

Preliminary

NEC

OD-8310N

1310 nm SMT-LD Module (1mW)

OD-8310N is a new surface-mount low cost 1310 nm LD module. This module can achieve stable operation over wide temperature range of -40 to +85°C. An InGaAs PIN monitor photodiode is built in for APC (Automatic Power Control) circuit.

This module has detachable pigtail interface and packaged in an 8 pin surface-mount package. Therefore the module can be soldered like an ordinary IC by standard I.R. reflow soldering process.

OD-8306N can be operated at speed up to 622 Mb/s and is especially suitable for the use of the subscriber loop, SONET and FITL.

1. FEATURES

- Surface mountable using I.R. reflow solder
- Small size flat ceramic package (7.6 x 12.7 x 3 mm)
- Optical output power : $P_f = 1 \text{ mW}$
- Peak wavelength : $\lambda_c = 1310 \text{ nm}$
- Wide operating temperature range : -40 to +85°C
- Internal InGaAs monitor PD
- Detachable pigtail interface

2. APPLICATION

- Subscriber loop
- Data communications
- Telecommunications
- Local area networks

3. ABSOLUTE MAXIMUM RATINGS

($T_a = +25^\circ\text{C}$, unless noted)

Item	Symbol	ratings	Unit	notes
Fiber Output Power	P_f	2	mW	
Laser Reverse Voltage	$V_R(\text{LD})$	2.0	V	
Monitor Forward Current	$I_F(\text{PD})$	2.0	mA	
Monitor Reverse Voltage	$V_R(\text{PD})$	20	V	
Operating Temperature	T_{op}	-40 to +85	°C	
Storage Temperature	T_{stg}	-40 to +85	°C	
Lead Soldering Temperature	T_{sol}	230°C, 30sec.		reflow soldering

4. ELECTRICAL/OPTICAL CHARACTERISTICS

(T_c=+25°C, unless otherwise noted)

Item	Symbol	Conditions*	Min.	Typ.	Max.	Unit
Optical Output Power from Fiber Pigtail End	P _f	CW, T _c = -40 to +85°C	1	-	-	mW
Threshold Current	I _{th}		3	8	15	mA
		T _c = -40 to +85°C	1	-	40	mA
Modulation Current	I _{mod}		10	17	25	mA
		T _c = -40 to +85°C	8	-	50	mA
Threshold Output Power	P _{th}	CW, I _F =I _{th} **	-	-	25	μW
Forward Voltage	V _{op}	CW, P _f =1mW	-	1.2	1.5	V
Slope Efficiency	S _e		0.040	0.060	0.100	mW/mA
		T _c = -40 to +85°C	0.020	-	0.120	mW/mA
Central Wavelength	λ _c	CW, P _f =1mW, RMS(-20dB)	1295	1310	1320	nm
		T _c = -40 to +85°C	1270	-	1345	nm
Temperature Dependency of Central Wavelength	Δλ/ΔT	T _c = -40 to +85°C	-	0.4	0.5	nm/°C
Spectral Width	σ	CW, P _f =1mW, RMS (-20dB)	-	1	2.5	nm
		T _c = -40 to +85°C	-	-	4	nm
Cut-off Frequency	f _c	-3dB	-	2.0	-	GHz
Rise Time	t _r	I _b =I _{th} , 10-90%	-	0.2	0.5	nsec
Fall Time	t _f	I _b =I _{th} , 90-10%	-	0.3	0.5	nsec
Monitor Current (PD)	I _m	CW, P _f =1mW, V _R =5V	200	700	1800	μA
Dark Current (PD)	I _D	V _R =5V	-	0.001	0.1	μA
Capacitance (PD)	C _t	V _R =5V, f=1MHz	-	6	20	pF
Tracking Error***	E _r	I _m =const, T _c = -40 to +85°C	0	0.4	1.0	dB

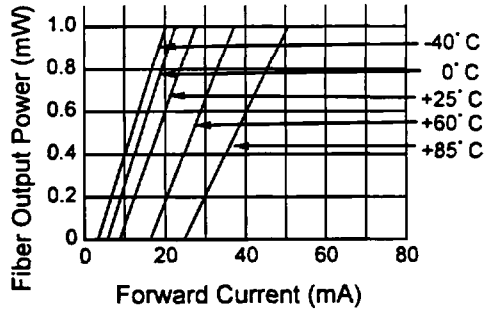
* Connected with single mode fiber pigtail (OD-S524 Series)

** I_F: Forward Current of LD

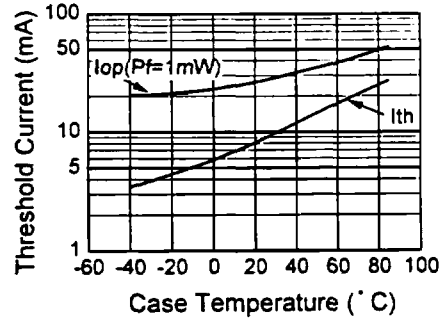
$$*** E_r = \left| 10 \cdot \log \frac{P_f(T_c)}{P_f(25^\circ\text{C})} \right| \text{ max.}$$

