

25Gb/s 10km SFP28 Transceiver

Hot Pluggable, Duplex LC, +3.3V, 1310nm DFB, Single mode

PSFP10/28-2321SF

Features

- ◆ UP to 25.78Gb/s bit rates
- ◆ Hot-Pluggable SFP28 footprint
- ◆ Duplex LC connector
- ◆ 1310nm DFB laser transmitter
- ◆ Up to 10km on 9/125μm SMF[®] 2-wire interface for management specifications compliant with SFF 8472 digital diagnostic monitoring interface for optical transceivers
- ◆ Power Supply :+3.3V
- ◆ Operating case temperature Range: 0~ 70°C
- ◆ RoHS compliant

Applications

- ◆ 25 Gigabit Ethernet Switch
- ◆ Switches, Routers and HBAs
- ◆ Data Center



Description

PSFP10/28-2321SF transceivers are designed for use in Ethernet links up to 25.78 Gb/s data rate and up to 10 km link length. They are compliant SFF-8472 , and compatible with SFF-8432 and applicable portions of SFF-8431. The product is RoHS compliant and lead-free per Directive 2011/96/EU.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Storage Temperature	TS	-40		+85	°C	
Case Operating Temperature	Tc	0		+70	°C	
Maximum Supply Voltage	Vcc	0		3.6	V	
Relative Humidity(Non-condensing)	RH	0		85	%	

Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Supply Voltage	Vcc	3.135		3.465	V	
Supply Current	Icc			360	mA	
Power Consumption	P			1.2	W	
Data Rate	R	-	25.78		Gb/s	
Fiber Length	L			10	Km	
Transmitter Section:						
Input differential impedance	Rin		100		Ω	1
Differential input voltage swing	Vin,pp	180		700	mV	2
Transmit Disable Voltage	VD	2		Vcc	V	3
Transmit Enable Voltage	VEN	Vee		Vee+0.8	V	
Receiver Section:						
Single Ended Output Voltage Tolerance	V	-0.3		4	V	
Rx Output Diff Voltage	Vo	185		800	mV	
LOS Fault	VLOS fault	2		VccHOST	V	4
LOS Normal	VLOS norm	Vee		Vee+0.8	V	4

Notes:

1. Connected directly to TX data input pins. AC coupling from pins into laser driver IC
2. Per SFF-8431 Rev 3.0
3. Into 100 ohms differential termination
4. LOS is an open collector output. Should be pulled up with 4.7k – 10kΩ on the host board. Normal operation is logic 0; loss of signal is logic 1. Maximum pull-up voltage is 5.5V

Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Transmitter Section:						
Center Wavelength	λ_t	1295		1325	nm	
Spectral width(-20dB)	$\Delta\lambda$			1	nm	
Average Optical Power	P_{avg}	-7.0		+2.0	dBm	
Laser Off Power	P_{off}			-30	dBm	
Side Mode Suppression Ratio		30				
Extinction Ratio	ER	3.5			dB	
Optical Return Loss Tolerance				-12	dB	
Receiver Section:						
Center Wavelength	λ_r	1260		1370	nm	
Receiver Sensitivity	S_{en}			-12	dBm	1
Los Assert	LOSA	-30		-	dBm	
Los Dessert	LOSD			-14	dBm	
Los Hysteresis	LOSH	0.5			dB	
Overload		2			dBm	

