1.25G DWDM SFP 80KM LC SMF Fiber Optic Transceiver

Zion Code and Description

Zion Code	Zion Description
7214320	1.25G DWDM SFP 80KM LC SMF Fiber Optic Transceiver

Applications

- C Band DWDM networks
- SONET/SDH networks
- Fiber channel
- Gigabit Ethernet

Features

- Transceiver unit with independent
  DWDM DFB Laser diode transmitter
  PIN photodiode receiver
- Compliant with DWDM SFP MSA
- Compliant with SFF-8472
- Duplex LC/UPC type pluggable optical interface
- Metal enclosure for lower EMI
- 3.3V Single power supply
- 100GHz ITU Grid, C Band
- Wavelength controlled within ± 0.1nm over life and temperature
- Digital diagnostic monitoring
- 80 km with 9/125 μm single mode fiber (SMF) of maximum interconnect distances
- Case operating temperature：0°C to +70°C

Description

1.25G DWDM SFP 80KM LC SMF Fiber Optic Transceiver Small Form Factor Pluggable (SFP) transceivers are compatible with the Small Form Factor Pluggable Multi-Sourcing Agreement (MSA) and SFF-8472. The transceiver consists of five sections: the LD driver, the limiting amplifier, the digital diagnostic monitor, the DFB laser and the PIN .The module data link up to 80KM in 9/125um single mode fiber. It offers a simple and convenient way to interface PCBs to single mode fiber optic cables in Dense Wavelength Division Multiplexing (DWDM) applications. It is a high performance, cost effective module for serial optical data communication applications。

The optical output can be disabled by a TTL logic high-level input of Tx Disable, and the system also can disable the module via I2C. Tx Fault is provided to indicate that degradation of the laser. Loss of signal (LOS) output is provided to indicate the loss of an input optical signal of receiver or the link status with partner. The system can also get the LOS (or Link)/Disable/Fault information via I2C register access.

Main product parameters

Form Factor	SFP	Vendor Name	Zion Communication
Wavelength	1528.77-1563.86nm	Max Cable Distance	80KM
Fiber cable Type	SMF	Connector type	Duplex LC
Transimitter Type	DFB CWDM	Max Data Rate	1.25Gbps
Transmit Power	0~5 dBm	Receiver Type	PIN
DOM	Supported	Receiver sensitivity	＜- 24 dBm
		Operating Temp.	0°C to 70°C (32°F to 158°F)

Zion Communication's Hot 1.25G transceiver types

Zion Code	Zion Description
7214010	1.25G SFP SX 850nm 550M LC MMF Fiber Optic Transceiver
7214020	1.25G SFP LX 1310nm 10KM LC SMF Fiber Optic Transceiver
7214030	1.25G SFP LX/LH 1310nm 20KM LC SMF Fiber Optic Transceiver
7214040	1.25G SFP EX 1310nm 40KM LC SMF Fiber Optic Transceiver
7214050	1.25G SFP EX 1550nm 40KM LC SMF Fiber Optic Transceiver
7214060	1.25G SFP ZX 1550nm 80KM LC SMF Fiber Optic Transceiver
7214070	1.25G SFP ZX 1550nm 120KM LC SMF Fiber Optic Transceiver
7214080	1.25G SFP ZX 1550nm 160KM LC SMF Fiber Optic Transceiver
7214110	1.25G BIDI SFP TX1310/RX1550nm(TX1550/RX1310nm) 10KM LC SMF Fiber Optic Transceiver
7214120	1.25G BIDI SFP TX1310/RX1550nm(TX1550/RX1310nm) 20KM LC SMF Fiber Optic Transceiver
7214130	1.25G BIDI SFP TX1310/RX1550nm(TX1550/RX1310nm) 40KM LC SMF Fiber Optic Transceiver
7214140	1.25G BIDI SFP TX1490/RX1550nm(TX1550/RX1490nm) 80KM LC SMF Fiber Optic Transceiver
7214150	1.25G BIDI SFP TX1490/RX1550nm(TX1550/RX1490nm) 120KM LC SMF Fiber Optic Transceiver
7214210	1.25G CWDM SFP 20KM LC SMF Fiber Optic Transceiver
7214220	1.25G CWDM SFP 40KM LC SMF Fiber Optic Transceiver
7214230	1.25G CWDM SFP 80KM LC SMF Fiber Optic Transceiver
7214240	1.25G CWDM SFP 120KM LC SMF Fiber Optic Transceiver
7214250	1.25G CWDM SFP 160KM LC SMF Fiber Optic Transceiver
7214310	1.25G DWDM SFP 40KM LC SMF Fiber Optic Transceiver
7214320	1.25G DWDM SFP 80KM LC SMF Fiber Optic Transceiver
7214330	1.25G DWDM SFP 120KM LC SMF Fiber Optic Transceiver

