

## OF3631B-C3

## Preliminary

2.5Gbps APD-preamplifier coaxial module with single mode fiber

**1. DESCRIPTION**

OF3631B-C3 is an optical receiver module for digital transmission systems up to 2.5Gbps. It uses an InGaAs avalanche photodiode with a low noise preamplifier. It operates from +3.3V to +5.0V TIA supply voltage. Package style is a hermetically sealed coaxial package with single mode fiber pigtail.

**2. FEATURES**

Data rate up to 2.5Gbps  
 High responsivity InGaAs-APD : 8.5A/W  
 Wide dynamic range  
 Typical sensitivity : -32dBm  
 Low noise  
 Small coaxial package

**3. APPLICATION**

SONET OC-48/SDH STM-16 applications  
 Long-haul transmission systems up to 2.5Gbps

**4. OPTICAL AND ELECTRICAL CHARACTERISTICS**

(Wavelength=1310nm, Ta =25°C, VDD=3.3V, unless otherwise specified)

| Parameter                       | Symbol    | Test Conditions   | Min.     | Typ. | Max.  | Unit |    |
|---------------------------------|-----------|---|----------|------|-------|------|----|
| Wavelength                      | $\lambda$ | -   | 1250     | --   | 1620  | nm   |    |
| APD Breakdown Voltage           | VBR       | ID=10 $\mu$ A   | 40       | 60   | 80    | V    |    |
| Temperature Coefficient of VBR* | $\gamma$  | -   | 0.10     | 0.15 | 0.25  | %/°C |    |
| APD Responsivity                | RAPD      | $\lambda=1.55\mu\text{m}, V_B=35\sim 78\text{V}, M=10$                        | 8.0      | 8.5  | --    | A/W  |    |
|                                 |           | $\lambda=1.31\mu\text{m}, V_B=35\sim 78\text{V}, M=10$                        | 7.5      | 8.5  | --    |      |    |
| Responsivity                    | R         | RL=100 $\Omega$ , M=10,<br>Pin=-30dBm, Differential                           | 12       | --   | --    | kV/W |    |
| Bandwidth                       | BW        | f3dB, RL=100 $\Omega$ , M=10  | 1550     | 1850 | --    | MHz  |    |
| Sensitivity                     | Prmin     | 2.488Gbps, NRZ,<br>BER=10 <sup>-10</sup> , PRBS2 <sup>23</sup> -1,<br>M=Mopt. | --       | -32  | -30.5 | dBm  |    |
| Overload                        | Prmax     | 2.488Gbps, NRZ,<br>BER=10 <sup>-10</sup> , PRBS2 <sup>23</sup> -1,<br>M=3     | -7       | -5   | --    | dBm  |    |
| Supply Current                  | IDD       | Pin = 0mW   | VDD=3.3V | --   | 30    | 63   | mA |
|                                 |           |   | VDD=5.0V | --   | 40    | 73   | mA |
| Recommended TIA Supply Voltage  | VDD       | -   | 3.0      | --   | 5.5   | V    |    |
| Optical Return Loss             | ORL       | -   | --       | --   | -27   | dB   |    |

\*) Temperature Coefficient of Breakdown Voltage.

$$\gamma = \frac{V_B(25^\circ\text{C} + \Delta T^\circ\text{C}) - V_B(25^\circ\text{C})}{V_B(25^\circ\text{C}) \cdot \Delta T^\circ\text{C}} \times 100 (\% / ^\circ\text{C})$$

**5. ABSOLUTE MAXIMUM RATING**

(Ta = 25 °C, unless otherwise specified)

| Parameter             | Symbol | Rating     | Unit |
|-----------------------|--------|------------|------|
| APD Supply Voltage    | VR     | 0 to VBR   | V    |
| TIA Supply Voltage    | VDD    | 6.0        | V    |
| APD Forward Current   | IF     | 4          | mA   |
| APD Reverse Current   | IR     | 1(cw)      | mA   |
| Operating Temperature | Top    | -40 to +85 | °C   |
| Storage Temperature   | Tstg   | -40 to +85 | °C   |

**6. CONNECTOR AND FIBER SPECIFICATIONS**

| Parameter           | Specifications | Unit |
|---------------------|----------------|------|
| Type                | SM             | --   |
| Mode Field Diameter | 10             | μm   |
| Cladding Diameter   | 125            | μm   |
| Jacket Diameter     | 900            | μm   |
| Length              | 1 (Min.)       | m    |
| Connector           | FC/PC or SC/PC | --   |

