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Uncooled DFB-LD Coaxial Module with Single-mode fiber for Analog Communication

Part Number : AWS4□□21-SUC

1310/1470/1490/1510/1530/1550/1570/1590/1610 nm

This product is manufactured by the OEM agreement.
Manufactured by MPCOM

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preliminary

Features

- Low threshold current (typical 8mA)
- Wide temperature range operation
- High - side mode suppression ratio (typical 45dB)
- High linearity multiple quantum wells (MQW) DFB LD
- Built-in single stage optical isolator
- Compliant with RoHS
- Reliability test completed ; Telcordia GR-468 Core (2004)

Application

- 3G 4G Analog mobile communication system
- Long - distance digital transmission system
- CATV FWD system

Description

The AWS4□□21-SUC is a hermetically sealed InGaAsP / InP DFB laser diode module in a small coaxial type package, InGaAs monitor photodiode and single mode fiber pigtail connection with a SC/PC interface.
It comes with a single stage isolator integrated inside.
The laser diode is designed for use in RFoG, Wireless(CDMA, WCDMA, WiBRO) fiber-optic repeaters and Analog Transmission over single mode fiber, can operate in temperatures of -30℃ to +85℃.
The laser diode module photodiode in the rear, which ensures highly stable emission at a wavelength of 1310nm, 1470nm ~ 1610nm.

Absolute Maximum Ratings (T_{ld}=25℃)

Stresses in excess of the absolute maximum ratings can cause damage to optical device.

Operations of the optical device are suggested to remain within the recommended operating conditions.

Exposure to the absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter		Symbol	Conditions	Rating	Unit
Laser diode	Optical output power from fiber end	P_f	CW	10	mW
	Forward current	I_f	CW	150	mA
	Reverse voltage	V_{rl}	–	2	V
Photo diode	Forward current	I_{fd}	–	2	mA
	Reverse voltage	V_{rd}	–	20	V
Operating case temperature		T_c	–	-30 to +85	℃
Storage temperature		T_{stg}	–	-40 to +85	℃
Soldering temperature		T_{sol}	10sec max	260	℃

Electrical and Optical Characteristics
(T_{ld}=25℃, T_c=25℃, unless otherwise noted)

Parameter	Symbol	Test Condition	Limits			Unit
			Min	Typ	Max	
Threshold current	I_{th}	CW	–	8	15	mA
Optical output power ant threshold current	P_{th}	CW, Ibias=Ith	–	–	100	uW
Operating current	I_{op}	CW, Pf= 4mW	–	–	60	mA
Operating voltage	V_{op}	CW, Pf= 4mW	–	1.2	1.6	V
Slope efficiency	η	CW, Pf= 4mW	0.11	–	0.17	W/A
Delta slope efficiency	△η	CW, Pf=4mW Tc= +85℃	40	65	–	%
Light-emission central wavelength (Note3)	λ_c	CW, APC	λc-5	λc	λc+5	nm
Wavelength temperature coefficient	λ_{ct}	CW, APC	–	0.1	0.11	nm/℃
Side mode suppression ratio	S_r	CW, APC	30	45	–	dB
Tracking Error (Note2)	E_r	CW, APC (Note1)	-1.25	0.5	1.25	dB
Monitor Current	I_m	CW, Pf=4mW Vrd=5V	0.1	–	1.5	mA
Dark Current (PD)	I_d	Vrd= 5V	–	–	0.1	uA

Note 1. “APC” represents operating Laser diode by a constant monitor current for Pf=4mW at Tc=25℃

Note 2. TE=max$\left|\ 10\times\log(I_m(T_c)/I_m(25℃)\right.$

Note 3. Light-emission central wavelength :
AWS43121:1310nm
AWS44721:1470nm, AWS44921:1490nm, AWS45121:1510nm, AWS45321:1530nm,
AWS45521:1550nm, AWS45721:1570nm, AWS45921:1590nm, AWS46121:1610nm

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RF Characteristics (T_c=25℃)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Relative Intensity Noise	RIN	CW, APC, f=2200MHz	-165	–	-145	dB/Hz
3rd Inter modulation distortion	IMD3	2tone test f1=2200MHz f2=2201MHz Omi=20%/tone. Pf=4mW	–	–	-60	dBc