Product selection

Code	Frequency (THz)	Center Wavelength(nm)	Code	Frequency (THz)	Center Wavelength(nm)
C17	191.7	1563.86	C40	194	1545.32
C18	191.8	1563.05	C41	194.1	1544.53
C19	191.9	1562.23	C42	194.2	1543.73
C20	192	1561.42	C43	194.3	1542.94
C21	192.1	1560.61	C44	194.4	1542.14
C22	192.2	1559.79	C45	194.5	1541.35
C23	192.3	1558.98	C46	194.6	1540.56
C24	192.4	1558.17	C47	194.7	1539.77
C25	192.5	1557.36	C48	194.8	1538.98
C26	192.6	1556.55	C49	194.9	1538.19
C27	192.7	1555.75	C50	195	1537.4
C28	192.8	1554.94	C51	195.1	1536.61
C29	192.9	1554.13	C52	195.2	1535.82
C30	193	1553.33	C53	195.3	1535.04
C31	193.1	1552.52	C54	195.4	1534.25
C32	193.2	1551.72	C55	195.5	1533.47
C33	193.3	1550.92	C56	195.6	1532.68
C34	193.4	1550.12	C57	195.7	1531.9
C35	193.5	1549.32	C58	195.8	1531.12
C36	193.6	1548.51	C59	195.9	1530.33
C37	193.7	1547.72	C60	196	1529.55
C38	193.8	1546.92	C61	196.1	1528.77
C39	193.9	1546.12			

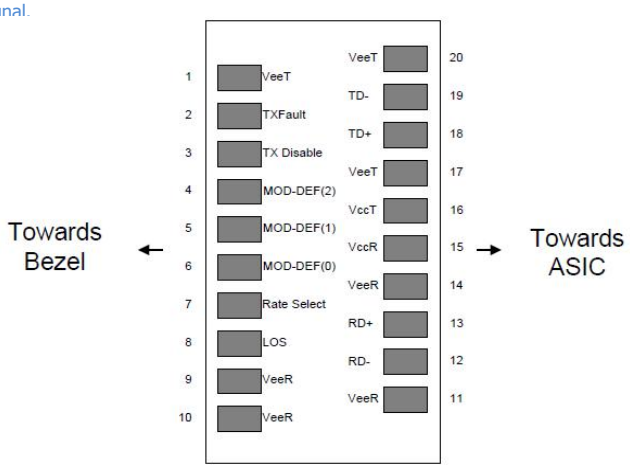
Detailed product specifications

1 Pin Descriptions

Pin	Symbol	Name/Description	NOTE
1	VEET	Transmitter Ground (Common with Receiver Ground)	1
2	TFAULT	Transmitter Fault.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	2
4	MOD_DEF	Module Definition 2. Data line for Serial ID.	3
5	MOD_DEF	Module Definition 1. Clock line for Serial ID.	3
6	MOD_DEF	Module Definition 0. Grounded within the module.	3
7	Rate Select	No connection required	4
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	5
9	VEER	Receiver Ground (Common with Transmitter Ground)	1
10	VEER	Receiver Ground (Common with Transmitter Ground)	1
11	VEER	Receiver Ground (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	VEER	Receiver Ground (Common with Transmitter Ground)	1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VEET	Transmitter Ground (Common with Receiver Ground)	1