5. TYPICAL CHARACTERISTICS

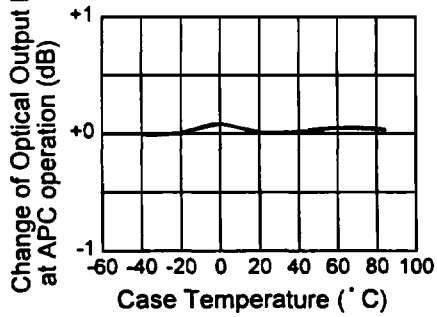
Fiber Output Power vs. Forward Current



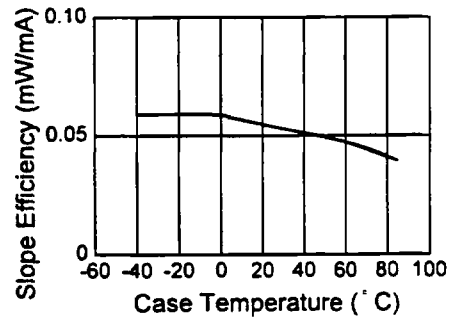
Threshold Current vs. Case temperature



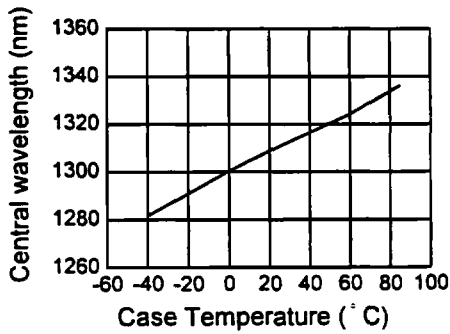
Tracking Error Characteristics



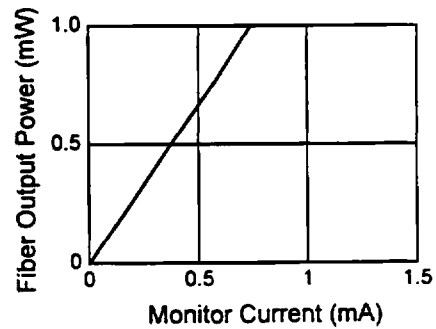
Slope Efficiency vs. Case temperature



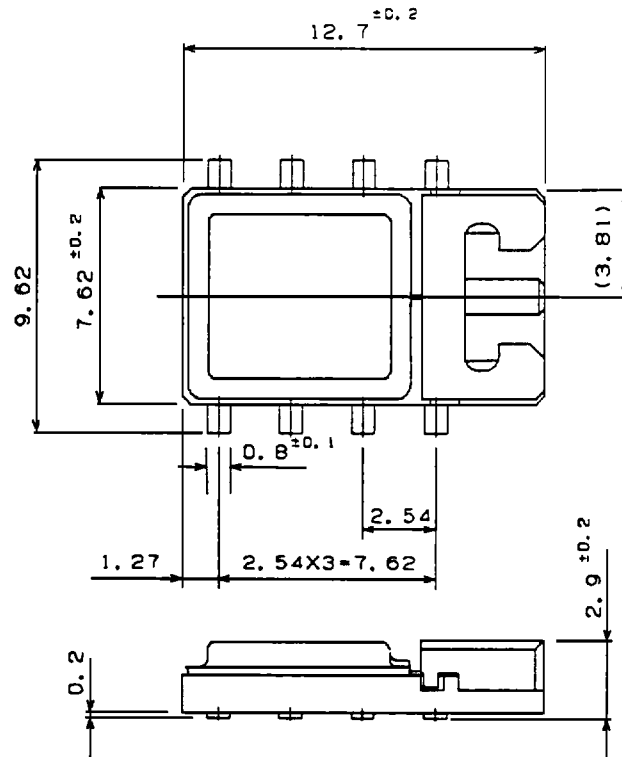
Central wavelength vs. Case temperature



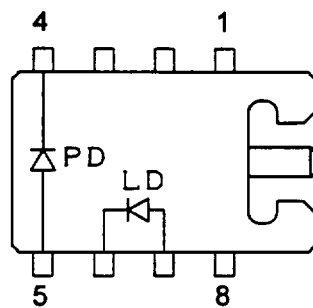
Fiber Output Power vs. Monitor Current



6. PACKAGE DIMENSIONS



Dimensions in millimeters



Top View

PIN No.	Function
1	NC
2	Package Ground
3	NC
4	PD Cathode
5	PD Anode
6	LD Cathode
7	LD Anode
8	NC