

1.25Gb/s SFP 1310nm 40km Optical Transceiver

Features

- Operating data rate 1250Mbps
- Industry standard Small Form Pluggable (SFP) package
- Digital diagnostic monitor interface compliant with SFF-8472
- Duplex LC connector
- Single +3.3V power supply
- Differential LVPECL inputs and outputs
- TTL signal detect indicator
- Hot-pluggable capability
- RoHS compliant
- Case operating temperature: 0 ~ +70°C

Applications

- Switch to Switch interface
- Switched backplane applications
- Router/Server interface
- Other optical transmission systems

Compliance

- SFP MSA
- SFF-8472
- IEEE802.3z
- RoHS

Description

The transmitter section uses a multiple quantum well 1310nm laser and is a 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. The SFP-1G-EX-31 series are designed to be compliant with SFF-8472 SFP Multi-source Agreement (MSA).

Absolute Maximum Ratings

Table1-Absolute Maximum Ratings				
Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	TS	-40	+85	°C
Supply Voltage	VCC	0	+3.7	V
Relative Humidity(Non-condensing)	RH	+5	+85	%
Power Dissipation	PD		0.95	W

Recommended Operating Conditions

Table2-Recommended Operating Conditions					
Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	Tc	0		+70	°C
Power Supply Voltage	VCC3	3.135	3.3	3.465	V
Data Rate	DR		1250		Mbps
Power Supply Current	Icc			300	mA

Transmitter Operating Characteristic-Optical

Table3-Transmitter Operating Characteristic-Optical						
Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Output Optical Power	PO	-5		0	dBm	
Optical Rise Time	TR		100	175	ps	
Optical Fall Time	TF		100	175	ps	
Center Wavelength Range	λ_c	1290	1310	1330	nm	
-20dB Spectral Width	$\Delta\lambda$			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Optical Power for TX DISABLE	Ptx-dis			-30	dBm	
Extinction Ratio	ER	9.5			dB	

Receiver Operating Characteristic-Optical

Table4-Receiver Operating Characteristic-Optical

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Differential Output Voltage	Vout p-p	600		1000	mV	
Receiver Sensitivity	Sen			-24	dBm	
Overload Input Power	So	-3			dBm	
Los Asserted	PA	-35			dBm	
Los De-asserted	PD			-23		
Receiver Optical Wavelength	λ in	1260		1620	nm	
Maximum Input Power	Pmax	0			dBm	

Digital diagnostic Functions

The following digital diagnostic characteristics are defined over the Recommended Operating Environment unless otherwise specified. It is compliant to SFF-8472 Rev10.2 with internal calibration mode. For external calibration mode please contact our sales staff.

Table5-Digital diagnostic specification table

Parameter	Symbol	Min.	Max.	Unit	Notes
Temperature monitor absolute error	DMI_Temp	-3	3	°C	Over operating temp
Laser power monitor absolute error	DMI_TX	-3	3	dB	
RX power monitor absolute error	DMI_RX	-3	3	dB	-1dBm to -16dBm range
Supply voltage monitor absolute error	DMI_VCC	-1	1	V	Full operating range
Bias current monitor	DMI_Ibias	-10	10	%	

