

# ML1010 series

DFB coaxial laser diode module for analog applications

## Overview

The ML1010 series comprises of 1310 nm DFB coaxial laser diode modules for analog applications. The lasers have a low threshold current and a high SMSR. The ML1010 series is available with optical isolators, various connectors and different flange options. Please check the section on ordering information for details on the different options.



## Applications

### Defense

Perimeter security

### Communications

Hybrid Fibre Coax (HFC)  
RF-over-fibre  
Wireless Repeaters  
Analogue applications

## Electro-optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit
Peak Wavelength ( $P_{OP} = 3 \text{ mW}$ , CW)	$\lambda_c$	1300	1310	1320	nm
Optical Output Power ( $I_{OP} = 40 \text{ mA}$ )	$P_{OP}$	2	3	6	mW
Operating Current ( $P_{OP} = 3 \text{ mW}$ , CW)	$I_{OP}$	-	40	60	mA
Operating Voltage ( $P_{OP} = 3 \text{ mW}$ , CW)	$V_{OP}$	-	1.5	1.8	V
Slope Efficiency (25°C, CW)	$\eta_{25}$	0.09	-	0.15	W/A
Slope Efficiency (85°C, CW)	$\eta_{85}$	0.05	-	-	W/A
Threshold Current	$I_{TH}$	-	7	15	mA
LD Series Resistance	$R_{LD}$	4	-	8	$\Omega$
Spectral Width (-20 dB)	$\Delta\lambda$	-	-	1	nm
Wavelength - Temp. Coefficient (-20...+85°C, CW)	$\Delta\lambda/\Delta T$	-	0.08	-	nm/K
Side-Mode Suppression Ratio ( $P_{OP} = 3 \text{ mW}$ , CW)	SMSR	35	-	-	dB
Monitor Current ( $V_{RPD} = 5 \text{ V}$ , $P_{OP} = 3 \text{ mW}$ )	$I_m$	0.1	-	-	mA
Monitor Dark Current ( $V_{RPD} = 5 \text{ V}$ )	$I_{md}$	-	-	0.1	$\mu\text{A}$
Tracking Error ( $T_c = 25...85^\circ\text{C}$ ) *	TE	-1.0	-	1.0	dB
Third Order Intermodulation Distortion **	IMD3	-	-	-55	dBc
Relative Intensity Noise ( $P_{OP} = 3 \text{ mW}$ , $f = 1.8 \text{ GHz}$ )	RIN	-	-150	-	dB/Hz
Optical Isolation ***	Iso	30/45	-	-	dB

Unless otherwise noted, the above values represent operation @ 25°C. All temperatures refer to case temperature,  $T_c$ .

\* CW,  $P_{OP(25^\circ\text{C})} = 3 \text{ mW}$ ,  $TE = 10\log(Pf(T_c)/Pf(25^\circ\text{C}))$

\*\* CW, 2 tone, RF input Power = 0dBm,  $f_1 = 1.8\text{G}$ ,  $f_2 = 1.802\text{GHz}$