Note:

1. Circuit ground is internally isolated from chassis ground.
2. Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
3. Should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V.MOD_DEF (0) pulls line low to indicate module is plugged in.
4. This is an optional input used to control the receiver bandwidth for compatibility with multiple data rates (most likely Fiber Channel 1x and 2x Rates).If implemented, the input will be internally pulled down with > 30kΩ resistor. The input states are:
   Low (0 – 0.8V): Reduced Bandwidth
   (>0.8, < 2.0V): Undefined
   High (2.0 – 3.465V): Full Bandwidth
   Open: Reduced Bandwidth
5. LOS is open collector output should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.



2 Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Ref.
Storage Temperature	Ts	-40		85	°C	
Storage Ambient Humidity	HA	5		95	%	
Power Supply Voltage	VCC	-0.5		4	V	
Signal Input Voltage		-0.3		Vcc+0.3	V	
Receiver Damage Threshold		5			dBm	

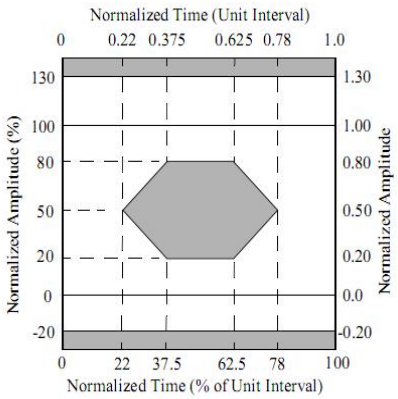
3 Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Ref.
Case Operating Temperature	Tcase	0		70	°C	
Power Supply Voltage	VCC	3.13	3.3	3.47	V	
Power Supply Current	ICC			500	mA	
Power Supply Noise Rejection				100	mVp-p	100Hz to 1MHz
Data Rate			1250/1250		Mbps	TX Rate/RX Rate
Transmission Distance				80	KM	
Coupled Fiber	Single mode fiber					9/125um SMF

4 Specification of Transmitter

Parameter	Symbol	Min.	Typical	Max.	Unit	Ref.
Center Wavelength Spacing			100		GHz	
Center Wavelength	λ	X-100	X	X+100	pm	Note (1)
Average Output Power	POUT	0		4	dBm	
Extinction Ratio	ER	9			dB	
Side Mode Suppression Ratio	SMSR	30			dB	
Spectrum Bandwidth(-20dB)	σ			0.3	nm	
Transmitter OFF Output Power	POff			-45	dBm	
Differential Line Input Impedance	RIN	90	100	110	Ohm	
Output Eye Mask	Compliant with ITU recommendation G.957					Note (2)

Note (1): X = specified ITU center wavelength. (To See "Ordering Information")
Note (2): Transmitter eye mask definition.



5 Specification of Receiver

Parameter	Symbol	Min.	Typical	Max.	Unit	Ref.
Input Optical Wavelength	λIN	1270		1610	nm	
Receiver Sensitivity	PIN			-26	dBm	Note (1)
Input Saturation Power (Overload)	PSAT	0			dBm	
LOS Assert	LOSA	-38		-27	dBm	
LOS De-assert	LOSD				dBm	Note (2)
LOS Hysteresis		0.5	2	6	dB	

Note (1): Measured with Light source 1550nm, ER=9dB; BER =<10^-12 @PRBS=2^23-1 NRZ
Note (2): When LOS de-asserted, the RX data+/- output is High-level (fixed)