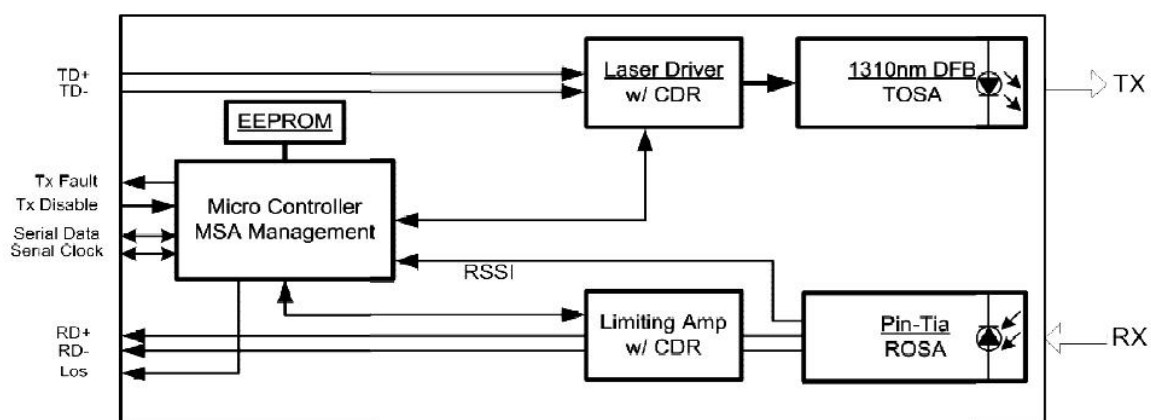
Note:

1. Measured with a PRBS 2³¹-1 test pattern, @25.78Gb/s, BER<5E-5

Digital Diagnostic Specifications

Parameter	Symbol	Units	Min	Max	Accuracy
Transceiver Temperature	Temp	°C	0	+70	±5°C
Transceiver Supply Voltage	Voltage	V	3.135	3.465	±3%
Transmitter Bias Current	Bias	mA	0	35	±10%
Transmitter Output Power	Tx-Power	dBm	-7	+2	±3dB
Receiver Average Optical Input Power	Rx-Power	dBm	-12	-3	±3dB

Transceiver Block Diagram



Pin Function Definitions

PIN #	Name	Function	Notes
1	VeeT	Module transmitter ground	1
2	Fault	Module transmitter Fault	2
3	Disable	Transmitter Disable; Turns off transmitter laser output	3
4	SDL	2 wire serial interface data input/output (SDA)	4
5	SCL	2 wire serial interface clock input (SCL)	4
6	MOD-ABS	Module Absent, connect to VeeR or VeeT in the module	2
7	RS0	Rate select0: module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.	
8	LOS	Receiver Loss of Signal Indication	
9	RS1	Rate select1: module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.	
10	VeeR	Module receiver ground	1
11	VeeR	Module receiver ground	1
12	RD-	Receiver inverted data out put	
13	RD+	Receiver non-inverted data out put	
14	VeeR	Module receiver ground	1
15	VccR	Module receiver 3.3V supply	
16	VccT	Module transmitter 3.3V supply	
17	VeeT	Module transmitter ground	1
18	TD+	Transmitter non-inverted data out put	
19	TD-	Transmitter inverted data out put	
20	VeeT	Module transmitter ground	1

Note:

1. The module ground pins shall be isolated from the module case.
2. This pin is an open collector/drain output pin and shall be pulled up with 4.7K-10Kohms to Host_Vcc on the host board.

- | | | | |
|----|------|------------|----|
| 11 | VEER | VEER | 10 |
| 12 | RD- | RX_LOS | 9 |
| 13 | RD+ | RS0 | 8 |
| 14 | VEER | MOD_ABS | 7 |
| 15 | VCCR | SCL | 6 |
| 16 | VcCT | SDA | 5 |
| 17 | VEET | TX_DISABLE | 4 |
| 18 | TD+ | TX_FAULT | 3 |
| 19 | TD- | VEET | 2 |
| 20 | VEET | | 1 |

The schematic diagram illustrates the SFP+ PCB_TOP interface. It shows a differential RX DATA+/- pair connected to a Host Board Receiver and a differential TX DATA+/- pair connected to a Host Board Driver. The circuit includes 100ohm differential terminations, 0.1uF capacitors, 22uF capacitors, and 4.7uH inductors. Power planes are indicated by GND and +3.3V Host signals.



Mechanical Dimensions

