

CWDM Coaxial DFB-LD Module for CATV Return-path

LDM5S515 Series



LDM5S515 Series

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

Applications

- 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	T _s	°C	-40	85
Relative Humidity	RH	%	5	95
Laser Diode Reverse Voltage	V _{RL}	V	-	2
Laser Diode Forward Current	I _{FL}	mA	-	150
Monitor PD Reverse Voltage	V _{RPD}	V	-	15
Monitor PD Reverse Current	I _{RPD}	mA	-	2
Lead Solder Temperature	-	°C	-	260
Lead Soldering Time	-	s	-	10

Recommended Operating Conditions

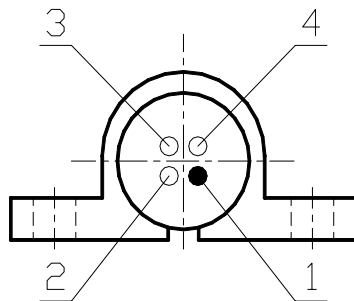
Parameter	Symbol	Unit	Min	Typ	Max
Case Operating Temperature Range	A version	T _c	°C	-20	75
	B version			0	75
Power Supply Voltage	V _{cc}	V	-	1.2	2.0

Specifications ($T_c=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Unit	Min	Type	Max	Condition
Electrical Characteristics						
Threshold Current	I_{th}	mA	-	8	15	CW
			-	-	50	CW, over temperature
Operating Current	I_{op}	mA	-	-	50	$T_c=25^\circ\text{C}$
			-	-	100	$T_c=75^\circ\text{C}$
Analog Bandwidth	BW	GHz	-	2.5	-	$I_{FL}=30\text{mA}$
Monitor PD Current	I_m	μA	50	-	2000	CW, $V_{rPD}=5\text{V}$,
Monitor PD Dark Current	I_d	nA	-	-	10	CW, $V_{rPD}=5\text{V}$,
Photodiode Capacitance	C	pF	-	-	10	$f=1\text{MHz}$, $V_{rPD}=5\text{V}$,
RF Passband Flatness		dB	-	-	1.0	Peak-to-Peak from 5MHz to 200MHz
Noise Power Ratio	NPR		40/14	-	-	$T_c=25^\circ\text{C}$
			40/11			Over temperature range
Optical Characteristics						
Optical Output Power	P_o	dBm	-	3	-	CW, $I_{op}=I_{th}+20$
Slope Efficiency	η	W/A	0.05	0.1	0.15	CW
Optical Wavelength	λ_c	nm	λ_c-3	λ_c	λ_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, $f=19\text{MHz}$, OMI=10%, through 20km fiber(*)
Spurious Noise without Carrier	SNoFF	dBc	-	-52	-	
Relative Intensity Noise	RIN	dB/Hz	-	-	-150	CW, $p_{RL}<-40\text{dB}$, $f=5\sim 200\text{MHz}$
Tracking Error	**TE	dB	-1	-	+1	CW, $P_o=2\text{mW}$