Pin Description

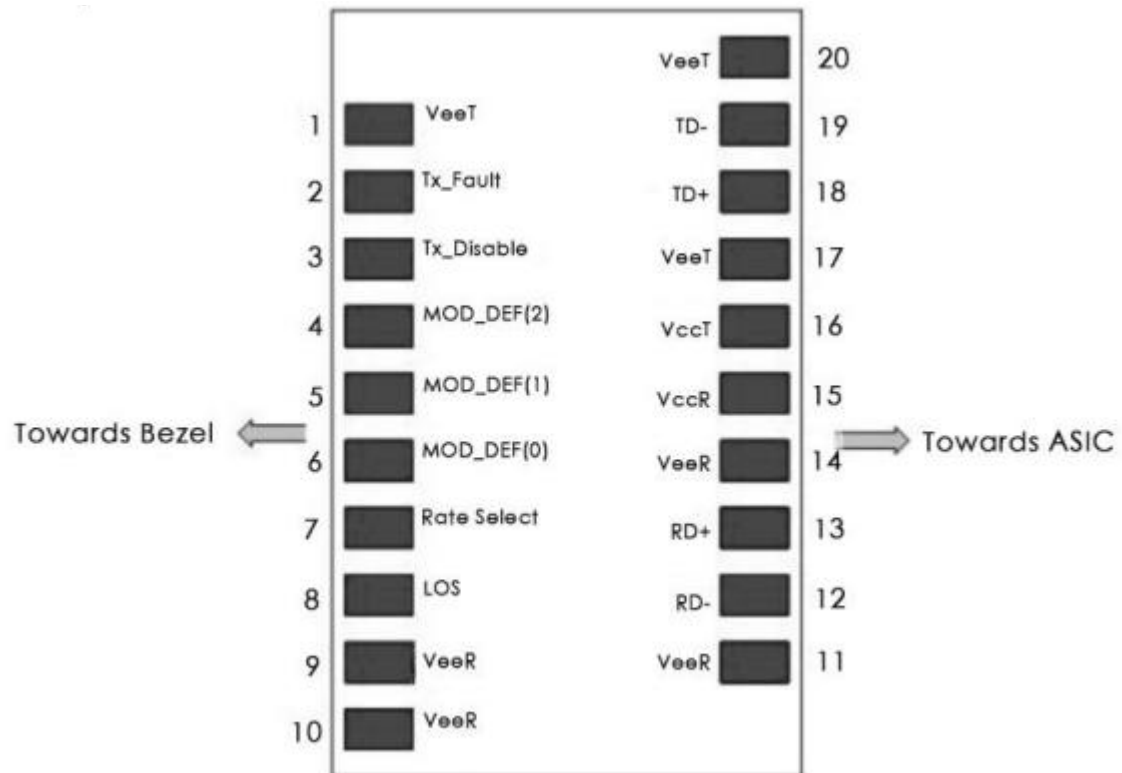


Figure1 Pin view

SFP+ Module PIN Definition

Table6-SFP+ Modulal PIN Definition				
PIN	Symbol	Name / Description	Power Sequence Order	Note
1	VeeT	Module Transmitter Ground	1st	
2	TX_Fault	Module Transmitter Fault	3rd	1
3	TX_Dis	Transmitter Disable; Turns off transmitter laser output	3rd	2
4	SDA	2-Wire Serial Interface Data Line	3rd	
5	SCL	2-Wire Serial Interface Clock	3rd	
6	MOD_ABS	Module Absent, connected to VeeT or VeeR in the module	3rd	
7	RS0	Not used	3rd	
8	RX_LOS	Receiver Loss of Signal Indication Active High	3rd	
9	RS1	Not used	3rd	
10	VeeR	Module Receiver Ground	1st	
11	VeeR	Module Receiver Ground	1st	
12	RD-	Receiver Inverted Data Output	3rd	
13	RD+	Receiver Data Output	3rd	
14	VeeR	Module Receiver Ground	1st	
15	VccR	Module Receiver 3.3 V Supply	2nd	
16	VccT	Module Receiver 3.3 V Supply	2nd	
17	VeeT	Module Transmitter Ground	1st	
18	TD+	Transmitter Non-Inverted Data Input	3rd	
19	TD-	Transmitter Inverted Data Input	3rd	
20	VeeT	Module Transmitter Ground	1st	

Notes:

[1] TX Fault is an open collector/drain output, which should be pulled up with a 4.7K – 10K Ω resistor on the host board. Pull up voltage between 2.0V and VccT, R+0.3V. When high, output indicates a laser fault of some kinds. Low indicates normal operation. In low state, the output will be pulled to < 0.8V.