**7. ORDERING INFORMATION**

OF3631 B - C3 - \_ \_ \_ \_

Fiber  
B: SM

Flange  
AF: Angled  
SF: Straight

Connector  
FC  
SC

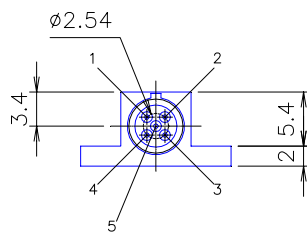
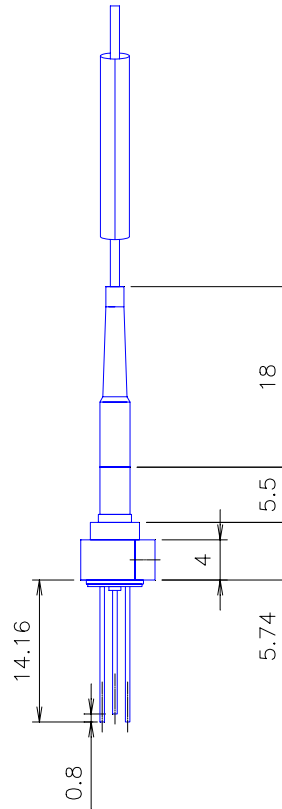
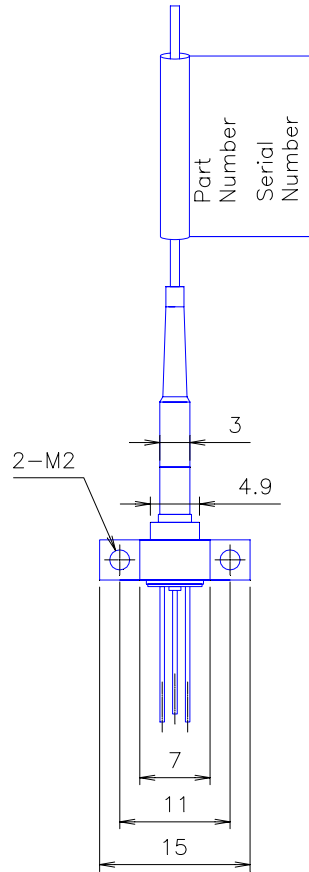
ex.) OF3631B-C3-AFFC

OF3631 with SM fiber, angled flange,  
and FC connector.

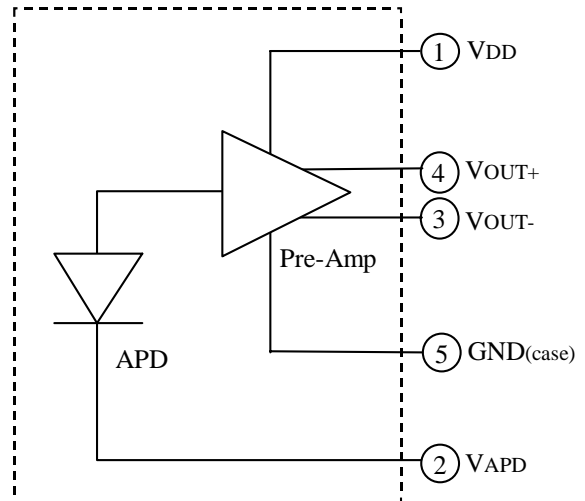
**8.OUTLINE DRAWING**

All dimensions in millimeters

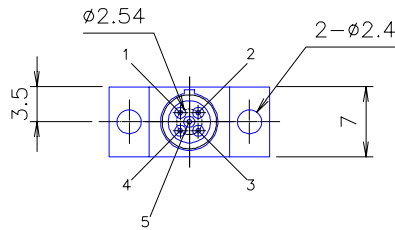
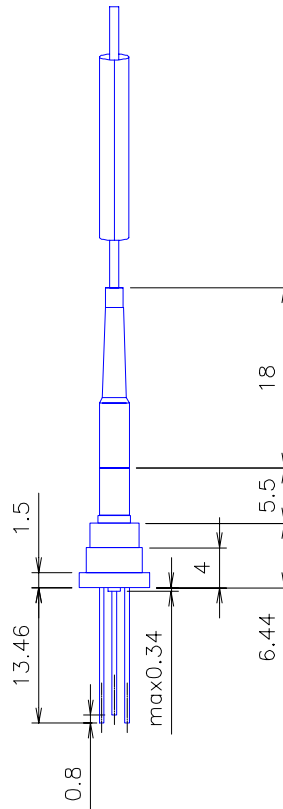
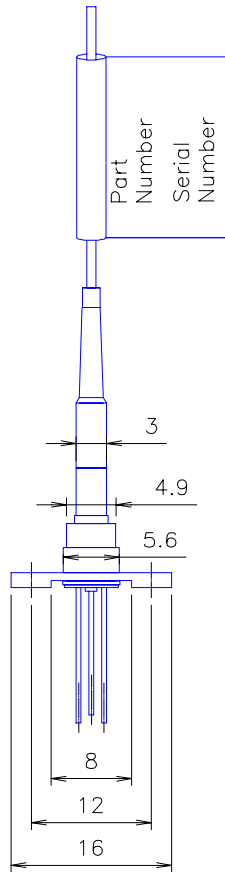
Package No. OF3631B-C3-AF\_\_ (Unit: mm)



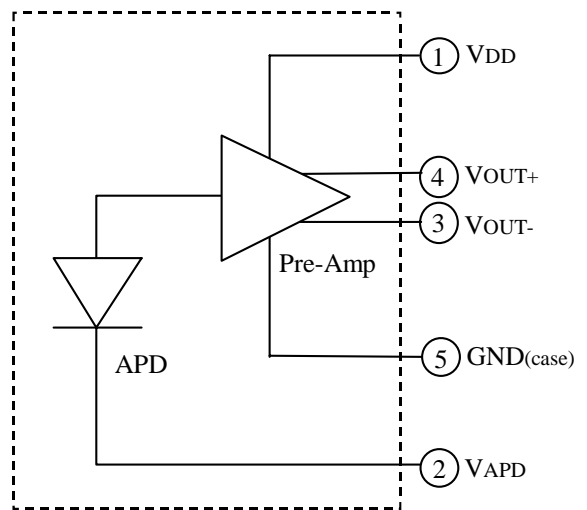
| Pin Connection |           |
|----------------|-----------|
| 1              | VDD       |
| 2              | VAPD      |
| 3              | VOUT-     |
| 4              | VOUT+     |
| 5              | GND(case) |



All dimensions in millimeters  
 Package No. OF3631B-C3-SF\_\_ (Unit: mm)



| Pin Connection |           |
|----------------|-----------|
| 1              | VDD       |
| 2              | VAPD      |
| 3              | VOUT-     |
| 4              | VOUT+     |
| 5              | GND(case) |



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