6 Electrical Interface Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Ref.
Transmitter						
Total Supply Current	ICC			A	mV	Note (1)
Transmitter Disable Input-High	VDISH	2		Vcc+0.3	V	
Transmitter Disable Input-Low	VDISL	0		0.8	V	
Transmitter Fault Input-High	VDISL	2		Vcc+0.3	V	
Transmitter Fault Input-Low	VTxFH	0		0.8	V	
Receiver						
Total Supply Current	ICC			B	mA	Note (1)
LOSS Output Voltage-High	VLOSH	2		Vcc+0.3	V	LVTTL
LOSS Output Voltage-Low	VLOSL	0		0.8	V	

Note (1): A (TX) + B (RX) = 500mA (Not include termination circuit)

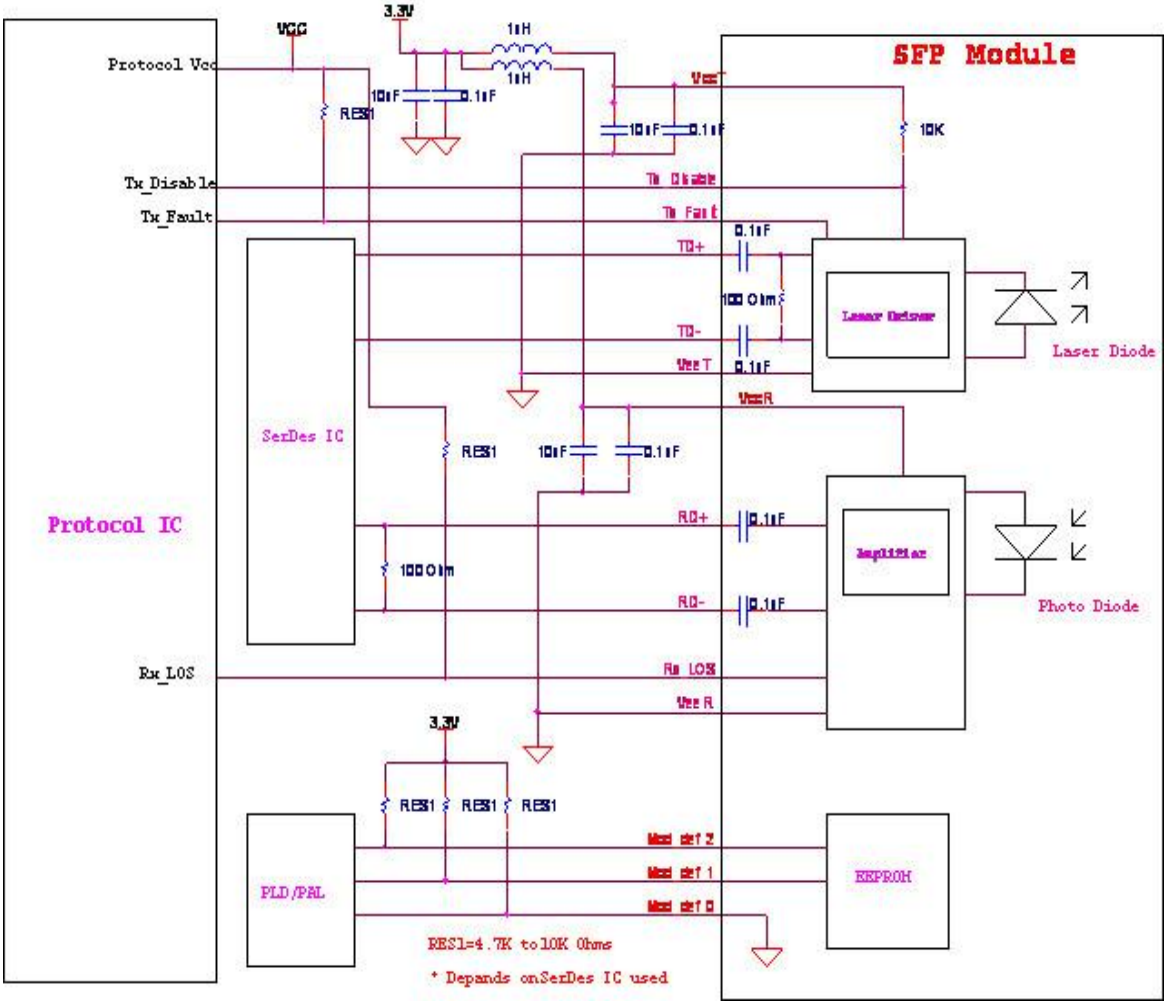
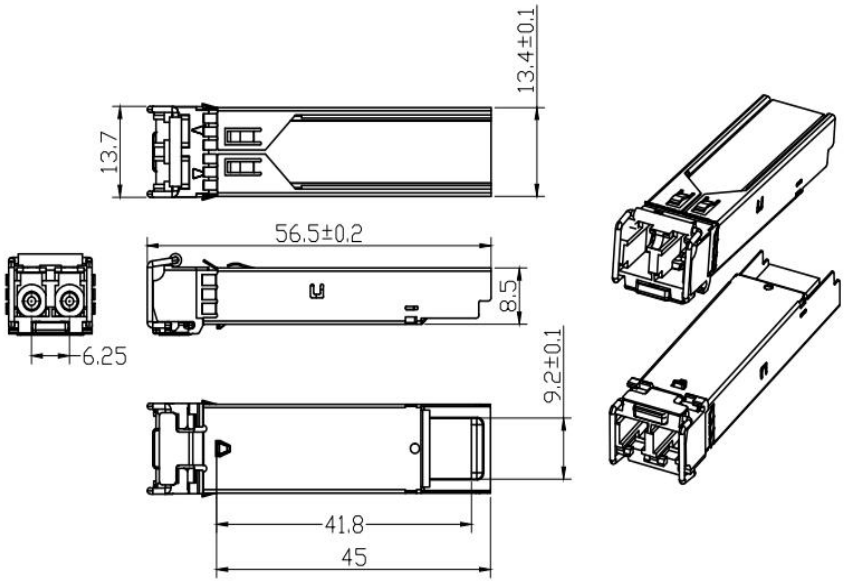
7 Digital Diagnostic Functions

