NEC

1310 nm SMT-LD MODULE (1 mW) | OD-8310N

FEATURES

- **SURFACE MOUNTABLE BY I.R. REFLOW SOLDER**
- **SMALL SIZE FLAT CERAMIC PACKAGE:**
  7.6 x 12.7 x 3 mm
- **OPTICAL OUTPUT POWER:**
  P_f = 1 mW
- **PEAK WAVELENGTH:**
  λ_C = 1310 nm
- **WIDE OPERATING TEMPERATURE RANGE:**
  -40 to +85°C
- **INTERNAL InGaAs MONITOR PD**
- **DETACHABLE PIGTAIL INTERFACE**

DESCRIPTION

The OD-8310N is a new surface mount low cost 1310 nm LD module. This device can achieve stable operation over a 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 a detachable pigtail interface and is packaged in an 8 pin surface mount package, allowing the module to be soldered like an ordinary IC by the standard I.R. reflow soldering process. OD-8310N can be operated at speeds up to 622 Mb/s and is especially suitable for the use of the subscriber loop, SONET and FITL.

APPLICATIONS

- **SUBSCRIBER LOOP**
- **TELECOMMUNICATIONS**
- **DATA COMMUNICATIONS**
- **LOCAL AREA NETWORKS**

ELECTRO-OPTICAL CHARACTERISTICS (T_C = +25°C, unless otherwise specified)

PART NUMBER			OD-8310N		
SYMBOLS	**PARAMETERS AND CONDITIONS[1]**	**UNITS**	**MIN**	**TYP**	**MAX**
P_f	Optical Output Power from Fiber Pigtail End, CW, T_C = -40 to +85°C	mW	1	–	–
I_{TH}	Threshold Current, T_C = +25°C T_C = -40 to +85°C	mA	3 1	8 –	15 40
I_{MOD}	Modulation Current, T_C = +25°C T_C = -40 to +85°C	mA	10 8	17 –	25 50
P_{TH}	Threshold Output Power at CW, $I_F = I_{TH}$[2]	μW	–	–	25
V_{OP}	Forward Voltage, CW, P_f = 1 mW	V	–	1.2	1.5
S_e	Slope Efficiency, T_C = +25°C T_C = -40 to +85°C	mW/mA	0.040 0.020	0.060 –	0.100 0.120
λ_C	Central Wavelength, CW, Pf = 1 mW, RMS (-20 dB) T_C = -40 to +85°C	nm	1295 1270	1310 –	1320 1345
$\Delta\lambda/\Delta T$	Temperature Dependency of Central Wavelength, T_C = -40 to +85°C	nm/°C	–	0.4	0.5
σ	Spectral Width, CW, Pf = 1 mW, RMS (-20 dB) T_C = -40 to +85°C	nm	– –	1 –	2.5 4
f_c	Cut-off Frequency at -3dB	GHz	–	2.0	–
t_r	Rise Time, $I_B = I_{TH}$, 10-90% nsec	–	0.2	0.5	
t_f	Fall Time, $I_B = I_{TH}$ 90-10% nsec	–	0.3	0.5	
I_M	Monitor Current (PD) CW, P_f = 1 mW, V_R = 5 V	μA	200	700	1800
I_D	Dark Current (PD), V_R = 5 V μA	–	0.001	0.1	
C_t	Capacitance (PD), V_R = 5 V, f = 1 MHz	pF	–	6	20
Er	Tracking Error[3], Im = const, T_C = -40 to +85°C	dB	0	0.4	1.0

Notes:
1. Connected with single mode fiber pigtail (OD-S524 Series).
2. I_F: Forward Current of LD.
3. $Er = \left| 10 \cdot \log \frac{Pf(Tc)}{Pf(25^\circ C)} \right|$ max.

ABSOLUTE MAXIMUM RATINGS[1]

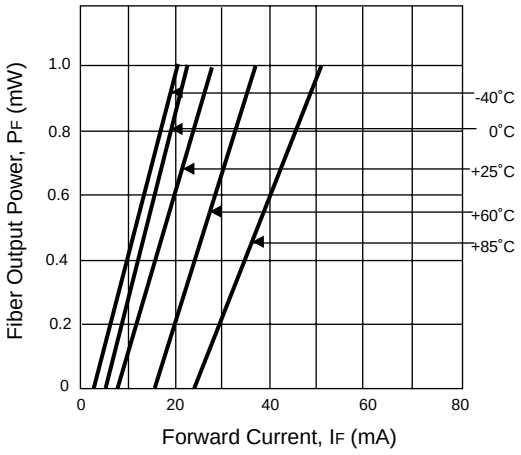
(T_A = 25˚C, unless otherwise specified)

SYMBOLS	PARAMETERS	UNITS	RATINGS
P_f	Fiber Output Power	mW	2
$V_{R\ (LD)}$	Laser Reverse Voltage	V	2.0
$I_{F(PD)}$	Monitor Forward Current	mA	2.0
$V_{R\ (PD)}$	Monitor Reverse Voltage	V	20
T_{OP}	Operating Temperature	˚C	-40 to +85
T_{STG}	Storage Temperature	˚C	-40 to +85
T_{SOL}	Lead Soldering Temperature[2]	˚C	230

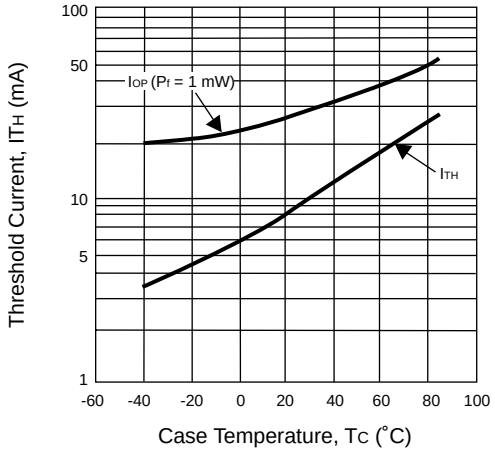
Notes:
1. Operation in excess of any one of these parameters may result in permanent damage.
2. 30 seconds, reflow soldering.

