XSDxx1-50LY

DWDM SFP 100 GHz, 1.25 Gbps, 50 km Reach, Digital Diagnostic, LC Single-mode Transceiver

Applications

- Gigabit Ethernet Switches and Routers
- Fibre Channel Switch Infrastructure
- XDSL Applications
- Metro Edge Switching
- CPRI option 2: 1228.8 Mbit/s
- CPRI option 1: 614.4 Mbit/s
- OBSAI 768 MBaud

Features

- Hot-Pluggable SFP Footprint LC Optical Transceiver
- Small Form-Factor Pluggable (SFP) MSA compatible
- Compliant with IEEE 802.3z Gigabit Ethernet 1000BASE-XD
- Compliant with Fibre Channel FC-PI 100-SM-LL-V
- Distance up to 50 km
- Temperature-stabilized DWDM DML Transmitter
- 19 dB Power Budget at Least
- 100 GHz ITU Grid, C Band
- SFF-8472 Digital Diagnostic Function
- AC/AC Coupling according to MSA
- Single +3.3 V Power Supply
- RoHS 6/6 Compliant
- 0°C to 70°C Operation
- Class 1 Laser International Safety Standard IEC-60825 Compliant

Laser Safety

This single mode transceiver is a Class 1 laser product. It complies with IEC-60825 and FDA 21 CFR 1040.10 and 1040.11. The transceiver must be operated within the specified temperature and voltage limits. The optical ports of the module shall be terminated with an optical connector or with a dust plug.

Description

The XSDxx1-50LY series single mode transceiver is a small form factor pluggable module for bi-directional serial optical data communications such as Gigabit Ethernet 1000BASE-XD and Fibre Channel FC-PI 100-SM-LL-V. It is with the SFP 20-pin connector to allow hot plug capability. Digital diagnostic functions are available via an I^2C. This module is designed for single mode fiber and operates at a nominal wavelength of 100GHz ITU Grid, C Band DWDM wavelength. A guaranteed minimum optical link budget of 19 dB is offered. The transmitter section uses temperature-stabilized DWDM directly modulated laser (DML) and is class 1 laser compliant according to International Safety Standard IEC-60825. The receiver section uses an integrated InGaAs detector preamplifier (IDP) mounted in an optical header and a limiting post-amplifier IC.

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units	Notes
Storage Temperature	Tstg	-40	85	°C	
Relative Humidity	RH	5	85	%	Non-condensing
Operating Case Temperature	Topr	0	70	°C	
Power Supply Voltage	Vcc	-0.5	3.6	V	

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Units/Notes
Power Supply Voltage	Vcc	3.13	3.3	3.47	V
Operating Case Temperature	Topr	0		70	°C
Relative Humidity	RH	5		85	% / Non-condensing
Power Supply Current	CC (TX+RX)			430	mA
Data Rate		100	1250		Mb/s

Transmitter Specifications (0°C < Topr < 70°C, 3.13 V < Vcc < 3.47 V)

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical						
Average Launch Power	$Po_{,AVG}$	-5	---	0	dBm	1
Center Wavelength Spacing			100		GHz	2
Transmitter Center Wavelength - over life time	λc	X-100	X	X+100	pm	3
Output Spectrum Width	Δλ	---		1	nm	-20 dB width
Side Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	E_R	9	---	---	dB	
Optical Rise Time	t_r			260	ps	20% to 80% Values
Optical Fall Time	tf			260	ps	20% to 80% Values
Relative Intensity Noise	RIN			-120	dB/Hz	
Electrical						
Data Input Current - Low	I_{IL}	-350			µA	
Data Input Current - High	I_{IH}			350	µA	
Differential Input Voltage	V_{IH} - V_{IL}	0.5		2.4	V	Peak-to-Peak
TX Disable Input Voltage - Low	TDIS, L	0		0.5	V	4
TX Disable Input Voltage - High	$T_{DIS, H}$	2.0		Vcc	V	4
TX Disable Assert Time	T_{ASSERT}			10	µs	
TX Disable Deassert Time	$T_{DEASSERT}$			1	ms	
TX Fault Output Voltage - Low	T_{FaultL}	0		0.5	V	5
TX Fault Output Voltage - High	T_{FaultH}	2.0		Vcc+0.3	V	5

Notes
1. Output power is power coupled into a 9/125 µm single-mode fiber.
2. Corresponds to approximately 0.8 nm.
3. X = specified ITU Grid wavelength
4. There is an internal 4.7 K to 10 K ohm pull-up resister to VccTX.
5. Open collector compatible, 4.7 K to 10 K ohm pull-up to Vcc (Host Supply Voltage).

