

10/25 Gb/s SFP28 1310 nm 10km DDM Transceiver

SFP28 Series



- SFP28 MSA package with duplex LC connector
- Supports 10.31 Gbps and 25.78 Gbps data links with CDR Auto bypass
- Up to 10 km transmission on SMF
- +3.3 V power supply
- Low DC power consumption
- Compliant with SFF-8472 & IEEE 802.3cc
- Fully RoHS Compliant

Ascent's SFPP28 10/25G LR transceiver provides 10/25GBASE-LR throughput up to 10km over single mode fiber (SMF) using a wavelength of 1310nm via an LC duplex connector. It provides connectivity option for 25G Ethernet, 10G Ethernet and data center.

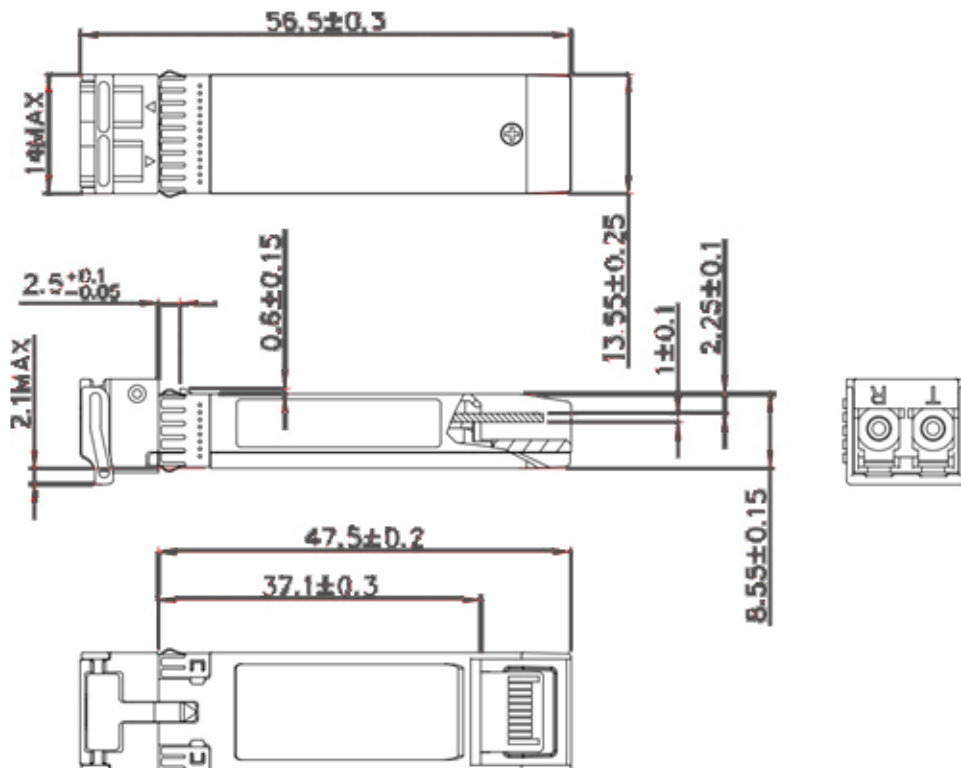
It is fully compliant with the SFP28 MSA, SFF-8472, SFF-8402, SFF-8432 and applicable portions of SFF-8431 standard. An integrated fiber optic transceiver that provides a high-speed serial link at signaling rates up to 25.78 Gb/s. The module complies with SFF-8431 and SFF-8472 standards. It is suitable for 10/25G Ethernet and CPRI 10 applications and has a transmission distance of up to 10 km on single-mode fibers.

The transceiver features a metal enclosure for lower EMI. It utilizes a 2-wire interface that is compliant with the serial communication protocol as defined in the SFP+ MSA. It also provides a unique integrated digital diagnostic monitoring interface, allowing for real-time access to device operating parameters. This module is also hot-pluggable.

