



2.5 Gbps 1590/1450nm SFP BIDI TRx 20km HOLS-P2542-LD-ED

FEATURES

- Supports up to 2.5Gb/s bit rates
- -20 to 75°C operating case temperature
- SFP package with single LC Receptacle connector
- 1450nm uncooled DFB laser transmitter and 1590nm PIN-TIA receiver
- Hot-pluggable capability
- Single 3.3V power supply
- Power dissipation<1W
- Up to 20km transmission distance over SMF
- Low EMI and excellent ESD protection
- Built- in Digital Diagnostic monitoring (DDM) function
- Class I laser product
- RoHS-6 compliance

APPLICATIONS

- CPRI/OBSAI LINE at 1.2288Gbps, 2.4576Gbps
- Digital repeater and Base station

STANDARDS

- Complies with SFP Multi-Source Agreement (MSA) SFF-8074i
- Complies with SFF 8472 V9.5
- Complies with FCC 47 CFR Part 15, Class B
- Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007

ABSOLUTE MAXIMUM RATING

Parameter	Symbol	Min.	Max.	Unit	Notes
Storage Ambient Temperature	T_{STG}	-40	85	°C	
Operating Case Temperature	T_c	-20	75	°C	
Operating Humidity	OH	5	85	%	
Power Supply Voltage	V_{CC}	-0.5	3.6	V	

RECOMMENDED OPERATING CONDITION

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Operating Case Temperature	T_c	-20		+75	°C	
Power Supply Voltage	V_{CC}	3.13	3.3	3.47	V	
Power Supply Current	I_{CC}			300	mA	
Date Rate			2.5		Gbps	
Data Rate Drift		-100		+100	PPM	

TRANSMITTER OPTICAL CHARACTERISTICS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Centre Wavelength	λ_c	1582.5	1590	1597.5	nm	
Spectral Width (-20dB)				1	nm	
Average Output Power		-2		+3	dBm	Launched into SMF Fiber
Average Power of OFF Transmitter				-30	dBm	
Extinction Ratio	ER	6			dB	
Side Mode Suppression Ratio	SMSR	30			dB	

TRANSMITTER ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Data Input Differential Swing		200		200	mV	
Input Differential Impedance		85	100	115	Ω	
TX Disable	Disable	2		VCC	V	
	Enable	0		0.8	V	
TX Fault	Normal	0		0.4	V	
	Fault	2.4		VCC	V	

RECEIVER OPTICAL CHARACTERISTICS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Operating Wavelength	λ_c	1440		1460	nm	
Sensitivity	SEN			-21	dBm	PRBS2 ⁷ -1@2.5Gbps BER $\leq 1 \times 10^{-12}$
Saturation Optical Power	SAT	2			dBm	
LOS De-Assert	LOS _D			-22	dBm	
LOS Assert	LOS _A	-35			dBm	
LOS Hysteresis	HYS	0.5		5	dB	

RECEIVER ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Differential data output swing	V _{out}	350		850	mV	
Rx_LOS Output Voltage - High	High	2.4		V _{cc}	V	
Rx_LOS Output Voltage - Low	Low	0		0.4	V	
Output Rise Time, 20%~80%	TR			60	ps	
Output Fall Time, 20%~80%	TF			60	ps	

PIN DESCRIPTION			
PIN	Name	Description	Notes
1	V _{EE} T	Transmitter Ground	
2	TX_Fault	Transmitter Fault Indication	Low: normal; High: abnormal
3	TX_Disable	Transmitter Disable	Low: transmitter on; High: transmitter off
4	SDA	SDA	The data line of two wire serial interface
5	SCL	SCL	The clock line of two wire serial interface
6	MOD_ABS	Module Absent	Connected to V _{EE} T or V _{EE} R in the module
7	Rate	Not Connected	
8	RX_LOS	Loss of Signal	Low: signal detected; High: loss of signal
9	V _{EE} R	Receiver Ground	
10	V _{EE} R	Receiver Ground	
11	V _{EE} R	Receiver Ground	
12	RD-	Inv. Received Data Out	AC-coupled, CML
13	RD+	Received Data Out	AC-coupled, CML
14	V _{EE} R	Receiver Ground	
15	V _{CC} R	Receiver Power	
16	V _{CC} T	Transmitter Power	
17	V _{EE} T	Transmitter Ground	
18	TD+	Transmit Data In	AC-coupled, CML
19	TD-	Inv. Transmit Data In	AC-coupled, CML
20	V _{EE} T	Transmitter Ground	

