub>   | Optical Output Power<br>Part No.:DL-3338AR<br>DL-3348AR<br>DL-3358AR | CW, I <sub>F</sub> =I <sub>op</sub>                       |      | 2.0<br>3.0<br>4.0 |           | mW<br>mW<br>mW |
| λ <sub>c</sub>   | Central Wavelength   | CW, I <sub>F</sub> =I <sub>op</sub>                       | 1290 | 1310              | 1330      | nm             |
| SMSR   | Side Mode Suppression Ratio  | CW, I <sub>F</sub> =I <sub>op</sub>                       | 30   | 35                |           | nm             |
| ΔP <sub>f</sub> /P <sub>f</sub>                                | Tracking Error   | APC, -20~85 °C  | -1   |                   | 1         | dB             |
| I <sub>m</sub>   | PD monitor Current   | CW, I <sub>F</sub> =I <sub>op</sub> , V <sub>RD</sub> =1V | 100  |                   | 1500      | μA             |
| I <sub>D</sub>   | PD Dark Current  | V <sub>RD</sub> =5V                                       |      |                   | 0.1       | μA             |
| C <sub>t</sub>   | PD Capacitance   | V <sub>RD</sub> =5V, f=1 MHz                              |      | 10                | 15        | pF             |
| IMD2   | Second-Order Intermodulation   | (*1)  |      |                   | -50       | dBc            |
| IMD3   | Third-Order Intermodulation  | (*1)  |      |                   | -55       | dBc            |
| CNR  | Carrier to Noise Ratio   | (*2)  | 51   |                   |           | dB             |
| BF   | Bandpass Flatness  | Peak to Valley, 5~300 MHz                                 |      |                   | 1.0       | dB             |
| RIN  | Relative Intensity Noise   | f=5~300 MHz   |      |                   | -145      | dB/Hz          |
| Iso  | Optical Isolation  | λ =1310 nm  | 30   |                   |           | dB             |

Note: \*1. 20 Km fiber loss, 2-tone (13 MHz and 19 MHz), OMI=0.1 for each RF Channel.

\*2. 1-tone with OMI=0.2, through 20 km fiber

## ABSOLUTE MAXIMUM RATINGS

Stress in excess of the absolute maximum rating can cause permanent damage to the device. These are absolute stress rating only. Functional operation of the device is not implied at these or any other conditions in excess of these given in the operational sections of the datasheet. Exposure to absolute ratings for extended periods can adversely affect device reliability.

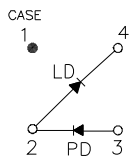
| Parameter  | Symbol              | Min | Max       | Unit     |
|--|---------------------|-----|-----------|----------|
| Optical Output Power<br>(3338AR / 3348AR / 3358AR) | P <sub>o</sub>      |     | 3 / 4 / 5 | mW       |
| LD Reverse Voltage                                 | V <sub>RL</sub>     |     | 2         | V        |
| PD Reverse Voltage                                 | V <sub>RD</sub>     |     | 10        | V        |
| PD Forward Current                                 | I <sub>FD</sub>     |     | 1         | mA       |
| Soldering Temperature                              | T <sub>solder</sub> |     | 260 / 10  | °C / sec |
| Operating Temperature Range                        | T <sub>op</sub>     | -20 | 85        | °C       |

## PRECAUTIONS for USE

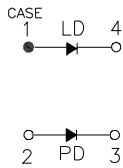
- ESD protection is imperative. Use of grounding straps, anti-static mats, and other ESD protective equipment is recommended when handling or testing any junction photodiodes.
- Fiber pigtails should be handled with less than 10N pull and with a bending radius greater than 30 mm.

## MECHANICAL DIMENSION (mm) and PIN ASSIGNMENT

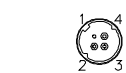
Type B



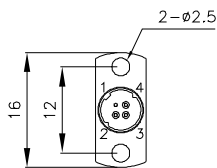
Type C



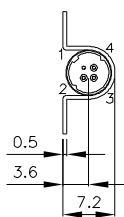
| P/N            | H    |
|----------------|------|
| DL-3338AR-XXXX | 9    |
| DL-3348AR-XXXX | 10.9 |
| DL-3358AR-XXXX | 10.9 |



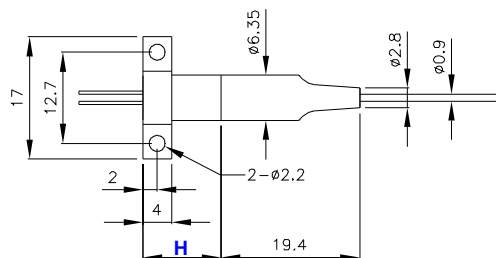
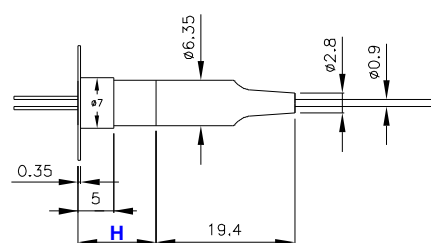
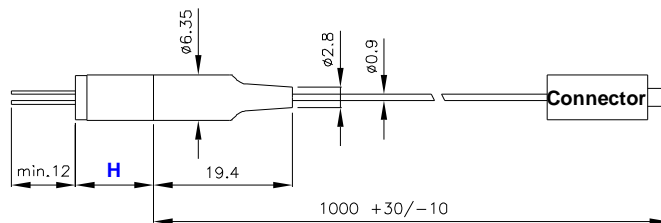
Flangeless



Vertical Flange



Horizontal Flange



ORDER INFORMATION

Part No.: D L - 3 3   AR -    S

| Code | Pout (mW) |
|------|-----------|
| 3    | 2         |
| 4    | 3         |
| 5    | 4         |

| Code | Pin Assignment |
|------|----------------|
| 5    | Type B         |
| 8    | Type C         |

| Code | Flange     |
|------|------------|
| V    | Vertical   |
| H    | Horizontal |
| X    | No Flange  |

| Code | Isolator     |
|------|--------------|
| S    | Single-Stage |

| Code | Connector    |
|------|--------------|
| S    | SC/PC        |
| F    | FC/PC        |
| T    | ST/PC        |
| L    | LC/PC        |
| X    | No connector |
| SA   | SC/APC       |
| FA   | FC/APC       |
| TA   | ST/APC       |
| LA   | LC/APC       |

| Code | Application      |
|------|------------------|
| AR   | CATV Return Path |

**Note:** Specifications subject to change without notice.

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## Revision History

| Version | Subject           | Release Date |
|---------|-------------------|--------------|
| 1.0     | Initial datasheet | 2008/6/1     |
|         |                   |              |
|         |                   |              |

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