



## **CWDM Coaxial DFB-LD Module for CATV Return-path**

### ***LDM5S515 Series***

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#### **Features**

- *Operating wavelength range: 1470~1610nm*
- *High-stability DFB laser chip*
- *Built-in InGaAsP monitor photodiode*
- *4-pin coaxial-pigtailed package, single mode coupling, SC/APC ,FC/APC connector*
- *Built-in optical isolator*

#### **Application**

- *CWDM analog communication schemes*
- *CATV transmission systems*
- *return-paths*
- *Other analog applications*

## Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Optical output power from fiber end	Pf	mW	-	10
Optical isolation	ISO	dB	50	
Fiber yield strength	-	kgf	-	1
Fiber bend radius	-	mm	30	
Storage Temperature Range	Ts	°C	-40	85
Relative Humidity	RH	%	5	95
Laser Diode Reverse Voltage	VRL	V	-	2
Laser Diode Forward Current	IFL	mA	-	150
Monitor PD Reverse Voltage	VRPD	V	-	15
Monitor PD Reverse Current	IRPD	mA	-	2
Lead Solder Temperature	-	°C	-	260
Lead Soldering Time	-	s	-	10

## Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Case Operating Temperature Range	A version	Tc	°C	-20	75
	B version			0	75
Power Supply Voltage	Vcc	V	-	1.2	2.0

## Specifications (Tc=25 °C, unless otherwise noted)

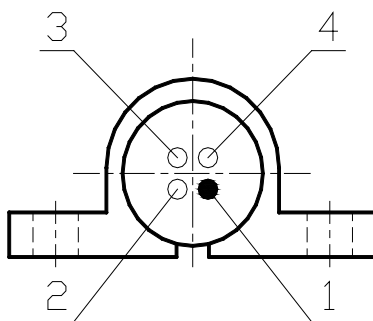
Parameter	Symbol	Unit	Min	Type	Max	Condition
<b>Electrical Characteristics</b>						
Threshold Current	Ith	mA	-	8	15	CW
			-	-	50	CW, over temperature
Operating Current	Iop	mA	-	-	50	Tc=25 °C
			-	-	100	Tc=75 °C
Analog Bandwidth	BW	GHz	-	2.5	-	IFL=30mA
Monitor PD Current	Im	uA	50	-	2000	CW, VrPD=5V,
Monitor PD Dark Current	Id	nA	-	-	10	CW, VrPD=5V,
Photodiode Capacitance	C	pF	-	-	10	f=1MHz, VrPD=5V,
RF Passband Flatness		dB	-	-	1.0	Peak-to-Peak from 5MHz to 200MHz
Noise Power Ratio	NPR		40/14			Tc=25 °C
			40/11			Over temperature range
<b>Optical Characteristics</b>						
Optical Output Power	Po	dBm	-	3	-	CW, Iop=Ith+20
Slope Efficiency	$\eta$	W/A	0.05	0.1	0.15	CW
Optical Wavelength	$\lambda_c$	nm	$\lambda_c-3$	$\lambda_c$	$\lambda_c+3$	CW

Variation in Center Wavelength	$\Delta\lambda_c$	nm	-7.5	-	7.5	Over temperature range
Side Mode Suppression Ratio	SMSR	dB	30	-	-	CW
Spurious Noise with Carrier	SNon	dBc	-	-60	-	1 tone test, f=19MHz, OMI=10%, through 20km fiber(*)
Spurious Noise without Carrier	SNoFF	dBc	-	-52	-	
Relative Intensity Noise	RIN	dB/Hz	-	-	-150	CW, pRL<-40dB, f=5~200MHz
Tracking Error	**TE	dB	-1	-	+1	CW, P0=2mW

