TITLE **1G SFP ZX 1550nm 80km Transceiver**	**DOC No. RFD-20230411015-001**	
	REVISION：03	**AUTHORIZED BY：Mike Sun**
	DATE：2023.04.12	**CLASSIFICATION：Optical Transceiver**

1. SCOPE

The P58000AACV80-1 family of Small Form Factor Pluggable (SFP) transceiver module is specifically designed for the high-performance integrated duplex data link over single mode. These transceiver modules are compliant with the SFP Multisource Agreement (MSA). With the hot plug ability, these modules offer an easy way to be installed into SFP MSA compliant ports at any time without the interruption of the host equipment operating online. The 1G ZX SFP transceivers using a long wavelength (1550nm) DFB laser diode enable data transmission up to 80km on a single-mode (9/125μm) optical fiber.

2. PRODUCT FEATURES

- Up to 1.25Gbps Data Links
- 1550nm DFB laser transmitter and PIN/TIA receiver
- Maximum link length of 80km on 9/125um SMF
- Hot-pluggable SFP footprint
- Duplex LC receptacles
- Low power dissipation
- RoHS compliant and lead-free
- Support Digital Diagnostic Monitor interface
- Single +3.3V power supply
- Compliant with SFF-8472
- Case operating temperature : Commercial:0℃ to +70℃

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3. PRODUCT DESCRIPTION

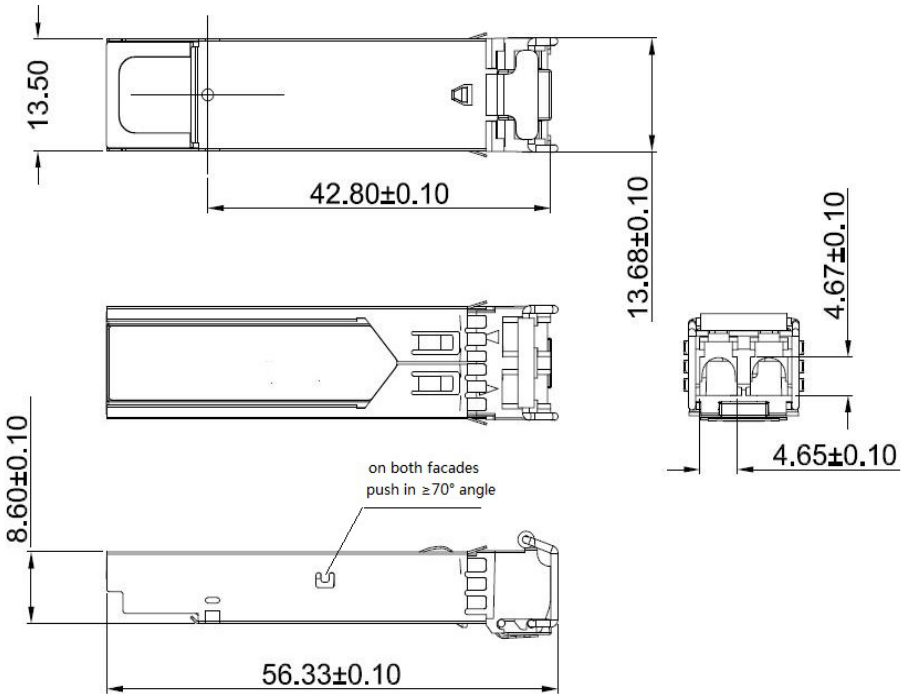
3.1 PRODUCT NAME AND SERIES NUMBER(S)

SFP 1G 80km ZX Transceiver

Part Number	Data Rate	Wavelength (nm)	Distance	Media	Power (dBm)	Sen. (dBm)	Connector	Tem.
P58000AACV80-1	1G	1550	80 km	SMF	0~+5	-24	LC	C

3.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKING

3.3



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4. APPLICABLE DOCUMENTS AND SPECIFICATIONS

- Gigabit Ethernet
- 1.06Gb/s Fiber Channel
- Compliant with SFP MSA / IEEE802.3z

5. Absolute Maximum Ratings & Recommended Operating Conditions

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	TS	-40	+85	℃
Supply Voltage	VCC3	-0.5	3.6	V
Relative Humidity (Non-condensing)	RH	5	95	%

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature(C-temp)	TC	0	-	70	℃
Power Supply Voltage	VCC3	3.1	3.3	3.5	V
Data Rate	-	-	1.25	-	Gbps
Supply Current	ICC	-	-	300	mV
Transmission Distance	SMF	-	-	80	km

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Transmitter Operating Characteristic-Optical, Electrical

