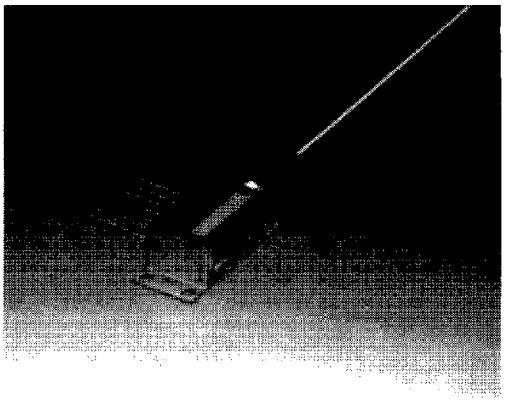
LB7374 Laser Diode Module

Description

The LB7374 is a single longitudinal mode laser diode module..

Features



- 1.55 μm multi-quantum well (MQW) DFB laser diode with marrow spectral line width
- High speed modulation (up to 2.5Gb/s)
- Long distance transmission with no external modulator (up to 80 km)
- Built-in 30dB optical isolator
- Internal monitor photodiode, thermistor and thermo-electric cooler
- Hermetically sealed, 14-pin low-profile butterfly package

Absolute Maximum Ratings (T_C = 25°C)

Item	Symbol	Rated Value	Units
Operating case temperature	T_{opr}	–20 to 65	°C
Storage case temperature	T_{stg}	–40 to 70	°C
LD forward current (CW)	I_F	150	mA
LD reverse voltage	$V_{R\ (LD)}$	2	V
PD reverse voltage	$V_{R\ (PD)}$	15	V
Thermistor current	I_T	0.2	mA
Cooling current	I_C	1.4	A
Lead soldering temperature	T_s	260	°C
Lead soldering time	—	10	sec

Fiber Pigtail Specifications

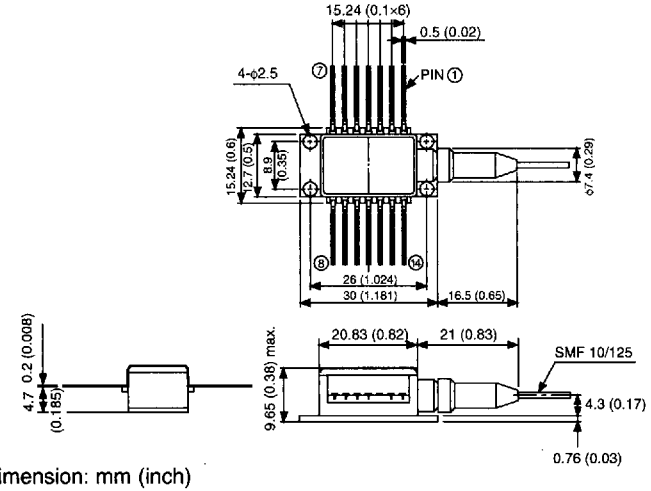
Item	Rated Value	Units
Core diameter	10±1	μm
Cladding diameter	125±3	μm
Jacket diameter	0.9±0.1	mm
Cutoff wavelength	≤1270	nm
Fiber length	≥2000	mm

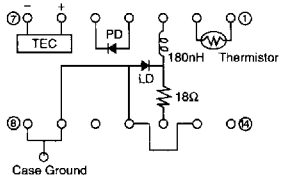
Optical Characteristics (T_{LD} = 25°C)

Item	Symbol	Min	Typ	Max	Units	Test Conditions
Threshold current	I_{th}	—	25	40	mA	CW
LD forward voltage	V_F	—	—	1.5	V	I_F = Ith + 20 mA
Fiber output power	P_f	0.5	1.0	—	mW	I_F = Ith + 20 mA
Tracking error	ΔP_f	—	±0.2	±0.5	dB	T_C = –20 to 65°C, APC, ATC
Optical rise time	t_r	—	—	100	ps	Note 1, 10 to 90%
Optical fall time	t_f	—	—	200	ns	Note 1, 10 to 90%
Peak wavelength	λ_p	1525	1550	1575	nm	Note 1
Spectral width	$\Delta\lambda$	—	0.4	0.6	nm	Note 1
Side mode suppression ratio	S_r	30	40	—	dB	Note 1
Monitor current	I_m	100		1500	μA	CW, $V_{R\ (PD)}$ = 4 V, $I_F = I_{th}$ + 20 mA
PD dark current	I_{DARK}	—		0.5	μA	$V_{R\ (PD)}$ = 10 V
Thermistor resistance	R_{th}	9.5	10	10.5	kΩ	
Cooling current	I_C	—	—	1.2	A	ΔT = 40K, $I_F = I_{th}$ + 20 mA
Cooling voltage	V_C	—	—	1.4	V	ΔT = 40K, $I_F = I_{th}$ + 20 mA
Optical isolation	—	30	—	—	dB	
Input impedance	Z_{in}	—	25	—	Ω	

Note 1 : 2.5Gb/s, NRZ, PRBS: $2^{23} - 1$, Mark ratio 50%
P_{peak} = 2 mW, $I_B \geq I_{th}$, rise/fall time of LD driver is less than 120 ps

Outline Drawings and Pin Descriptions





Pin	Description
1:	Themistor
2:	Themistor
3:	LD Cathode (DC Bias)
4:	PD Anode
5:	PD Cathode
6:	TE Cooler (+)
7:	TE Cooler (–)
8:	Case Ground
9:	Case Ground
10:	NC
11:	LD Anode, Case Ground
12:	LD Cathode (RF Signal)
13:	Case Ground
14:	NC

Dimension: mm (inch)