**Note1:** \* f=5 to 200 MHz, RBW=100 kHz, VBW=30 kHz, Hold time=30s

**Note2:** \*\*TE=10log (PT/P0)

## Pin Description



Pin	Description
1	LD anode (case)
2	LD cathode
3	PD cathode
4	PD anode

## Package Outline

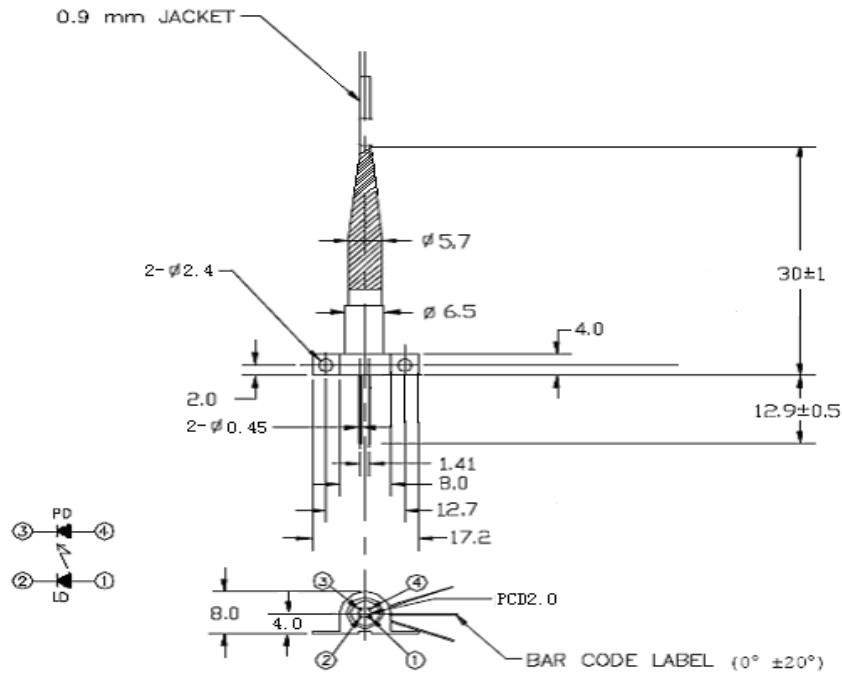


Figure.1 Tabs with 0.9mm pigtail jacket

*NOTE: All dimension are in mm.*

## Fiber pigtail specification

Fiber type: single mode fiber

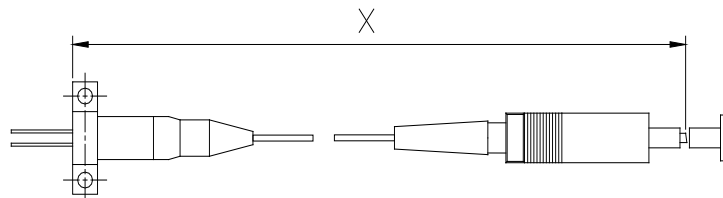


Figure.2 Pigtail specifications

## Update Information

From datasheet V1.0 to datasheet V1.1

Revise the parameter "Optical output power from fiber end" (in "Absolute Maximum Ratings" table, page 1) from "20mW" to "10mW"

## Ordering Information

Part No.	Specification					
	Package	Bandwidth	Laser	Optical Power	Operating Temperature	Others
LDM5S515-001	Coaxial pigtail	2.5GHz	1470nm DFB	2mW	(A)-20~75°C; (B)0~75°C	FC/APC; $\phi$ 3mm Jacket
LDM5S515-002	Coaxial pigtail	2.5GHz	1490nm DFB	2mW	(A)-20~75°C; (B)0~75°C	FC/APC; $\phi$ 3mm Jacket
LDM5S515-003	Coaxial pigtail	2.5GHz	1510nm DFB	2mW	(A)-20~75°C; (B)0~75°C	FC/APC; $\phi$ 3mm Jacket
LDM5S515-004	Coaxial pigtail	2.5GHz	1530nm DFB	2mW	(A)-20~75°C; (B)0~75°C	FC/APC; $\phi$ 3mm Jacket
LDM5S515-005	Coaxial pigtail	2.5GHz	1550nm DFB	2mW	(A)-20~75°C; (B)0~75°C	FC/APC; $\phi$ 3mm Jacket
LDM5S515-006	Coaxial pigtail	2.5GHz	1570nm DFB	2mW	(A)-20~75°C; (B)0~75°C	FC/APC; $\phi$ 3mm Jacket
LDM5S515-007	Coaxial pigtail	2.5GHz	1590nm DFB	2mW	(A)-20~75°C; (B)0~75°C	FC/APC; $\phi$ 3mm Jacket
LDM5S515-008	Coaxial pigtail	2.5GHz	1610nm DFB	2mW	(A)-20~75°C; (B)0~75°C	FC/APC; $\phi$ 3mm Jacket
LDM5S515-011	Coaxial pigtail	2.5GHz	1470nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; $\phi$ 3mm Jacket
LDM5S515-012	Coaxial pigtail	2.5GHz	1490nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; $\phi$ 3mm Jacket
LDM5S515-013	Coaxial pigtail	2.5GHz	1510nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; $\phi$ 3mm Jacket
LDM5S515-014	Coaxial pigtail	2.5GHz	1530nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; $\phi$ 3mm Jacket
LDM5S515-015	Coaxial pigtail	2.5GHz	1550nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; $\phi$ 3mm Jacket
LDM5S515-016	Coaxial pigtail	2.5GHz	1570nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; $\phi$ 3mm Jacket
LDM5S515-017	Coaxial pigtail	2.5GHz	1590nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; $\phi$ 3mm Jacket
LDM5S515-018	Coaxial pigtail	2.5GHz	1610nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; $\phi$ 3mm Jacket
LDM5S515-021	Coaxial pigtail	2.5GHz	1470nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; $\phi$ 0.9mm Jacket
LDM5S515-022	Coaxial pigtail	2.5GHz	1490nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; $\phi$ 0.9mm Jacket
LDM5S515-023	Coaxial pigtail	2.5GHz	1510nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; $\phi$ 0.9mm Jacket
LDM5S515-024	Coaxial pigtail	2.5GHz	1530nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; $\phi$ 0.9mm Jacket
LDM5S515-025	Coaxial pigtail	2.5GHz	1550nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; $\phi$ 0.9mm Jacket
LDM5S515-026	Coaxial pigtail	2.5GHz	1570nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; $\phi$ 0.9mm Jacket
LDM5S515-027	Coaxial pigtail	2.5GHz	1590nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; $\phi$ 0.9mm Jacket
LDM5S515-028	Coaxial pigtail	2.5GHz	1610nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; $\phi$ 0.9mm Jacket

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