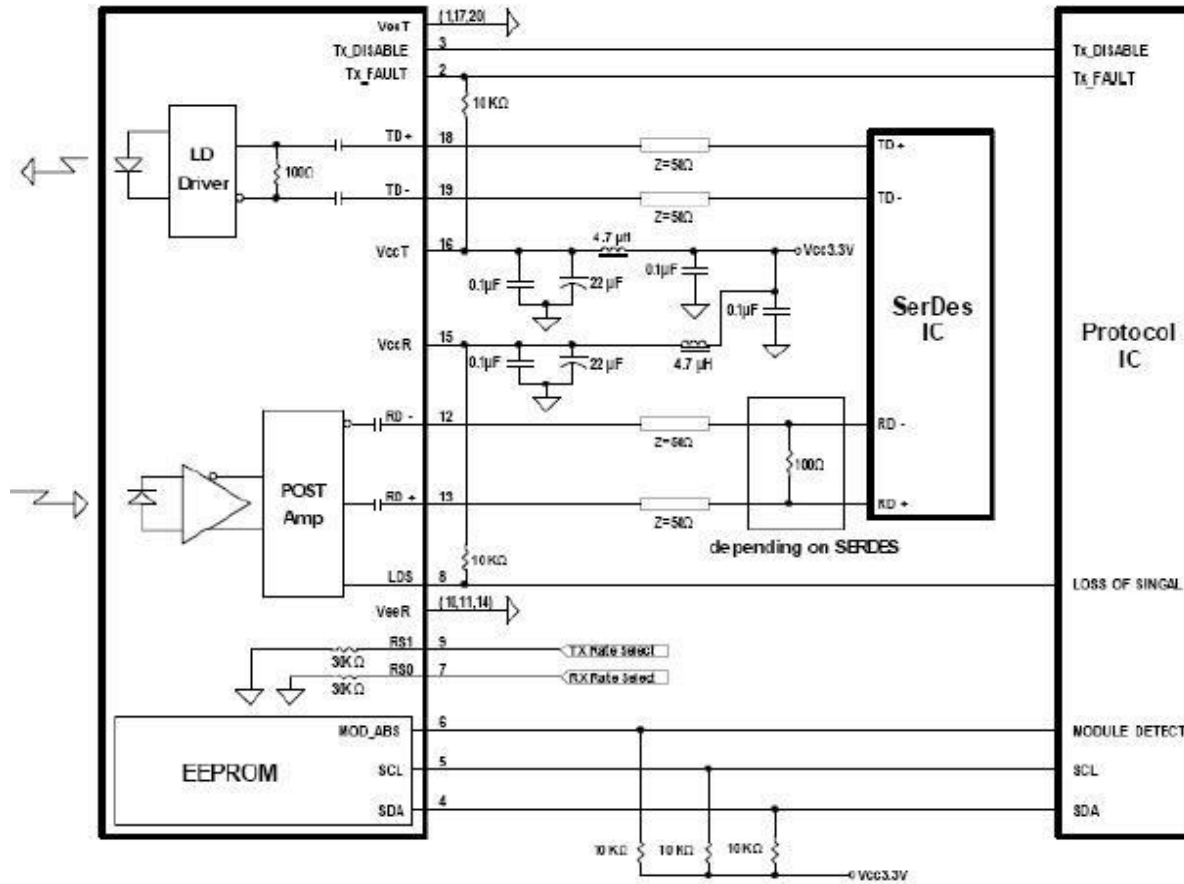
Key Features

- Support 10Gbps and 25Gbps data links
- Operating data rate up to 25.78Gbps
- SFP28 MSA package with duplex LC connector
- Rate Adaptation
- Up to 10km transmission distance
- High sensitivity Pin photodiode and TIA
- Hot pluggable 20pin connector
- Low power consumption
- Single +3.3V $\pm 5\%$ power supply
- Compliant with SFF-8472 & IEEE 802.3cc
- Fully RoHS Compliant
- Case operating temperature range:
Commercial: 0 °C to +70 °C
Industrial: -40 °C to +85 °C

