

## Coaxial DFB Laser Module



### Applications

- CATV Return-path
- CWDM transmission

### Descriptions

- FOL1xxxMWSx-A4 series is a coaxial DFB laser module designed for CATV return-path application.
- The module is a coaxial package with a single mode fiber pigtail, which contains a DFB laser diode, a power monitor photodiode, and an optical isolator.
- This laser module complies with telecom requirements described in Telcordia™ GR-468 and is manufactured in an ISO™9001 certified production line.

### Features

- 1310nm, 1550nm and C-WDM (1470~1610nm) wavelength are available
- Wide temperature operation
- Low threshold current
- High side mode suppression ratio
- High output power and low distortion for CATV return-path applications
- Semi-double stage isolator integrated
- RoHS compliant

### Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Note
Storage Temperature	Tstg	-40	85	°C	
Operating Case Temperature	Tc	-20	85	°C	S version
		-20	75	°C	
LD Forward Current	IfLD	-	150	mA	
LD Reverse Voltage	VrLD	-	2	V	
PD Forward Current	IfPD	-	5	mA	
PD Reverse Voltage	VrPD	-	20	V	
Soldering Temperature (<10s)	Stemp	-	260	°C	
Relative Humidity	RH	0	85	%	

## Specifications (Tc=25°C, unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Threshold Current	I <sub>th</sub>	-	8	15	mA	CW
		-	-	50	mA	CW, Tc=over temperature
Optical Output Power	Pop <sup>*1</sup>	-	4.0	-	mW	CW
Slope Efficiency	η	0.12	0.14	-	W/A	Pop, CW
LD Operating Current	I <sub>op</sub>	-	-	50	mA	Pop, CW
LD Forward Voltage	V <sub>f</sub>	-	1.1	1.5	V	Pop, CW
Peak Wavelength	λ <sub>p</sub>	1300	1310	1320	nm	<b>13F1</b> ; Pop, CW, Tc=25°C
		1540	1550	1560	nm	<b>15F5</b> ; Pop, CW, Tc=25°C
		λ <sub>p</sub> -3	λ <sub>p</sub> <sup>*2</sup>	λ <sub>p</sub> +3	nm	<b>1xQx</b> ; Pop, CW, Tc=25°C
Side Mode Suppression Ratio	SMSR	30	-	-	dB	Pop, CW, Tc=over temperature
Second Order Distortion	IMD2	-	-	-50	dBc	2 tone test, f1=13MHz, f2=19MHz, OMI=10%/tone, Pop
Third Order Distortion	IMD3	-	-	-60	dBc	
Spurious Noise with Carrier	SNon	-	-55	-	dBc	1 tone test, f1=19MHz, OMI=10%, Pop, through 20km fiber <sup>*3</sup>
Spurious Noise with out Carrier	SNoFF	-	-50	-	dBc	
Relative Intensity Noise	RIN	-	-	-150	dB/Hz	Pop, CW, OpRL<-40dB <sup>*4</sup> , f=5~200MHz
Monitor PD Current	I <sub>m</sub>	100	-	2000	μA	V <sub>r</sub> PD=5V, Pop, CW
Monitor PD Dark Current	I <sub>d</sub>	-	-	100	nA	V <sub>r</sub> PD=5V
Monitor PD Capacitance	C	-	-	10	pF	V <sub>r</sub> PD=5V, f=1MHz
Isolation	I <sub>so</sub>	50	-	-	dB	
Tracking Error	TE	-1	-	1	dB	I <sub>m</sub> =constant, Tc=over temperature

Note: \*1 The symbol 'Pop' denotes the typical value.

\*2 λ<sub>p</sub>: **14Q7**:1470nm, **14Q9**:1490nm, **15Q1**:1510nm, **15Q3**:1530nm, **15Q5**:1550nm,  
**15Q7**:1570nm, **15Q9**:1590nm, **16Q1**:1610nm

Wavelength tolerance can be customized.