\*\*\* 30 dB with single-stage isolator, 45 dB with double-stage isolator

### Absolute Maximum Ratings

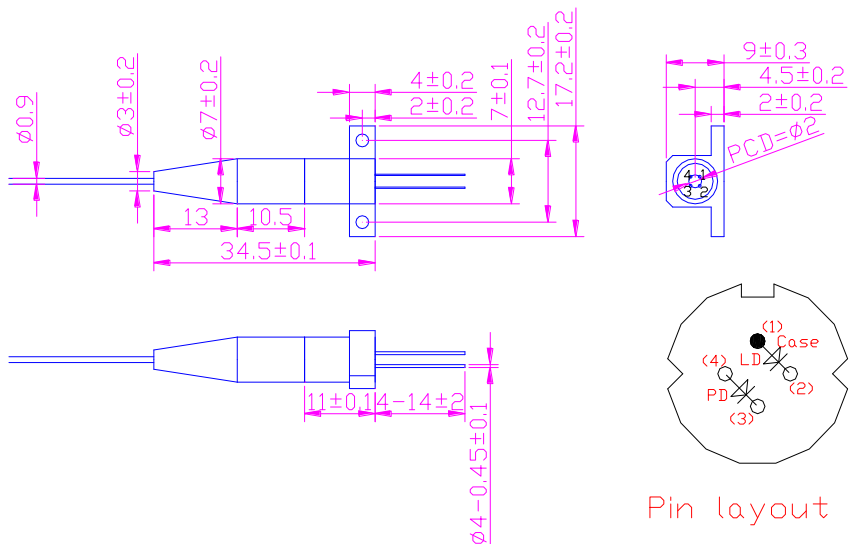
Parameter	Symbol	Rating	Unit
Light Output	$P_{OPT}$	7	mW
LD Reverse Voltage	$V_{RLD}$	2	V
PD Reverse Voltage	$V_{RPD}$	20	V
Operating Temperature	$T_{OP}$	-20...+85	°C
Storage Temperature	$T_S$	-40...+85	°C
Soldering Temperature (< 10 s)	$T_{SOL}$	260	°C

### Optical Fiber Specification

Parameter	Specification	Unit
Mode Field Diameter	$9.5 \pm 1$	$\mu\text{m}$
Cladding Diameter	$125 \pm 2$	$\mu\text{m}$
Maximum Cladding Noncircularity	2	%
Maximum Core/Cladding Noncircularity	1.6	%
Outer Diameter	$0.9 \pm 0.1$	mm
Minimum Fibre Bending Radius	30	mm
Fibre Length	$1000 \pm 50$	mm

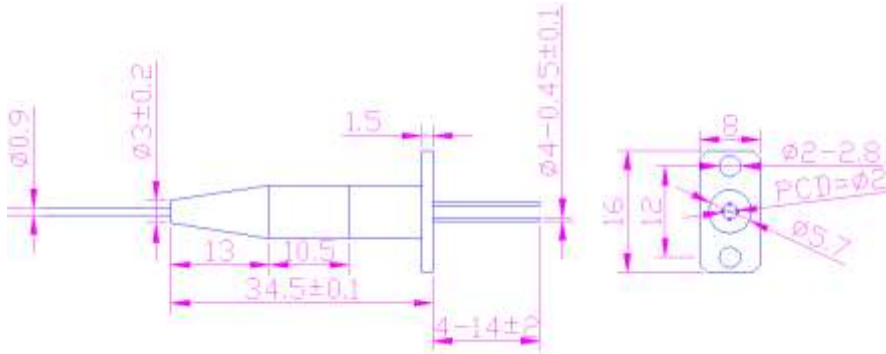
### Mechanical Specification And Pin Layout

#### Dimensions With Horizontal Flange:



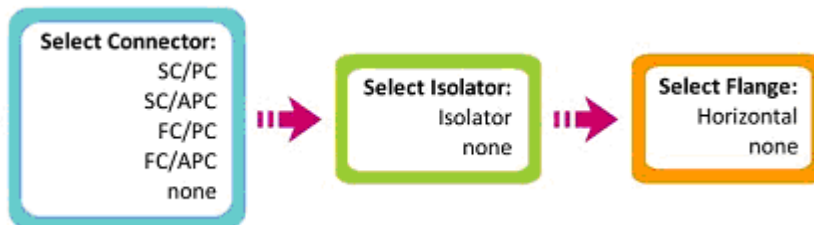
Pin layout 2

### Dimensions With Vertical Flange:



### Ordering Information

When ordering ML1010 series lasers, please specify a configuration from following selection:



### Safety Information

- The laser light emitted from this laser diode is invisible and potentially harmful to the human eye. Avoid eye and skin exposure to the beam, both direct and reflected.
- Products are subject to the risks normally associated with sensitive electronic devices including static discharge, transients, and overload. Please ensure ESD protection prior to handling the products.
- These Modulight products are not intended for use in systems where product malfunction can reasonably be expected to result in personal injury.



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