[2] TX disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7 – 10 K Ω resistor. Its states are: Low (0 – 0.8V): Transmitter on (> 0.8, < 2.0V): Undefined High (2.0 – 3.465V): Transmitter Disabled Open: Transmitter Disabled.

Monitoring Specification

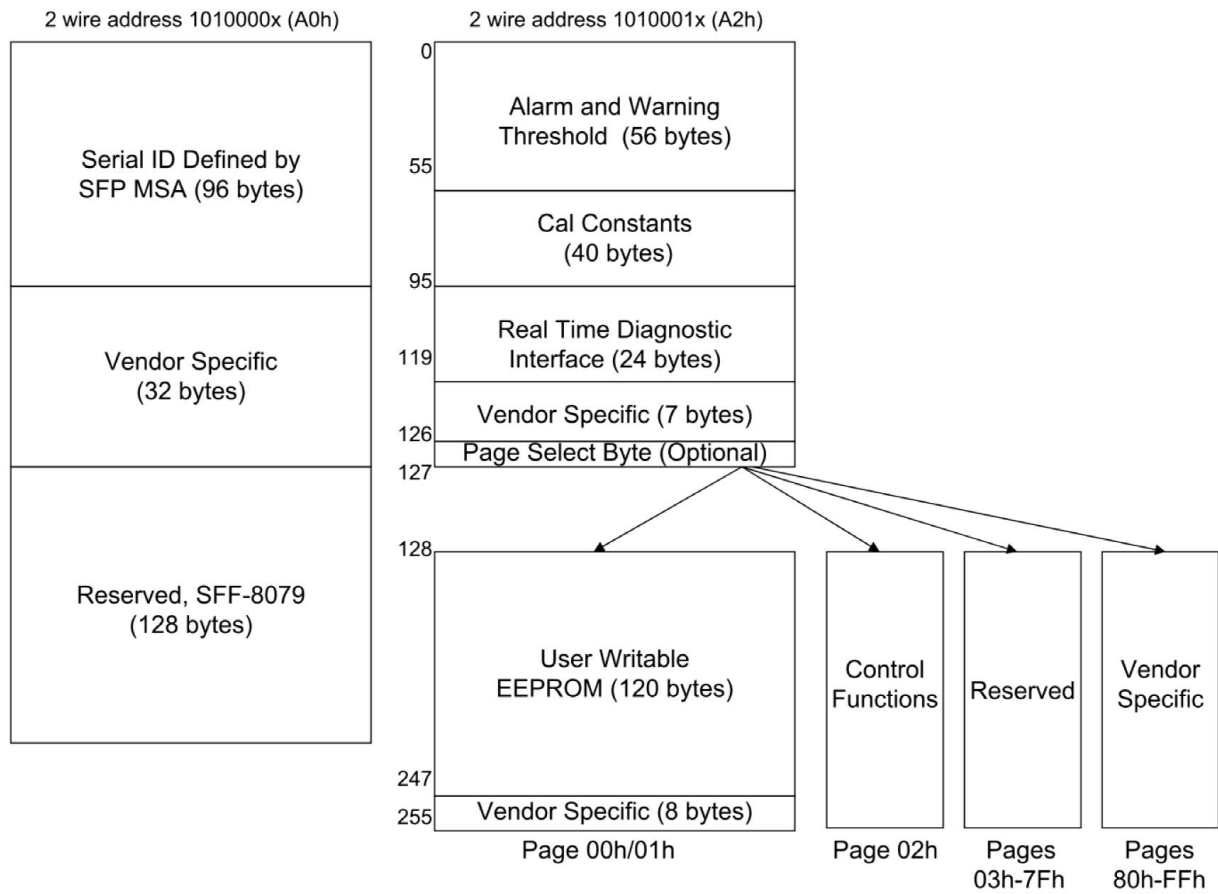


Figure2 Memory map

Further Information:

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