DATA SHEET

O K I F I B E R - O P T I C P R O D U C T S

OL4121N-120 and OL4121N-140 High-Power Laser Diode Butterfly Modules (1480 nm, 120 mW/140 mW)

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Oki Semiconductor

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OL4121N-120 and OL4121N-140

High-Power Laser-Diode Butterfly Modules

INTRODUCTION

Oki Semiconductor's OL4121N-120/OL4121N-140 family of 1480-nm high-power laser diodes are available in a 14-pin "butterfly" package which is designed for high-performance fiber-optic applications. The OL4121N-120 and OL4121N-140 diodes have a built-in thermo-electric cooler, thermistor, and isolator, and have a single-mode fiber pigtail.

The OL4121N is available in two optional power levels: 120 mW or 140 mW. These laser diodes can be used as a pumping source for an Er- (erbium) doped fiber-optic amplifier. The high power output of the laser diodes in the OL4121N family supports the high-performance demands of Erbium-Doped Fiber-optic Amplifiers in Dense Wavelength Division Multiplex (DWDM-EDFA) systems and long-haul terrestrial networks.

FEATURES

- High power output: Pf=120 mW (OL4121N-120)
  Pf=140 mW (OL4121N-140)
- 14-pin "butterfly" package
- Single-mode fiber
- Built-in isolator
- Includes photodiode for power monitoring
- Built-in thermo-electric cooler (TEC)

APPLICATION

- WDM/DWDM systems
- Erbium-doped fiber amplifier
- Regeneration of data
- Fiber-optic long-haul terrestrial networks

ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings (ambient temperature Ta = 25°C unless otherwise noted)

Parameter		Symbol	Ratings	Units
Fiber Output Power	OL4121N-120	Pf	130	mW
	OL4121N-140		160	mW
Laser Diode Forward Current	OL4121N-120	$I_{F(LD)}$	750	mA
	OL4121N-140		800	mA
Laser Diode Reverse Voltage		$V_{R(LD)}$	2	V
Photo Diode Reverse Voltage		$V_{R(PD)}$	15	V
Operating Temperature Range		Topr	-20 to +65	°C
Storage Temperature Range		Tstg	-40 to +70	°C

Exceeding these maximum ratings could cause immediate damage or lead to permanent deterioration of the device.

Optical and Electrical Characteristics (Ta = 25°C)

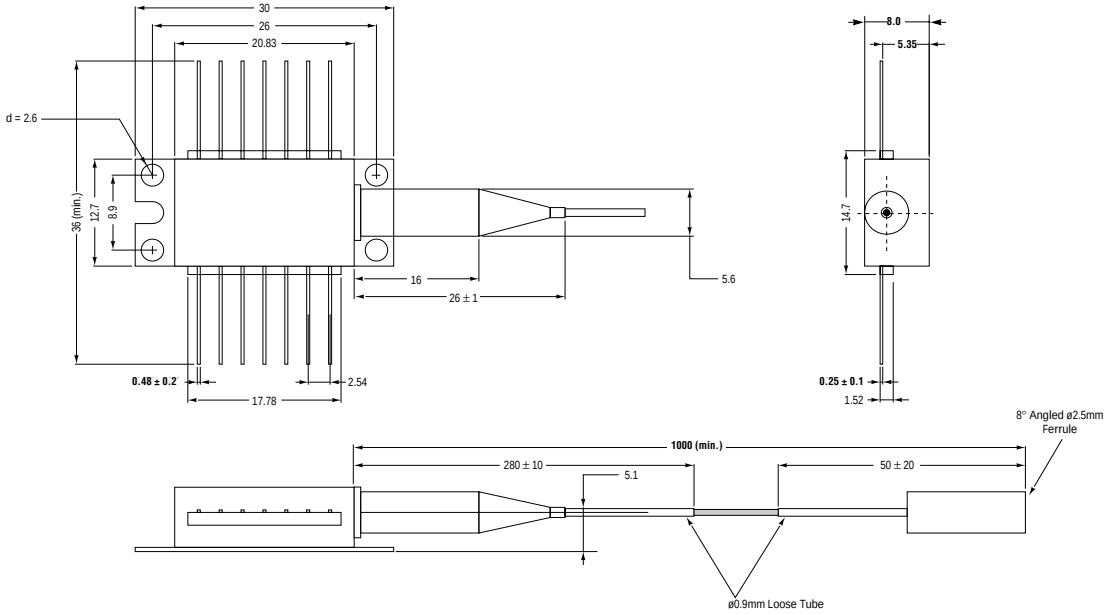
Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Units
Threshold Current		I_{TH}	---	---	---	60	mA
Laser Diode Operating Current	OL4121N-120	$Iop_{(LD)}$	Pf = 120 mW	---	---	600	mA
	OL4121N-140		Pf = 140 mW			700	mA
Laser Diode Operating Voltage		$Vop_{(LD)}$	Pf = 120 / 140 mW	---	---	2.5	V
Center Wavelength		λc	Pf = 120 / 140 mW	1460	---	1490	nm
RMS Spectral Width		σ	Pf = 120 / 140 mW (RMS)	---	---	10	nm
Tracking Error		TER	I_M = const., 0/ 25/ 65°C	---	---	+/-1.0	dB
PD Dark Current		I_{DARK}	$V_{R(PD)}$ = 5 V	---	---	100	nA
Monitor Current		Im	Pf = 120 / 140 mW, $V_{R(PD)}$ = 5 V	100	---	---	µA
Thermoelectric Cooler Capacity		ΔT	Pf = 120 / 140 mW	40	---	---	°C
Thermoelectric Cooler Current		I_{TEC}	ΔT = 40°C, Pf = 120 / 140 mW	---	---	1.5	A
Thermoelectric Cooler Voltage		V_{TEC}	ΔT = 40°C, Pf = 120 / 140 mW	---	---	4.0	V
Thermistor Resistance		Rth	---	9	---	11	KΩ

Fiber Pigtail Specifications

Parameter	Specifications	Units
Type	SM	---
Mode Field Diameter	10 +/-1	µm
Cladding Diameter	125 +/-2	µm
Jacket Diameter	900	µm
Length	1.0 (Minimum)	m
Connector	FC	---

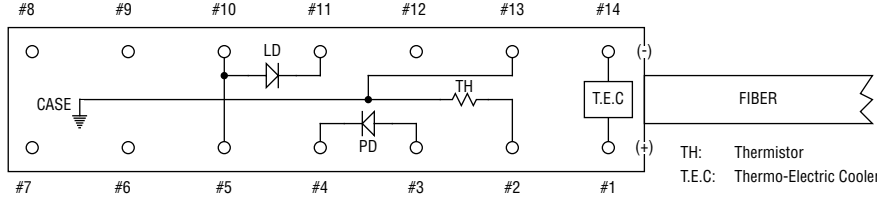
PACKAGE DIMENSIONS

(Units: mm)



Tolerance = ±0.5 mm (unless noted otherwise)

TERMINAL CONNECTION (BOTTOM VIEW)



TH: Thermistor
T.E.C: Thermo-Electric Cooler

Pin Configuration

Pin No.	Description	Pin No.	Description
01	Thermo Electric Cooler (+)	08	NC
02	Thermistor	09	NC
03	PD Anode	10	LD Anode
04	PD Cathode	11	LD Cathode
05	LD Anode	12	NC
06	NC	13	Thermistor and Case Ground
07	NC	14	Thermo Electric Cooler Cathode (-)

Notes:

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