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Center Wavelength	λC	1530	1550	1570	nm	
Spectral Width(-20dB)	Pm	-	-	1	nm	
Side-mode Suppression Ratio	SMSR	30	-	-	dB	
Average Output Power	Pavg	0	-	5	dBm	
Extinction Ratio	ER	9	-	-	dB	
Return Loss	-	12	-	-	dB	
Transmitter OFF Output Power	POff	-	-	-30	dBm	
Input differential impedance	Rin	-	100	-	-	
Differential data input swing	Vin, pp	200	-	1000	mV	
Transmit Disable Voltage	V_D	2	-	V_{CC}	V	
Transmit Enable Voltage	V_{EN}	Vee	-	Vee+0.8	V	

Receiver Operating Characteristic-Optical, Electrical

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Center Wavelength	λc	1260		1600	nm	
Receiver Sensitivity, Average Power				-24	dBm	
Receiver Saturation Power	Psat			0	dBm	
Loss of Signal Assert	P_A	-35			dBm	
Loss of Signal De-assert	P_D			-26	dBm	
LOS Hysteresis	P_D- P_A	0.5			dB	
Differential data output swing	Vout, pp	200		1000	mV	1
LOS Fault	V_{LOS_fault}	2		Vcc	V	2

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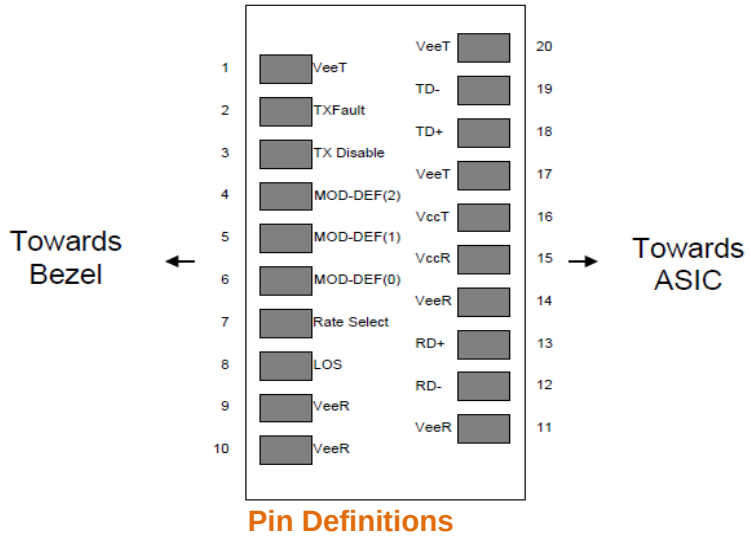
LOS Normal	V_{LOS_norm}	Vee		Vee+0.8	V	2
Power Supply Noise Tolerance	V_{CCT}/V_{CCR}	Per SFP MSA			mVpp	

Notes:
1. Into 100Ω differential termination.
2. Loss of Signal is LVTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.

Control and Status I/O Timing Characteristics

Parameter	Unit	Accuracy
Case Temperature	℃	±3
Supply Voltage	V	±3%
Tx Bias Current	mA	±10%
Tx Optical Power	dB	±3
Rx Optical Power	dB	±3

6. Pin-out Definition:



Pin Definitions

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Pin Assignment

Pin	Symbol	Name/Description	Note
1	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1
2	T_{FAULT}	Transmitter Fault.	2
3	T_{DIS}	Transmitter Disable. Laser output disabled on high or open.	3
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	4
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	4
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	4
7	Rate Select	No connection required	-
8	LOS	Loss of Signal indication. Logic “0” indicates normal operation.	5
9	V_{EER}	Receiver Ground (Common with Transmitter Ground)	-
10	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
11	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out (CML). AC Coupled	-
13	RD+	Receiver Non-inverted DATA out (CML). AC Coupled	-
14	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
15	V_{CCR}	Receiver Power Supply	-
16	V_{CCT}	Transmitter Power Supply	-
17	V_{EET}	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	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1