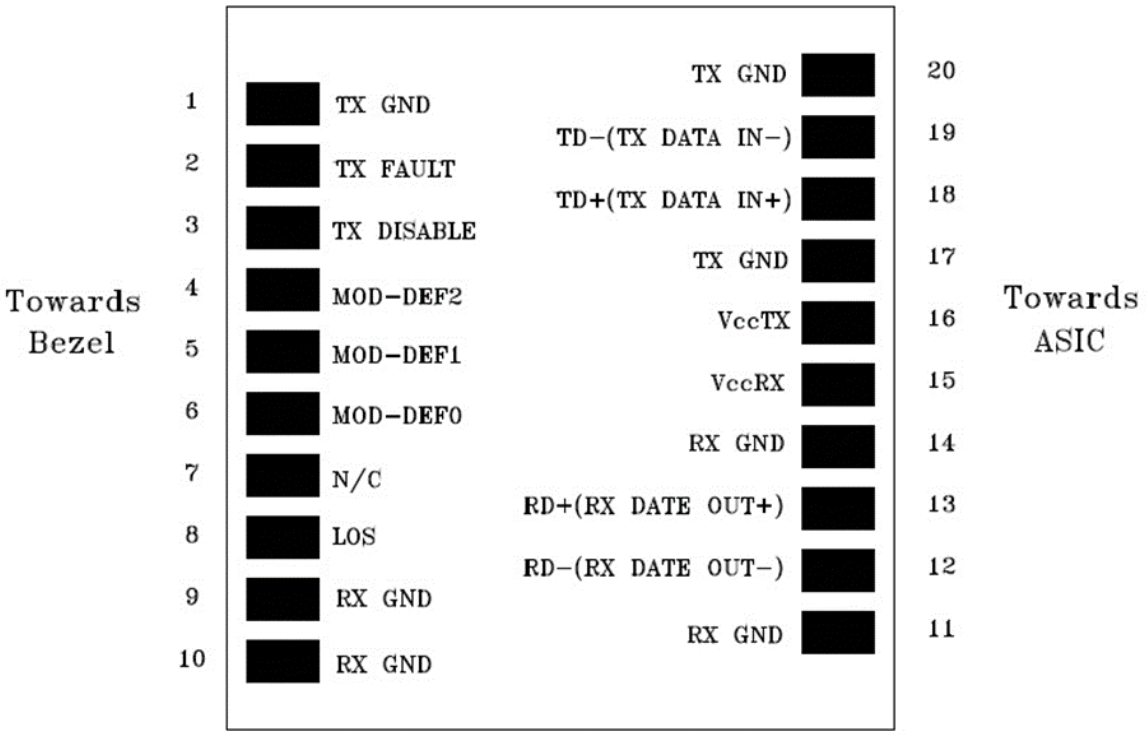
Receiver Specifications (0°C < Topr < 70°C, 3.13 V < Vcc < 3.47 V)

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical						
Sensitivity	Sens			-24	dBm	6
Maximum Input Power	P_{in}	-3			dBm	6
Signal Detect - Asserted	PA	---		-24	dBm	Transition: low to high
Signal Detect - Deasserted	PD	-36	---	---	dBm	Transition: high to low
Signal Detect - Hysteresis		1.0	---		dB	
Wavelength of Operation		1100	---	1620	nm	
Electrical						
Differential Output Voltage	V_{OH} - V_{OL}	0.6		2.0	V	
Output LOS Voltage - Low	V_{OL}	0		0.5	V	7
Output LOS Voltage - High	V_{OH}	2.0		Vcc+0.3	V	7