Optical Fiber Specification

Parameter	Limits	Unit
Type	Single Mode	-
Mode filed diameter	9.5±1	Um
Cladding diameter	125±1	Um
Jacket diameter	900 typ.	Um
Connector type	SC/PC, (Reference)	-
Fiber pigtail length	L_{fiber}=1000±50	um
Optical return loss to connector	SC/PC : Typ. -50dB	Um

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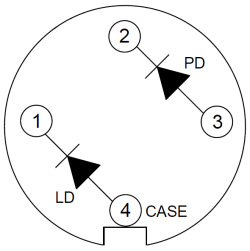
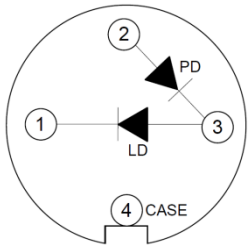
Pin Configuration & Bracket Type (Bottom view)

A-Type♪



Pin	Function
1	LD Cathode
2	PD Cathode
3	PD Anode
4	LD Anode

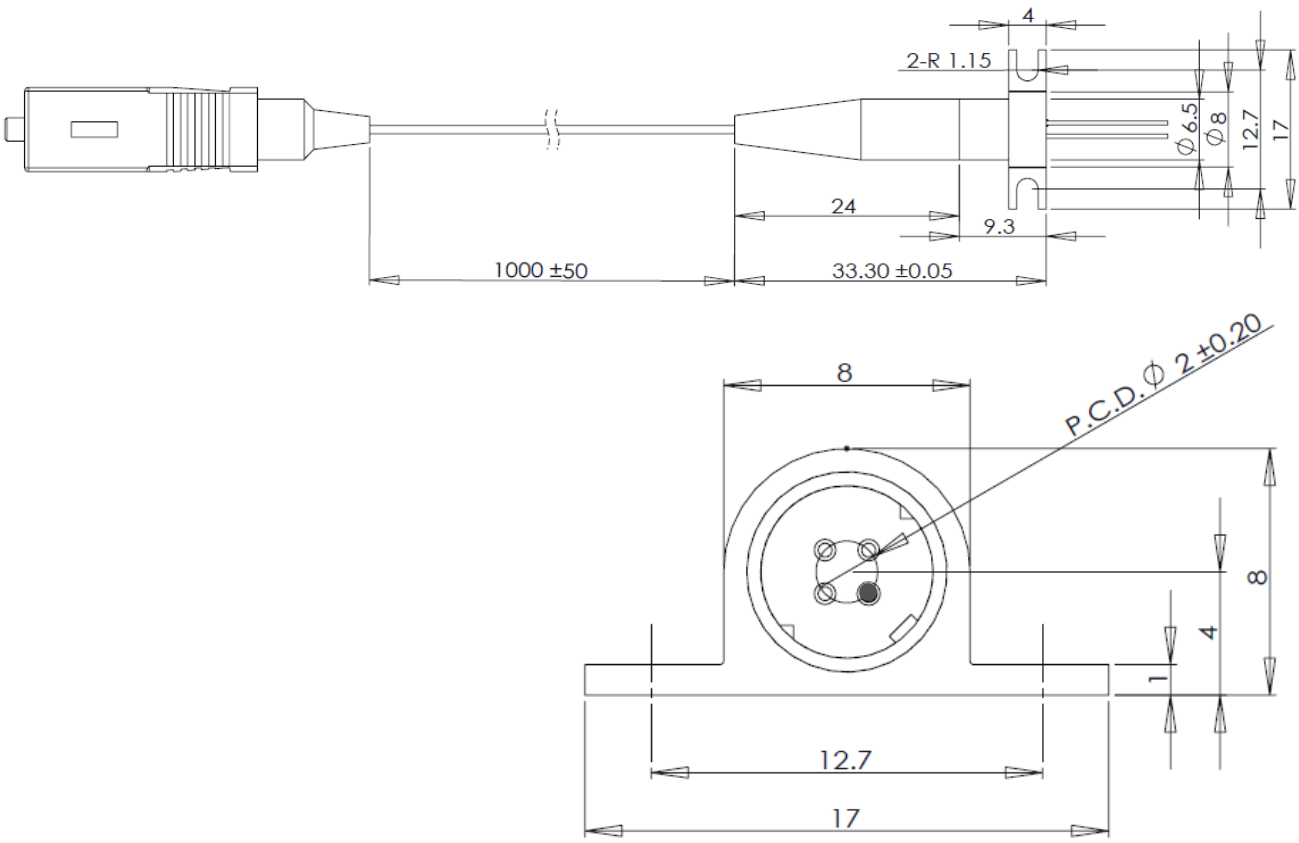
B-Type♪



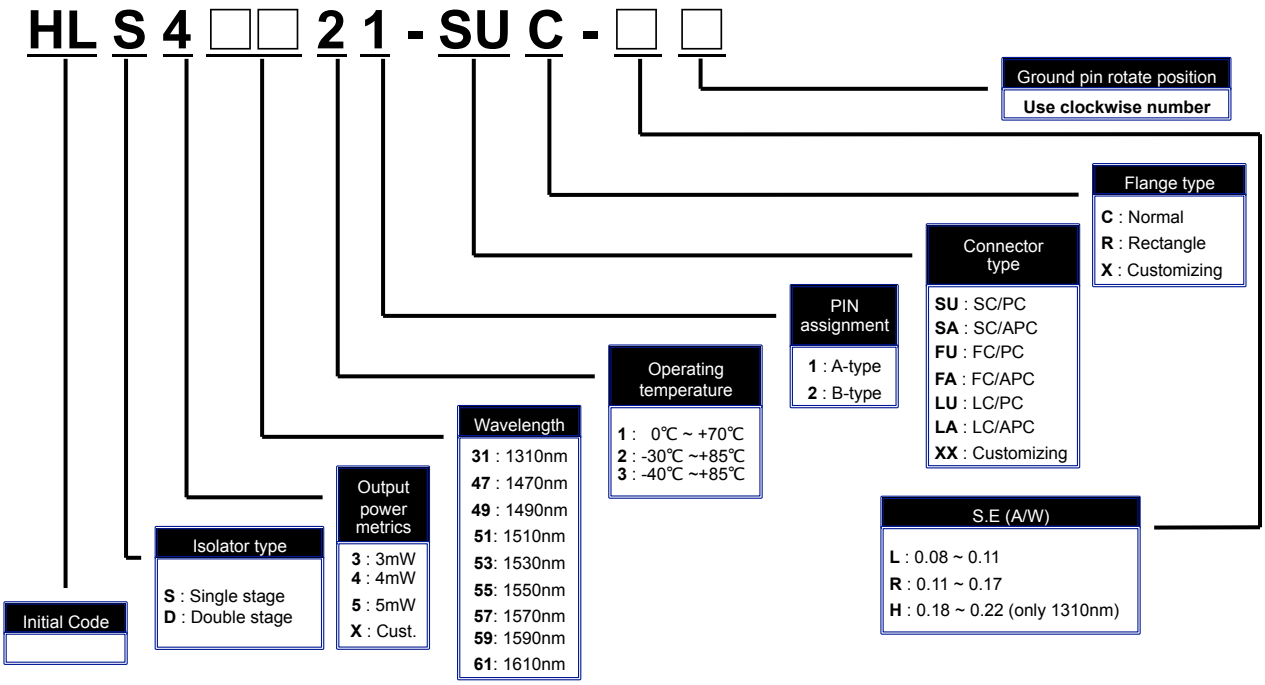
Pin	Function
1	LD Cathode
2	PD Anode
3	LD Anode PD Cathode
4	GND

Dimensions in mm

Unit : mm



Ordering Information



Warning

(1) The laser light emitted from the optical fiber end is invisible and will be hazardous to the human eye. Avoid looking directly into the optical fiber, when the device is in operation.
(2) The device should be damaged by static electricity and surge current. Static electricity protection and surge protection are needed before handling.

Safety Information

The product complies with 21 CFR 1040.10 and 1040.11, Class 3b laser product. Invisible laser radiation is emitted from the end of the fiber or connector. Avoid direct exposure to the beam.

Limited Warranty

PANOPTICS warrants the LD modules against defects in parts and workmanship for one full year after the delivery. This warranty shall be invalid by any abuse, misuse, misapplication or improper installation of the product.

Revision History

Rev.♪	Date♪	Description♪	Approved by♪	Note.♪
0.0♪	Apr. 4, 2015♪	Released♪	Dennis Suh♪	

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