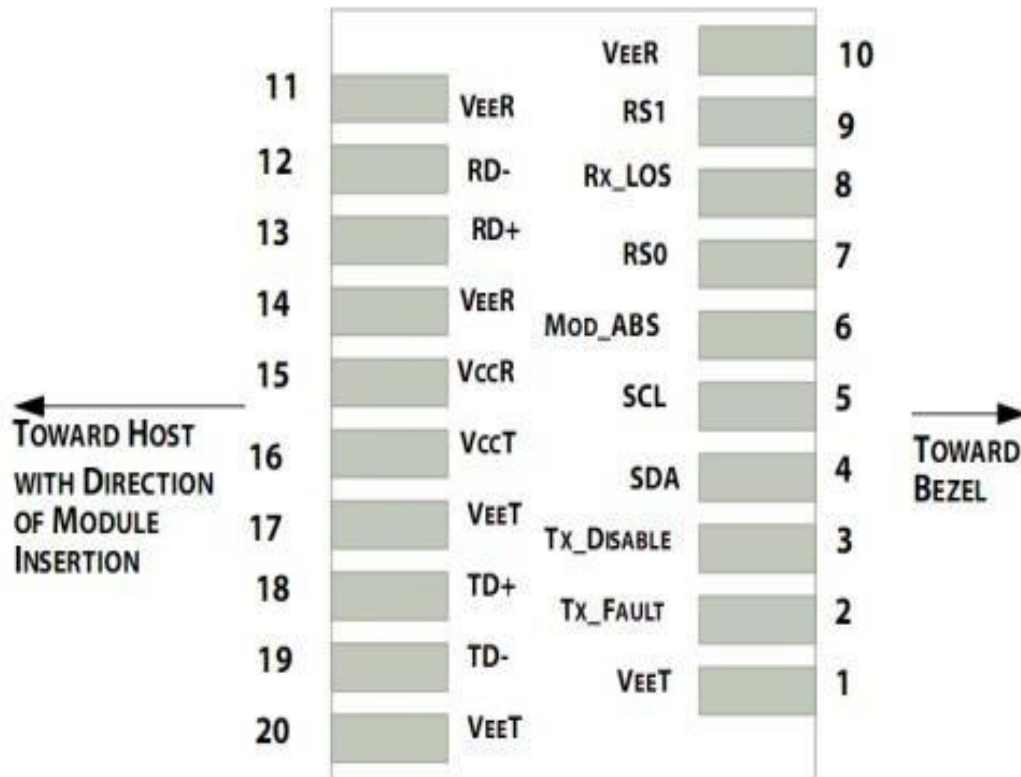
Mechanical Dimension



Recommended Interface Circuit



Pin Assignment



Pin	Logic	Symbol	Name/Description
1		VeeT	Transmitter Ground
2	LVTTTL-O	Tx_Fault	Transmitter Fault - High indicates a fault condition
3	LVTTTL-I	Tx_Dis	Transmitter Disable - High or open disables the transmitter
4	LVTTTL-I/O	SDA	2-wire Serial Interface Data Line (MOD-DEF2)
5	LVTTTL-I	SCL	2-wire Serial Interface Clock (MOD-DEF1)
6		MOD_DEF0	Module Absent, connected to VeeT or VeeR in the module
7	LVTTTL-I	RS0	Rate Select 0 - Not used, Presents high input impedance
8	LVTTTL-O	RX_LOS	Receiver Loss of Signal (LVTTTL-O). Logic 0 indicates normal operation
9	LVTTTL-I	RS1	Rate Select 1 - Not used, Presents high input impedance
10		VeeR	Module Receiver Ground
11		VeeR	Module Receiver Ground
12	CML-O	RD-	Receiver Inverted Data Output
13	CML-O	RD+	Receiver Data Output
14		VeeR	Module Receiver Ground
15		VccR	Module Receiver 3.3V Supply
16		VccT	Module Receiver 3.3V Supply
17		VeeT	Module Transmitter Ground
18	CML-I	TD+	Transmitter Non-Inverted DATA in. AC Coupled.
19	CML-I	TD-	Transmitter Inverted DATA in. AC Coupled.
20		VeeT	Transmitter Ground

