C-WDM Coaxial DFB-LD Module for Wireless Communication
(with single isolator)

FOL1xQxMWIx-R4-x7

The Furukawa Electric Co., Ltd.

C-WDM Coaxial DFB-LD Module for Wireless Communication

FOL1xQxMWIx-R4-x7 (with single-stage isolator)

1. 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	%	

2. Performance Specifications (Tc=25°C, unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Threshold Current	Ith	-	8	15	mA	CW
		-	-	50	mA	CW, Tc=over temperature
Optical Output Power *1	Pop	-	4.0	-	mW	R4: CW
Slope efficiency	η	0.12	0.14	-	W/A	R4: Pop, CW
LD Operating Current	Iop	-	-	50	mA	Pop, CW
LD Forward Voltage	Vf	-	1.1	1.5	V	Pop, CW
Peak Wavelength *2	λp	λp-3	λp	λp+3	nm	Pop, CW
Side Mode Suppression Ratio	SMSR	30	-	-	dB	Pop, CW, Tc=over temperature
Cut-off Frequency	fc	-	3	-	GHz	Pop
Third Order Distortion	IMD3	-	-	-56	dBc	2 tone test, f1=2200MHz, f2=2202.5MHz, OMI=20%/tone, Pop
Relative Intensity Noise	RIN	-	-154	-145	dB/Hz	Pop, CW, OpRL<-40dB (*3), f=2200MHz
Isolation	Iso	30	-	-	dB	
Monitor PD Current	Im	100	-	2000	μA	VrPD=5V, Pop, CW
Monitor PD Dark Current	Id	-	-	100	nA	VrPD=5V
Monitor PD Capacitance	C	-	-	10	pF	VrPD=5V, f=1MHz
Tracking Error *4	TE	-1	-	1	dB	Pop, CW

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

*2 λp: **12Q7:**1270nm, **12Q9:**1290nm, **13Q1:**1310nm, **13Q3:**1330nm, **13Q5:**1350nm, **13Q7:**1370nm, **13Q9:**1390nm, **14Q1:**1410nm, **14Q3:**1430nm, **14Q5:**1450nm, **14Q7:**1470nm, **14Q9:**1490nm, **15Q1:**1510nm, **15Q3:**1530nm, **15Q5:**1550nm, **15Q7:**1570nm, **15Q9:**1590nm, **16Q1:**1610nm Wavelength tolerance can be customized.

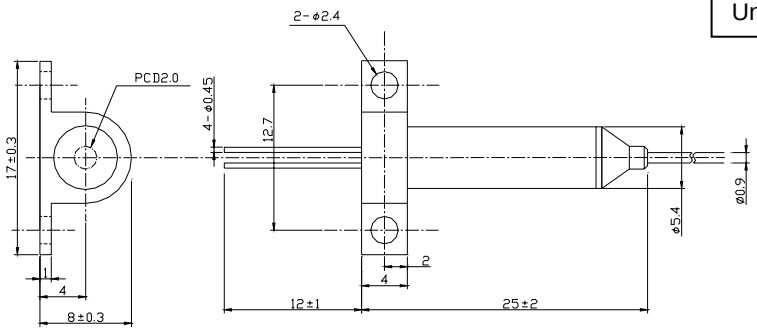
*3 OpRL: Optical Return Loss

*4 TE=10log(Pop@Tc/Pop@25°C), APC

3. Dimensions

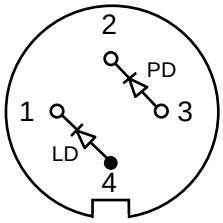
[MW] Horizontal flange

Unit: mm



*Key direction: Y7

4. Pin Assignment



Y7

* Bottom view : No.4 Pin is Case GND

5. Fiber pigtail specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit
Fiber Type		Single Mode Fiber Flame Retardant Hytrel Coating			
Cutoff Wavelength	fc	-	1260	-	nm
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*6		SC/PC			
		FC/PC			

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

*6 Only no connector is available for 12Q7 to 14Q5.

6. Ordering Information

FOL 1xQx MWI x – R4 – x 7

- ***Connector type***
  S: SC/PC, **F:** FC/PC, **N:** no connector
- ***Output power***
  R4: 4mW
- ***Version of operating case temperature***
  S: -20~+85°C, **Blank:** -20~+75°C
- ***Wavelength***
  12Q7: 1270nm, **12Q9:** 1330nm, **13Q1:** 1310nm, **13Q3:** 1330nm, **13Q5:** 1350nm,
  13Q7: 1370nm, **13Q9:** 1390nm, **14Q1:** 1410nm, **14Q3:** 1430nm, **14Q5:** 1450nm,
  14Q7: 1470nm, **14Q9:** 1490nm, **15Q1:** 1510nm, **15Q3:** 1530nm, **15Q5:** 1550nm,
  15Q7: 1570nm, **15Q9:** 1590nm, **16Q1:** 1610nm

7. Accompanied Data (Tc=25°C, unless otherwise specified)

Parameter	Symbol	Condition	Unit
Threshold Current	Ith	CW	mA
LD Operating Current	Iop	Pop, CW	mA
Monitor PD Current	Im	Pop, CW	μA
Peak Wavelength	λp	P_0=5mW, CW, Measured at TO-package	nm

8. Warning

(1) The laser light emitted from the optical fiber end is invisible and will be hazardous to the human eye. Avoid looking directly into the optical fiber, when the device is in operation.

(2) The device should be damaged by static electricity and surge current. Static electricity protection and surge protection are needed before handling.

9. Safety Information

The product complies with 21 CFR1040.10 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.

10. Limited Warranty

Furukawa Electric warrants the LD modules against defects in parts and workmanship for one full year after the delivery. This warranty shall be invalid by any abuse, misuse, misapplication or improper installation of the product.