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

Note2: **TE= $10\log(P_T/P_o)$

Pin Description


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

Package Outline

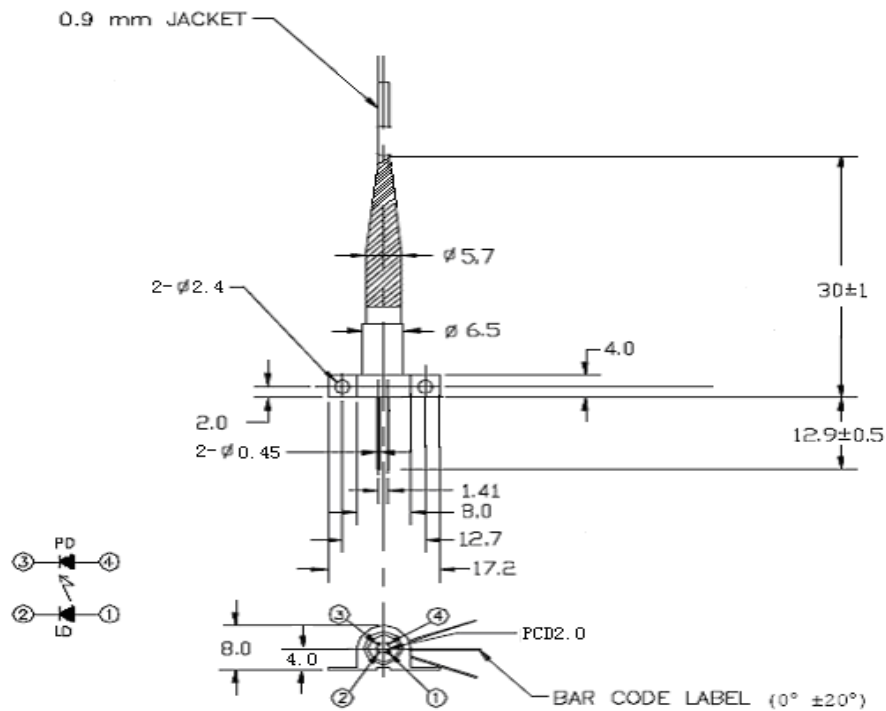


Figure.1 Tabs with 0.9mm pigtail jacket

NOTE:All dimension are in mm.

Fiber pigtail specification

Fiber type: single mode fiber

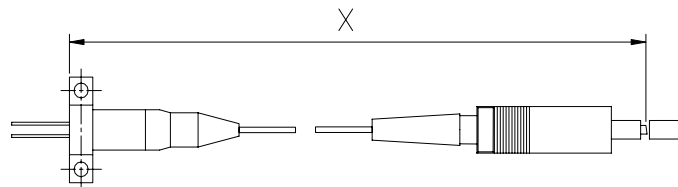


Figure.2 Pigtail specifications

Update Information

- From datasheet V1.0 to datasheet V1.1
 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; φ3mm Jacket
LDM5S515-002	Coaxial pigtail	2.5GHz	1490nm DFB	2mW	(A)-20~75°C; (B)0~75°C	FC/APC; φ3mm Jacket
LDM5S515-003	Coaxial pigtail	2.5GHz	1510nm DFB	2mW	(A)-20~75°C; (B)0~75°C	FC/APC; φ3mm Jacket
LDM5S515-004	Coaxial pigtail	2.5GHz	1530nm DFB	2mW	(A)-20~75°C; (B)0~75°C	FC/APC; φ3mm Jacket
LDM5S515-005	Coaxial pigtail	2.5GHz	1550nm DFB	2mW	(A)-20~75°C; (B)0~75°C	FC/APC; φ3mm Jacket
LDM5S515-006	Coaxial pigtail	2.5GHz	1570nm DFB	2mW	(A)-20~75°C; (B)0~75°C	FC/APC; φ3mm Jacket
LDM5S515-007	Coaxial pigtail	2.5GHz	1590nm DFB	2mW	(A)-20~75°C; (B)0~75°C	FC/APC; φ3mm Jacket
LDM5S515-008	Coaxial pigtail	2.5GHz	1610nm DFB	2mW	(A)-20~75°C; (B)0~75°C	FC/APC; φ3mm Jacket
LDM5S515-011	Coaxial pigtail	2.5GHz	1470nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; φ3mm Jacket
LDM5S515-012	Coaxial pigtail	2.5GHz	1490nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; φ3mm Jacket
LDM5S515-013	Coaxial pigtail	2.5GHz	1510nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; φ3mm Jacket
LDM5S515-014	Coaxial pigtail	2.5GHz	1530nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; φ3mm Jacket
LDM5S515-015	Coaxial pigtail	2.5GHz	1550nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; φ3mm Jacket
LDM5S515-016	Coaxial pigtail	2.5GHz	1570nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; φ3mm Jacket
LDM5S515-017	Coaxial pigtail	2.5GHz	1590nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; φ3mm Jacket
LDM5S515-018	Coaxial pigtail	2.5GHz	1610nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; φ3mm Jacket
LDM5S515-021	Coaxial pigtail	2.5GHz	1470nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; φ0.9mm Jacket
LDM5S515-022	Coaxial pigtail	2.5GHz	1490nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; φ0.9mm Jacket
LDM5S515-023	Coaxial pigtail	2.5GHz	1510nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; φ0.9mm Jacket
LDM5S515-024	Coaxial pigtail	2.5GHz	1530nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; φ0.9mm Jacket
LDM5S515-025	Coaxial pigtail	2.5GHz	1550nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; φ0.9mm Jacket
LDM5S515-026	Coaxial pigtail	2.5GHz	1570nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; φ0.9mm Jacket
LDM5S515-027	Coaxial pigtail	2.5GHz	1590nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; φ0.9mm Jacket
LDM5S515-028	Coaxial pigtail	2.5GHz	1610nm DFB	2mW	(A)-20~75°C; (B)0~75°C	SC/APC; φ0.9mm Jacket

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