Notes

6. Measured at PRBS 2^7-1 at BER 1E-12.
7. Open collector compatible, 4.7K to 10K ohm pull-up to Vcc (Host Supply Voltage)

Connection Diagram



PIN	Signal Name	Description	PIN	Signal Name	Description
1	TX GND	Transmitter Ground	11	RX GND	Receiver Ground
2	TX Fault	Transmitter Fault Indication	12	RX DATA OUT-	Inverse Receiver Data Out
3	TX Disable	Transmitter Disable (Module disables on high or open)	13	RX DATA OUT+	Receiver Data Out
4	MOD-DFE2	Modulation Definition 2 – Two wires serial ID Interface	14	RX GND	Receiver Ground
5	MOD-DEF1	Modulation Definition 1 – Two wires serial ID Interface	15	Vcc RX	Receiver Power – 3.3V±5%
6	MOD-DEF0	Modulation Definition 0 – Ground in Module	16	Vcc TX	Transmitter Power – 3.3V±5%
7	N/C	Not Connected	17	TX GND	Transmitter Ground
8	LOS	Loss of Signal	18	TX DATA IN+	Transmitter Data In
9	RX GND	Receiver Ground	19	TX DATA IN-	Inverse Transmitter Data In
10	RX GND	Receiver Ground	20	TX GND	Transmitter Ground