PIN OUT DRAWING (TOP VIEW)

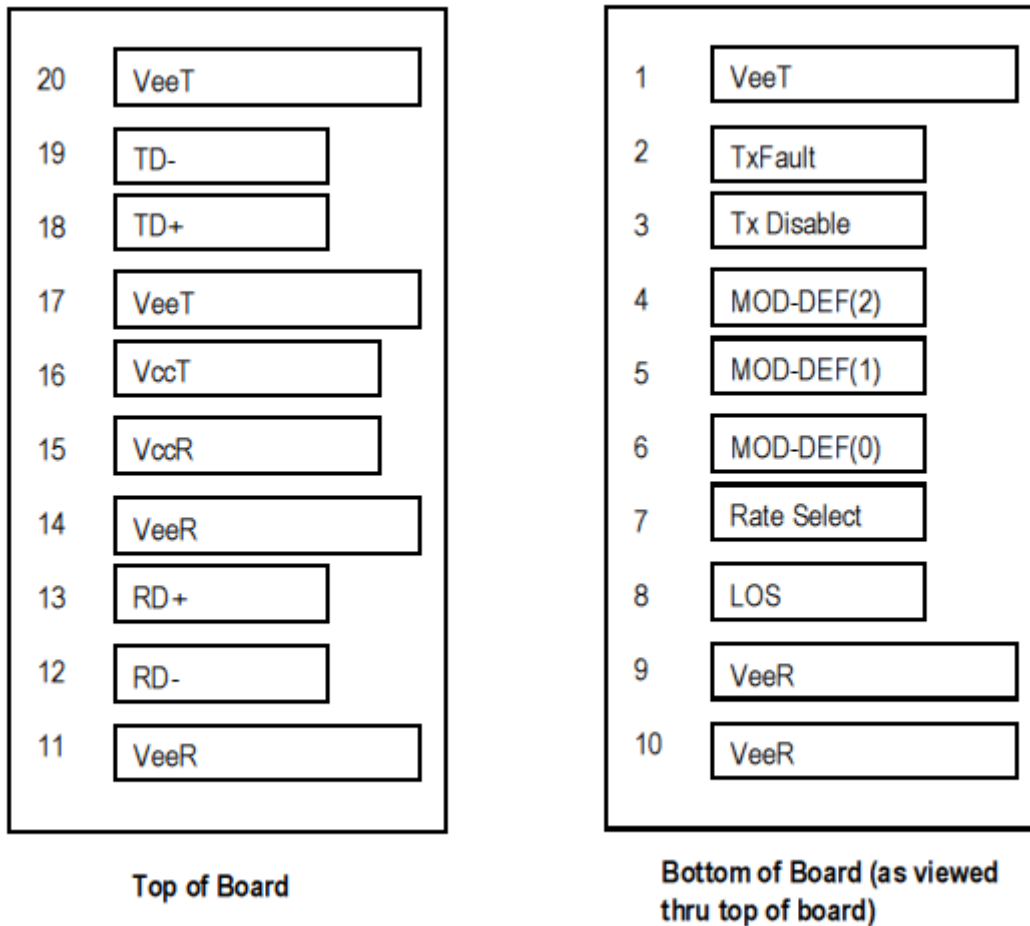


Figure 1 Pin Out Drawing (Top view)