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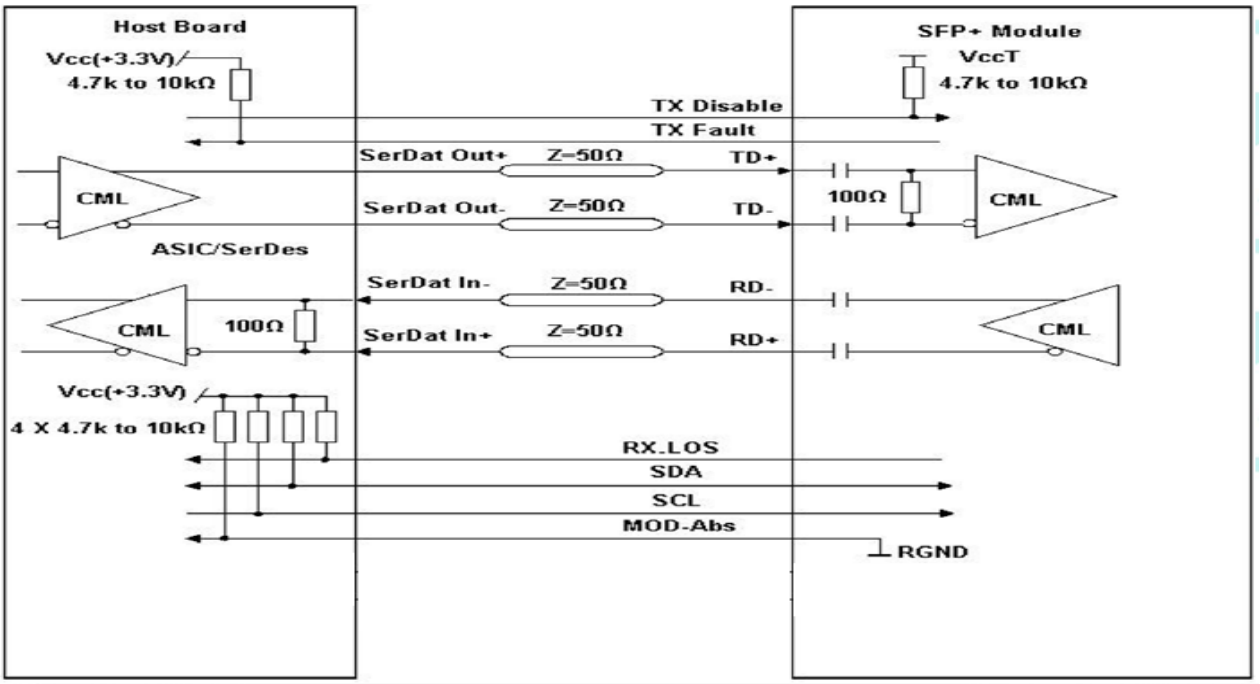
Notes:

1. *Circuit ground is internally isolated from chassis ground.*
2. *T_{FAULT} is an open collector/drain output, which is pulled up with a 4.7kΩ – 10kΩ resistor on the host board but is grounded inside the SFP cable plug.*
3. *Laser output disabled on T_{DIS} >2.0V or open, enabled on T_{DIS} <0.8V.*
4. *Mod-Def 0,1,2. These are the module definition pins. They should be pulled up with a 4.7K – 10KΩ resistor on the host board. The pull-up voltage shall be VccT or VccR*
   Mod-Def 0 is grounded by the module to indicate that the module is present
   Mod-Def 1 is the clock line of two wire serial interface for serial ID
   Mod-Def 2 is the data line of two wire serial interface for serial ID
5. *LOS is open collector output. Should be pulled up with 4.7kΩ – 10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.*

Block Diagram of Transceiver



Block Diagram of Transceiver

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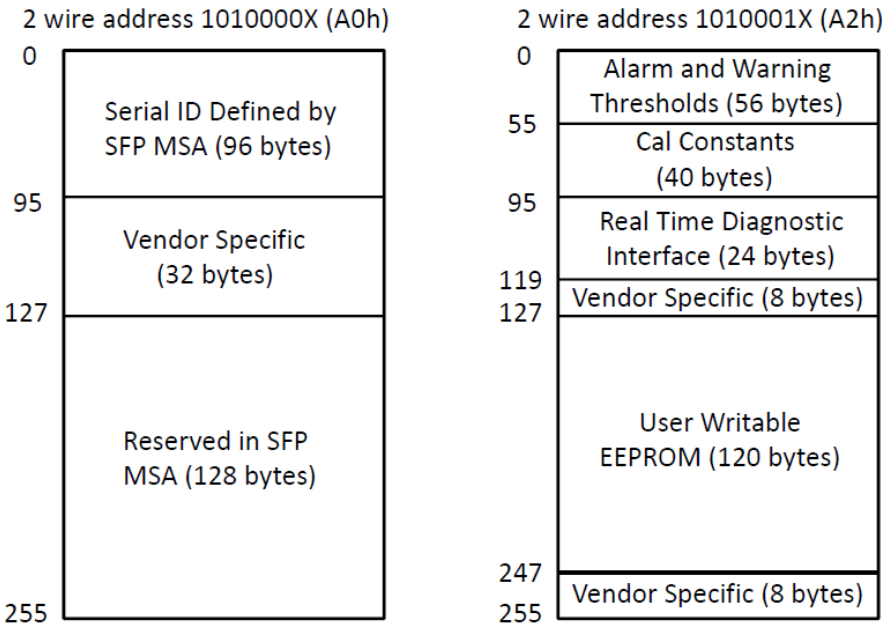
7. Digital Diagnostic Memory Map



8. Modification History

Rev.	Comments	Date	Originator	Approval
01	Preliminary Draft	2017.11.16	Mike Sun	Ray Yang
02	Revise Part Number	2020.05.25	Mike Sun	Ray Yang
03	Modify Receiver Sensitivity	2023.04.12	Albert Lin	Mike Sun