\*3 f=5~200MHz, RBW=100kHz, VBW=30kHz, Hold time=30s

\*4 OpRL: Optical Return Loss

# FOL1xxxMWSx-A4 series

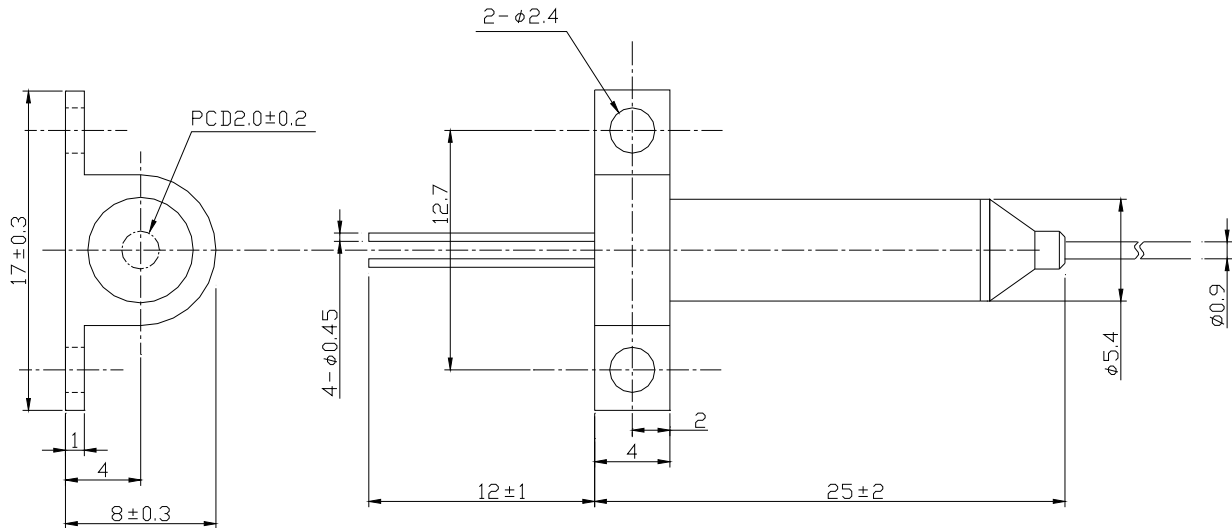


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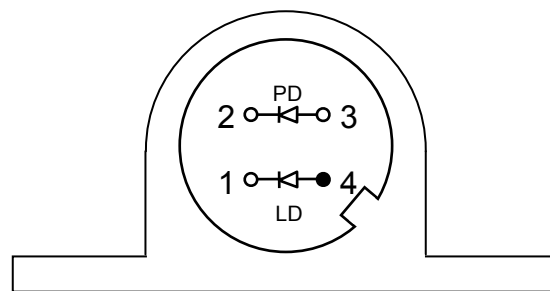
## Dimensions and pin assignments

Unit: mm

Tolerance: +/-0.1mm, unless otherwise specified.



Y7



Bottom view, No.4 Pin is Case GND

## Fiber pigtail specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit
Fiber Type		Single Mode Fiber, Flame Retardant Hytel Coating			
Cladding Diameter	Dcl	122	125	128	µm
Mode Field Diameter	Dmf	-	10	-	µm
Coating Diameter	Dbc	-	0.9	-	mm
Pigtail Length *5	Lf	1.0	1.1	1.2	m
Bending Radius	Rb	30	-	-	mm
Connector Type		SC/Angled PC			
		No connector			

Note: \*5 From the ferrule-end to the bottom of the TO-Header

# FOL1xxxMWSx-A4 series



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## Ordering information

FOL□□□□MWS□-A4-□7

Wavelength	
13F1	1310nm
15F5	1550nm
14Q7	1470nm
14Q9	1490nm
15Q1	1510nm
15Q3	1530nm
15Q5	1550nm
15Q7	1570nm
15Q9	1590nm
16Q1	1610nm

Operating case temperature	
S	-20~+85°C
(blank)	-20~+75°C

Connector	
SA	SC/Angled PC
N	No connector

## Safety information

This product complies with 21 CFR 1040.10 and 1040.11, Class 3b laser product. Invisible laser radiation is emitted from the end of the fiber or connector. Avoid direct exposure to the beam.



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## FURUKAWA ELECTRIC CO., LTD.

**Japan**  
**Head Office**  
 2-2-3, Marunouchi  
 Chiyoda-ku  
 Tokyo 100-8322,  
 JAPAN  
 Tel: +81-3-3286-3253  
 Fax: +81-3-3286-3978  
<http://www.furukawa.co.jp>

**North America**  
**OFS**  
 1 Brightwave Blvd.  
 Carrollton, GA 30117, USA  
 Tel: +1-770-798-5555  
<http://www.ofsoptics.com>  
 E-mail: [info@ofsoptics.com](mailto:info@ofsoptics.com)

**Europe**  
**Furukawa Electric Europe Ltd.**  
 Furukawa House  
 77-85 Fulham Palace Road,  
 London W6 8JD, United Kingdom  
 Tel: +44-20-7313-5300  
 Fax: +44-20-7313-5310  
<http://www.furukawa.co.uk>  
<http://www.furukawa.co.uk/contactus.php>

**ASIA**  
**Furukawa Electric Hong Kong Ltd.**  
 Suite 1810, 18/F, Tower 2,  
 33 Canton Road, China Hong Kong City  
 Tsim Sha Tsui, Kowloon, Hong Kong  
 Tel: 852-2512-8938  
 Fax: 852-2512-9717  
<http://www.fehk.com.hk/>  
 E-mail: [guest@fehk.cn](mailto:guest@fehk.cn)