Fiberate SFDXX1G80DC transceivers support the 2-wire serial communication protocol as defined in the SFP MSA. It is very closely related to the E2PROM defined in the GBIC standard, with the same electrical specifications.

The standard SFP serial ID provides access to identification information that describes the transceiver's capabilities, standard interfaces, manufacturer, and other information.
Additionally, Fiberate SFP transceivers provide a unique enhanced digital diagnostic monitoring interface, which allows real-time access to device operating parameters such as transceiver temperature, laser bias current, transmitted optical power, received optical power and transceiver supply voltage .It also defines a sophisticated system of alarm and warning flags, which alerts end-users when particular operating parameters are outside of a factory set normal range.
The SFP MSA defines a 256-byte memory map in E2PROM that is accessible over a 2-wire serial interface at the 8 bit address 1010000X (A0h). The digital diagnostic monitoring interface makes use of the 8 bit address 1010001X (A2h), so the originally defined serial ID memory map remains unchanged. The interface is identical to, and is thus fully backward compatible with both the GBIC Specification and the SFP Multi Source Agreement.

The operating and diagnostics information is monitored and reported by a Digital Diagnostics Transceiver Controller (DDTC) inside the transceiver, which is accessed through a 2-wire serial interface. When the serial protocol is activated, the serial clock signal (SCL, Mod Def 1) is generated by the host. The positive edge clocks data into the SFP transceiver into those segments of the E2PROM that are not write-protected. The negative edge clocks data from the SFP transceiver. The

8 Recommend Circuit Schematic



9 Mechanical Specifications (Unit: mm)