

MITSUBISHI (OPTICAL DEVICES)

# FU-423SLD-F3M31

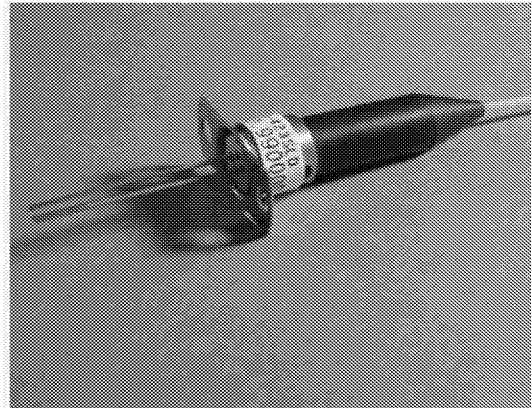
1.3  $\mu\text{m}$  LD MODULE WITH SINGLEMODE FIBER PIGTAIL

## DESCRIPTION

Module type FU-423SLD-F3M31 has been developed for coupling a singlemode optical fiber and a 1.3 $\mu\text{m}$  wavelength InGaAsP LD (Laser diode). FU-423SLD-F3M31 is suitable to light source for high-speed short haul and long haul digital optical communication systems.

## FEATURES

- High-speed response
  - Emission wavelength is in 1.3 $\mu\text{m}$  band
  - Low threshold current (7mA typ.)
  - With photodiode for optical output monitor
  - MQW\* active layer
  - FSBH\*\* structure fabricated by all MOCVD process
- \*Multiple quantum well  
\*\*Facet selective-growth buried heterostructure



## APPLICATION

Trunk Line, FitL

## ABSOLUTE MAXIMUM RATINGS (Tc=25°C)

| Parameter                  |                                     | Symbol | Conditions        | Rating  | Unit |
|----------------------------|-------------------------------------|--------|-------------------|---------|------|
| Laser diode                | Optical output power from fiber end | Pf     | CW<br>Tc=-40~85°C | 0.4     | mW   |
|                            | Reverse voltage                     | Vrl    | -                 | 2       | V    |
| Photodiode for monitoring  | Reverse voltage                     | Vrd    | -                 | 20      | V    |
|                            | Forward current                     | Ifd    | -                 | 2       | mA   |
| Operating case temperature |                                     | Tc     | -                 | -40~+85 | °C   |
| Storage temperature        |                                     | Tstg   | -                 | -40~+85 | °C   |

**1.3 μm LD MODULE WITH SINGLEMODE FIBER PIGTAIL**

**ELECTRICAL/OPTICAL CHARACTERISTICS**

| Parameter                                  | Symbol                          | Test Conditions                                                                           | Limits |      |      | Unit |
|--------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------|--------|------|------|------|
|                                            |                                 |                                                                                           | Min.   | Typ. | Max. |      |
| Threshold current                          | I <sub>th</sub>                 | CW, T <sub>c</sub> =25°C                                                                  | 3      | 6    | 10   | mA   |
|                                            |                                 | CW, T <sub>c</sub> =-40~85°C                                                              | 1      | -    | 35   |      |
| Modulation current                         | I <sub>mod</sub>                | CW, P <sub>f</sub> =0.2mW, T <sub>c</sub> =25°C                                           | 5      | 6    | 15   | mA   |
|                                            |                                 | CW, APC, I <sub>mon</sub> (P <sub>f</sub> (25°C)=0.2mW), T <sub>c</sub> =-40~85°C         | 4      | -    | 35   |      |
| Operating Voltage                          | V <sub>op</sub>                 | CW, APC, I <sub>mon</sub> (P <sub>f</sub> (25°C)=0.2mW), T <sub>c</sub> =-40~85°C         | 0.8    | -    | 1.5  | V    |
| Threshold power                            | P <sub>fth</sub>                | CW, I <sub>f</sub> =I <sub>th</sub> , T <sub>c</sub> =-40~85°C<br>(Note1)                 | -      | -    | 10   | μW   |
| dP <sub>f</sub> /dI <sub>f</sub> linearity | η <sub>I</sub>                  | CW, APC, P <sub>f</sub> =0.04~0.2mW                                                       | -25    | -    | 25   | %    |
| Center wavelength                          | λ <sub>c</sub>                  | CW, P <sub>f</sub> =0.2mW, T <sub>c</sub> =25°C                                           | 1290   | -    | 1330 | nm   |
|                                            |                                 | CW, APC, I <sub>mon</sub> (P <sub>f</sub> (25°C)=0.2mW), T <sub>c</sub> =-40~85°C         | 1260   | -    | 1360 |      |
| Spectral width(RMS)<br>(Note 3)            | Δλ                              | CW, APC, I <sub>mon</sub> (P <sub>f</sub> (25°C)=0.2mW), T <sub>c</sub> =-40~85°C         | -      | -    | 2.5  | nm   |
| Rise and fall times                        | t <sub>r</sub> , t <sub>f</sub> | I <sub>b</sub> =I <sub>th</sub> , P <sub>fpeak</sub> =0.2mW, 10~90%, T <sub>c</sub> =25°C | -      | 0.3  | 0.5  | ns   |
| Tracking error<br>(Note2)                  | E <sub>r</sub>                  | CW, APC, I <sub>mon</sub> (P <sub>f</sub> (25°C)=0.2mW), T <sub>c</sub> =0~70°C           | 0      | 0.4  | 1    | dB   |
|                                            |                                 | CW, APC, I <sub>mon</sub> (P <sub>f</sub> (25°C)=0.2mW), T <sub>c</sub> =-40~85°C         | 0      | 0.5  | 1.2  |      |
| Monitor current                            | I <sub>mon</sub>                | CW, V <sub>rd</sub> =3V, P <sub>f</sub> =0.2mW                                            | 0.08   | 0.5  | 1    | mA   |
| Dark current (Photodiode)                  | I <sub>d</sub>                  | V <sub>rd</sub> =3V                                                                       | -      | 0.1  | 0.5  | μA   |
| Capacitance (Photodiode)                   | C <sub>t</sub>                  | V <sub>rd</sub> =3V, f=1MHz                                                               | -      | -    | 15   | pF   |