TYPICAL PERFORMANCE CURVES

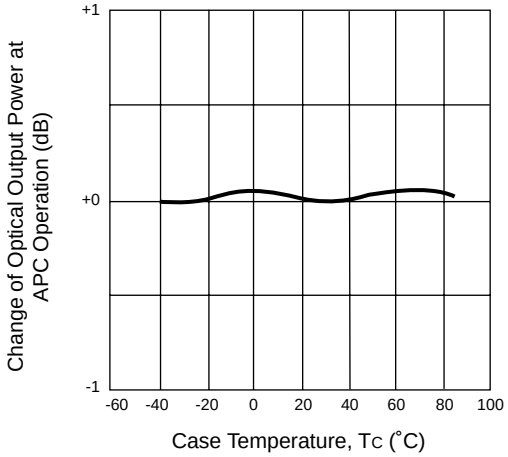
FIBER OUTPUT POWER vs. FORWARD CURRENT



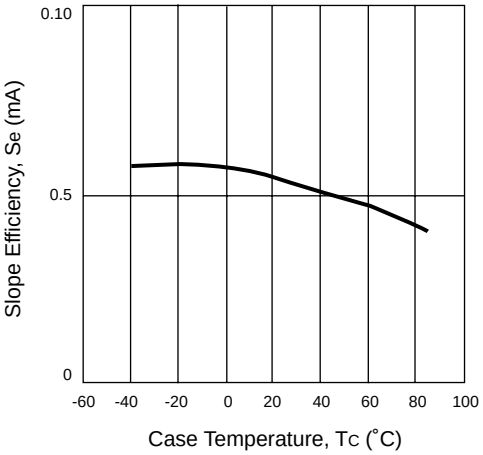
THRESHOLD CURRENT vs. CASE TEMPERATURE



TRACKING ERROR CHARACTERISTICS

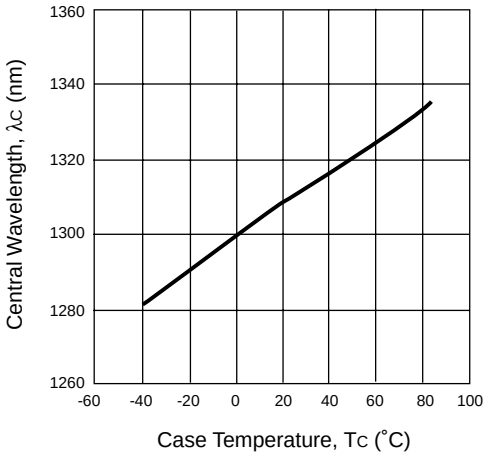


SLOPE EFFICIENCY vs. CASE TEMPERATURE

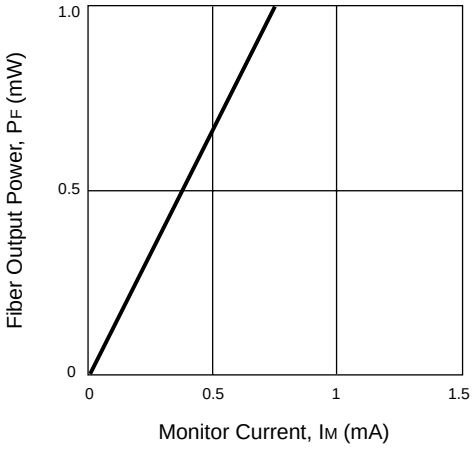


TYPICAL PERFORMANCE CURVES

CENTRAL WAVELENGTH vs. CASE TEMPERATURE

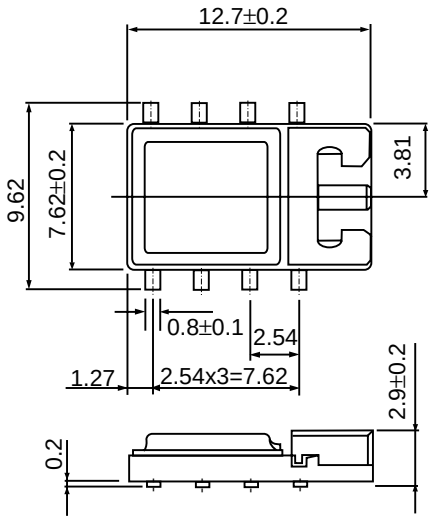


FIBER OUTPUT POWER vs. MONITOR CURRENT

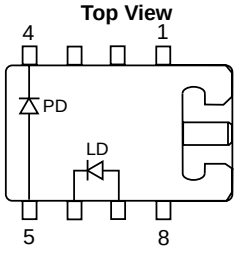


OUTLINE DIMENSIONS (Units in mm)

OD-8310N



Top View



PIN	FUNCTION
1	NC
2	Package Ground
3	NC
4	PD Cathode
5	PD Anode
6	LD Cathode
7	LD Anode
8	NC