Specifications

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Storage Temperature	T _s	-40		85	°C
Relative Humidity	RH	0		85	%

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Case Temperature	T _c	0		70	°C	1
		-40		85		2
Power Supply Voltage	V _{CC}	3.15	3.3	3.45	V	
Bit Rate	BR		10.3125 & 25.78125		Gbps	
Bit Error Ratio	BER			5*10 ⁻⁵		
Max Supported Link Length	L			10	km	

Note1, 2: See order information

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Center Wavelength	λ	1290		1330	nm	
Side-mode Suppression Ratio	SMSR	30			nm	
Average Optical Power	P _{avg}	-7		2.0	dBm	
Optical Modulation Amplitude	TxOMA	-4			dBm	
Transmitter and Dispersion Penalty	TDP			2.7	dB	
Average Launch Power of OFF Transmitter	P _{off}			-30	dBm	
Extinction Ratio	ER	3.5			dB	
Optical Return Loss Tolerance				11	dB	
Transmitter Reflectance				-12	dB	
Receiver						
Center Wavelength	λ	1260		1360	nm	
Damage Threshold		3			dBm	
Receive Power Overload				2	dBm	
Receiver Reflectance				-26	dB	
Receiver Sensitivity	S			-12	dBm	1
LOS Assert	LOS _A	-30			dBm	
LOS De-assert	LOS _D			-17	dBm	
LOS Hysteresis		0.5			dB	

Note:

1. Measured at 25.78Gb/s, ER>3.5dBm, PRBS 2³¹ -1 and BER better than or equal to 5E-5.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Consumption				1.2	W	
Supply Current	I _{CC}			350	mA	

Electric Ports Definition

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Input Differential Impedance	R _{IN}		100		Ω	
Single-ended Data Input Swing	V _{IN}	90		450	mVp-p	
Transmit Disable Voltage	V _{DIS}	2			V _{CCHOST}	
Transmit Enable Voltage	V _{EN}	V _{EE}			V _{EE} +0.8	
Transmit Fault Assert Voltage	V _{FA}	2			V _{CCHOST}	
Transmit Fault De-Assert Voltage	V _{FDA}	V _{EE}			V _{EE} +0.4	
Receiver						
Single-ended Data Output Swing	V _{OD}	200		450	mVp-p	
LOS Fault	V _{LOSFT}	2			V _{CCHOST}	V
LOS Normal	V _{LOSNR}	V _{EE}			V _{EE} +0.4	V

Digital Diagnostics

Parameter	Accuracy	Unit
Internally Measured Transceiver Temperature	+/-3	°C
Internally Measured Transceiver Supply Voltage	+/-3	%
Measured Tx bias Current	+/-10	%
Measured Tx Output Power	+/-3	dB
Measured Rx Received Average Optical Power	+/-3	dB

Ordering Information

Product Name	Product Description
SFP28-1025-31-10	SFP28 Plug-in, 10/25Gbps, 10km, TX=1310/RX, on two single mode fibres, LC/PC
S28-1025-31-10A	SFP28 Plug-in, 10/25Gbps, 10km, TX=1310/RX, on two single mode fibres, LC/PC, Industrial Temperature
JS28-1025-31-10	SFP28 Plug-in, 10/25Gbps, 10km, TX=1310/RX, on two single mode fibres, LC/PC, Compatible with Juniper
JS28-1025-31-10A	SFP28 Plug-in, 10/25Gbps, 10km, TX=1310/RX, on two single mode fibres, LC/PC, Compatible with Juniper, Industrial Temperature

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