Note 1. I<sub>f</sub> is ward current of LD.

2.  $E_r = \text{MAX} |10 \times \log(P_f(T_c)/P_f(25^\circ\text{C}))|$

3.  $\Delta\lambda = ((\sum a_i \cdot (\lambda_i - \lambda_c)^2) / \sum a_i)^{1/2}$

Where a<sub>i</sub> ≥ a<sub>p</sub> × 0.01

a<sub>i</sub>: Relative intensity of laser spectral emission modes

a<sub>p</sub>: Peak of laser spectral emission modes

**OPTICAL FIBER SPECIFICATION**

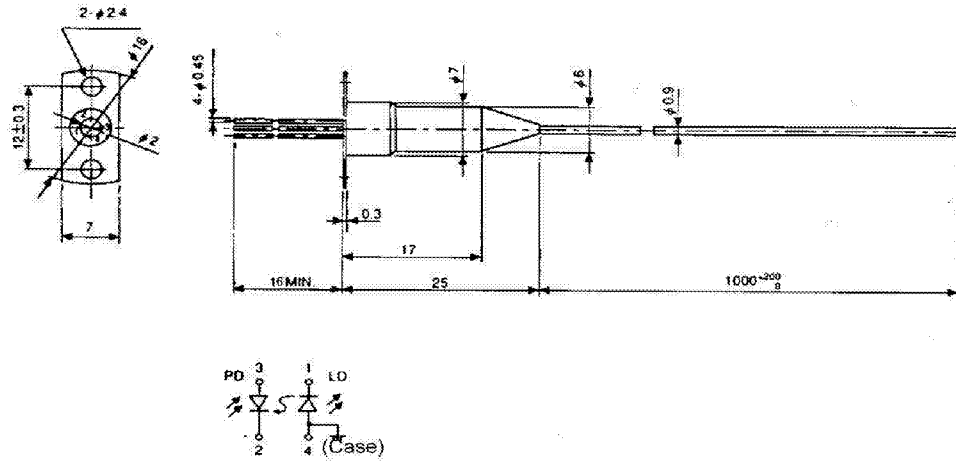
| Parameter       | Limits   | Unit |
|-----------------|----------|------|
| Type            | SM       | -    |
| Mode field dia. | 9.5±1    | μm   |
| Cladding dia.   | 125±2    | μm   |
| Jacket dia.     | 0.9 typ. | mm   |

# FU-423SLD-F3M31

1.3  $\mu\text{m}$  LD MODULE WITH SINGLEMODE FIBER PIGTAIL

## OUTLINE DIAGRAM

(Unit : mm)



FU-423SLD-F3M31