TYPICAL INTERFACE CIRCUIT

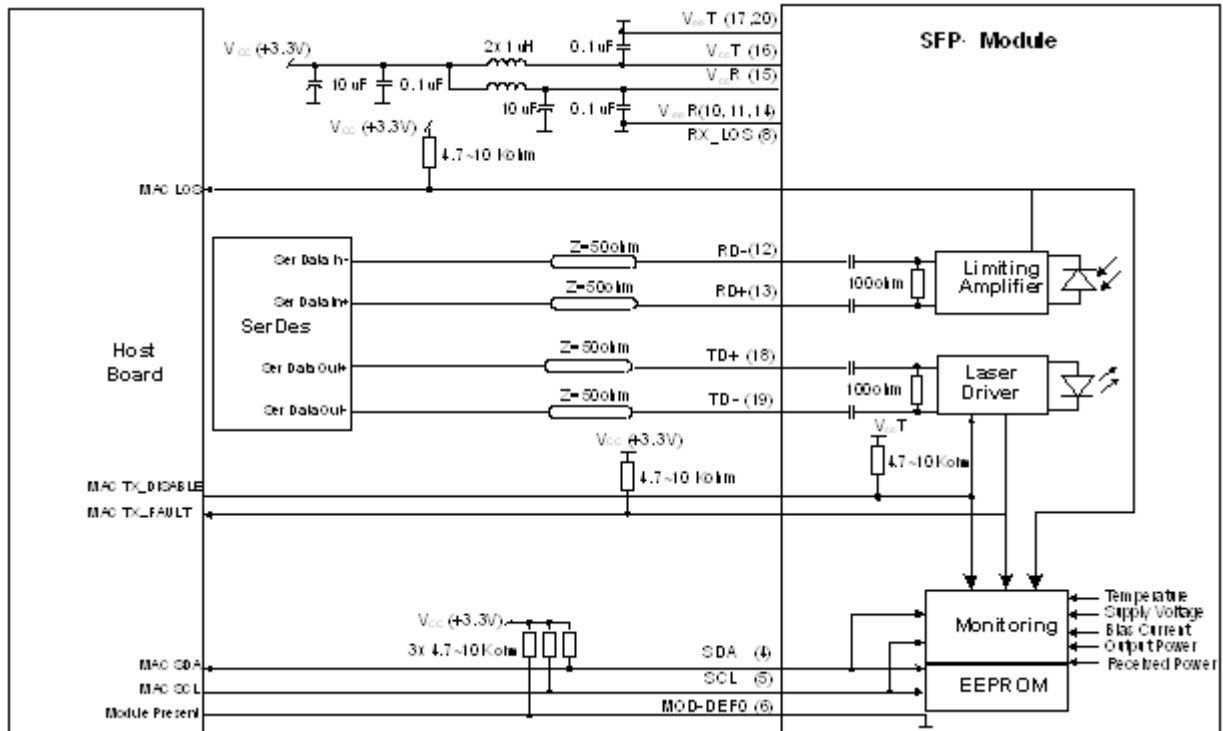


Figure 2 Typical Interface Circuit

PACKAGE OUTLINE

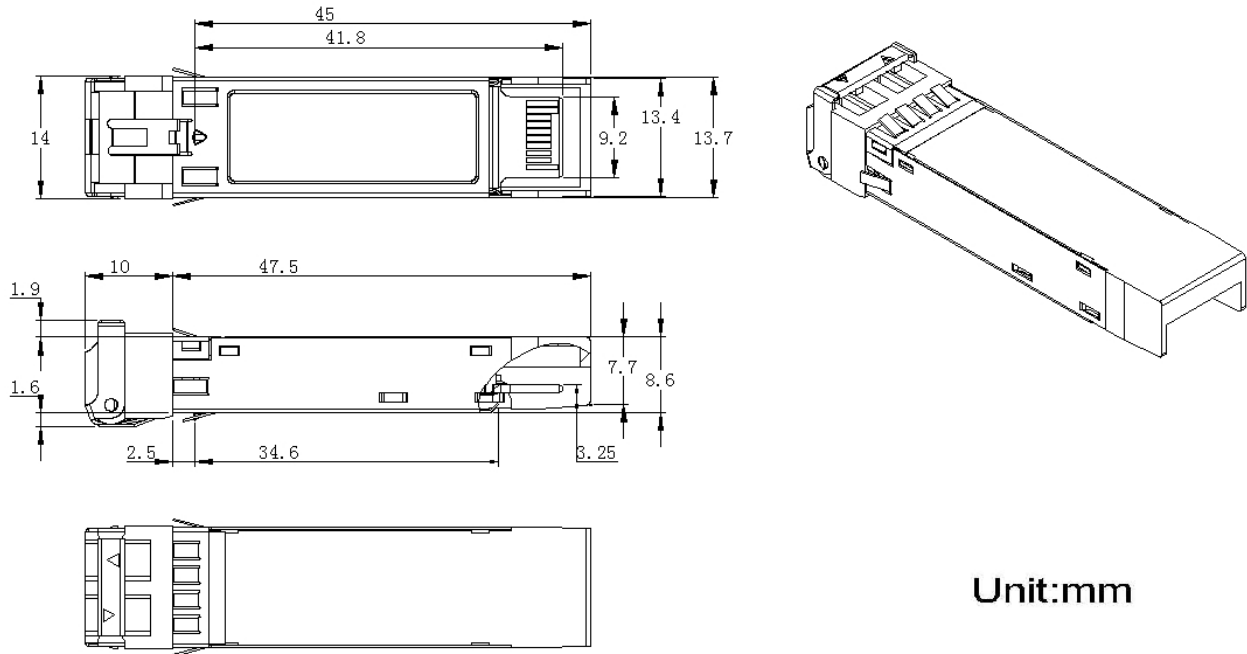


Figure 3 Package Outline

EEPROM INFORMATION

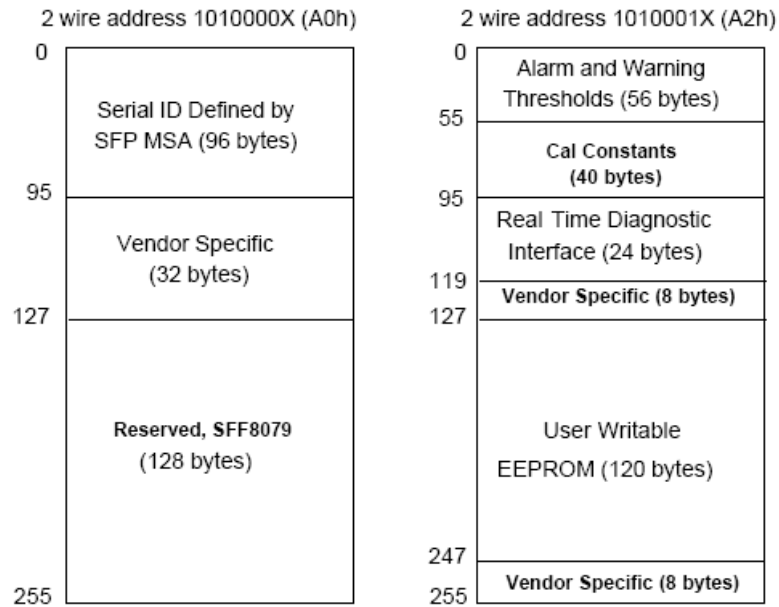


Figure 4 EEPROM Memory Map Specific Data Field Descriptions

DIGITAL DIAGNOSTIC MONITORING INTERFACE

Five transceiver parameter values are monitored. The following table defines the monitored parameter's accuracy.

Parameter	Range	Accuracy	Calibration
Temperature	-20 to 75°C	±3°C	Internal
Voltage	2.97 to 3.63V	±3%	Internal
Bias Current	0 to 90mA	±10%	Internal
TX Power	-4 to +3dBm	±2dB	Internal
RX Power monitor	-23 to +3dBm	±2dB	Internal



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WARNINGS

- Handling Precautions: This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.
- Laser Safety: Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.