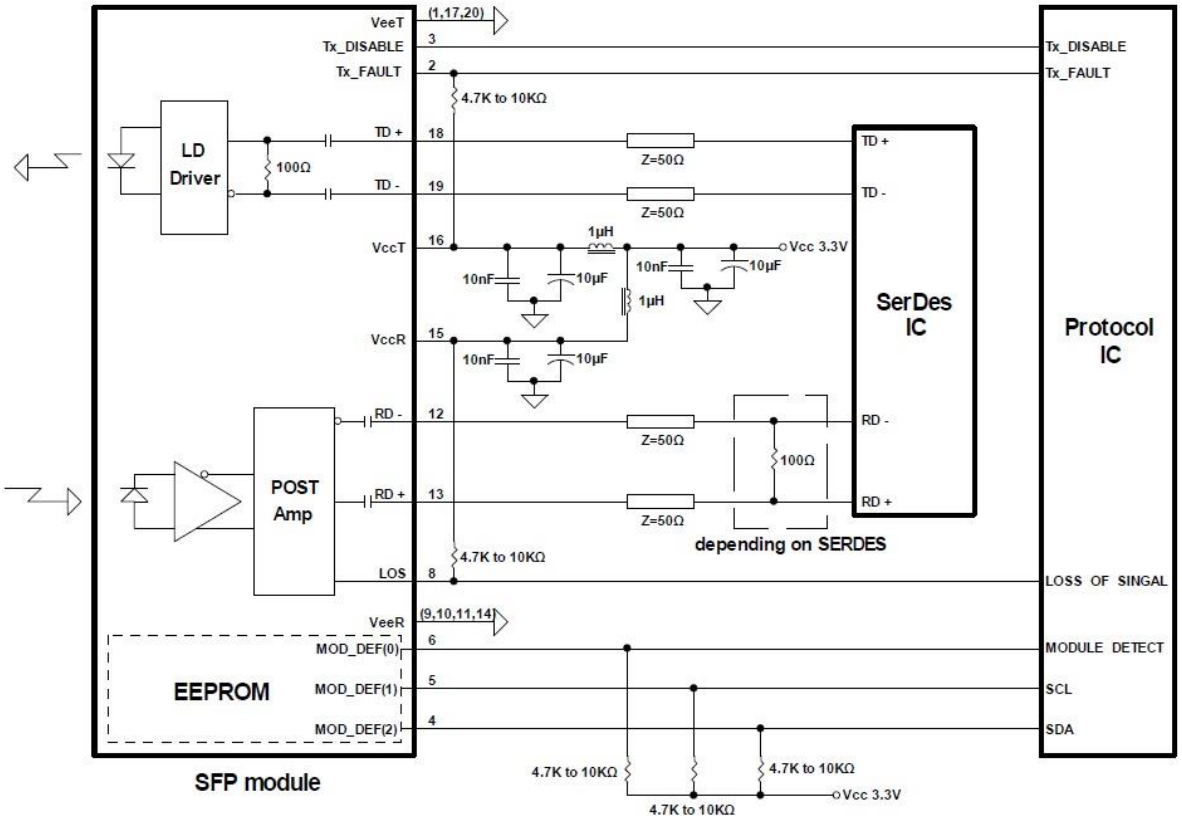
Module Definition

Module Definition	MOD-DEF2 PIN 4	MOD-DEF1 PIN 5	MOD-DEF0 PIN 6	Interpretation by Host
4	SDA	SCL	LV-TTL Low	Serial module definition protocol

Note

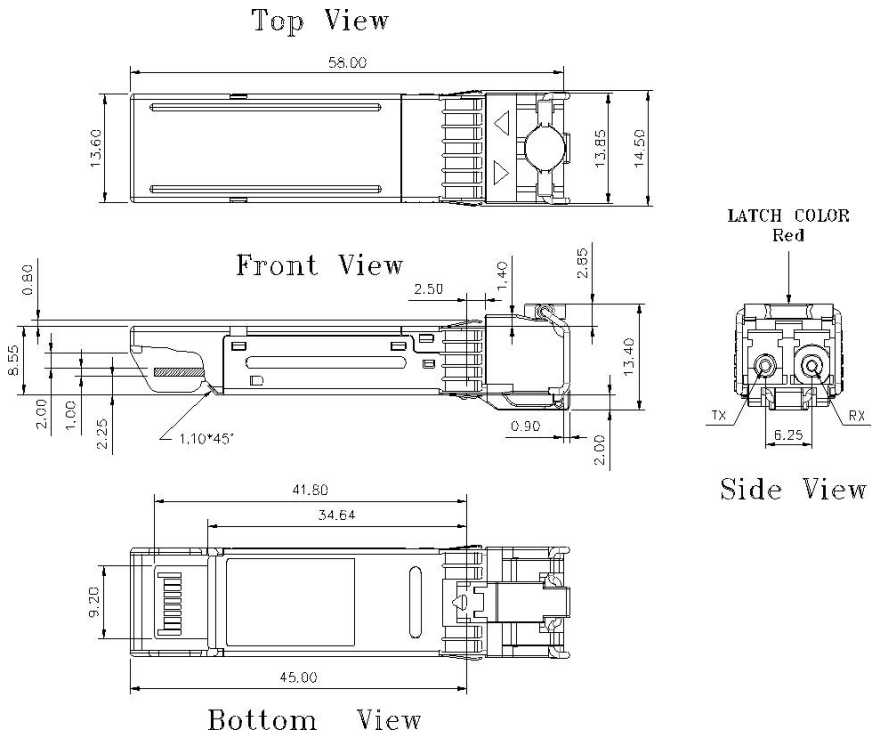
Module Definition 4 specifies a serial definition protocol. For this definition, upon power up, SDA and SDL appear as no connector (NC) and MOD-ABS is TTL LOW. When the host system detects this condition, it activates the serial protocol. The protocol uses the 2-wire serial CMOS E^2PROM protocol of the ATMEL AT24C01A/02/04 family of components.

Recommended Circuit Schematic



Package Diagram

Units in mm



Ordering information[1]

PN	Description
XSDxx1-50LY	DWDM SFP, xx=20~60 (ITU Channel C-band), 1,25 Gbps, 50 km Reach, LC, DMI, 0°C to 70°C

Notes:

[1] For accurate order specification please contact Xenopt reseller before placing an order. The content of this document is subject to change without notice. Xenopt does not guarantee errorless or outdated information. Please specify any compatibility requirements at time of ordering. Standard MSA compatible pluggable components may not work or some function of these components may not be available in devices that require customized compatible devices. Pluggable components compatible with one type of communications equipment may not work in other type of communications equipment.

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