25 Gb/s 1310 nm Single-Mode SFP28 Transceiver

SFP28 Series

- Operating data rate up to 25.78Gbps
- Rate Adaptation
- Up to 10km transmission distance
- Low power consumption
- Single +3.3V ±5% power supply
- Compliant with SFF-8472 & IEEE 802.3cc
- Fully RoHS Compliant

Ascent's SFP28 transceivers are designed for use in 25G Gigabit Ethernet links with distances up to 10 km over single-mode fiber. These transceivers include a high sensitivity Pin photo detector diode and DFB transmitter. Digital diagnostic functions are available via a 2-wire interface.

Ascent's SFP28 transceivers provide a unique enhanced digital diagnostic monitoring interface which allows real-time access to device operating parameters such as transceiver temperature, laser bias current, transmitted optical power, received optical power, and transceiver supply voltage. It also defines a sophisticated system of alarm and warning flags which alerts end users when particular operating parameters are outside of a factory set normal range.

Ascent's 25G SFP28 transceivers are compliant with SFF 8431 and SFF 8472 standards, and offer a convenient solution for high-speed storage area networks, OBSAI and CPRI 10 applications, and LTE optical repeater applications.

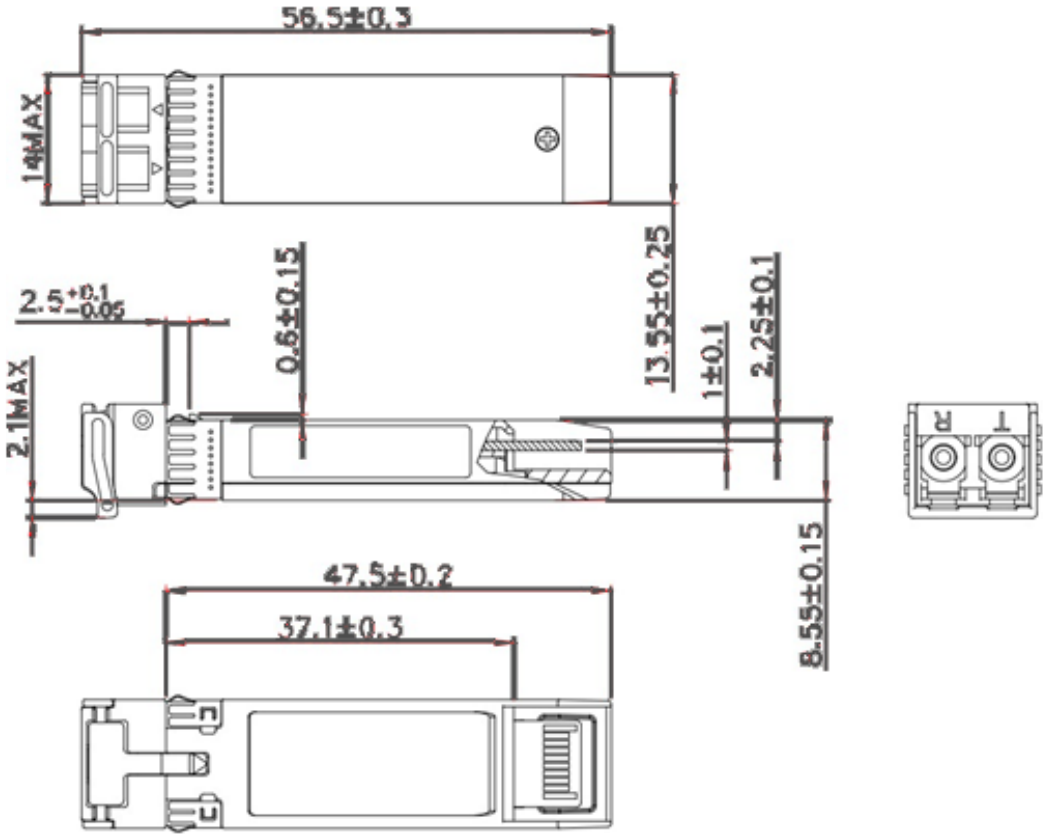
Key Features

- 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 ±5% power supply
- Compliant with SFF-8472 & IEEE 802.3cc
- Fully RoHS Compliant
- Case operating temperature range:

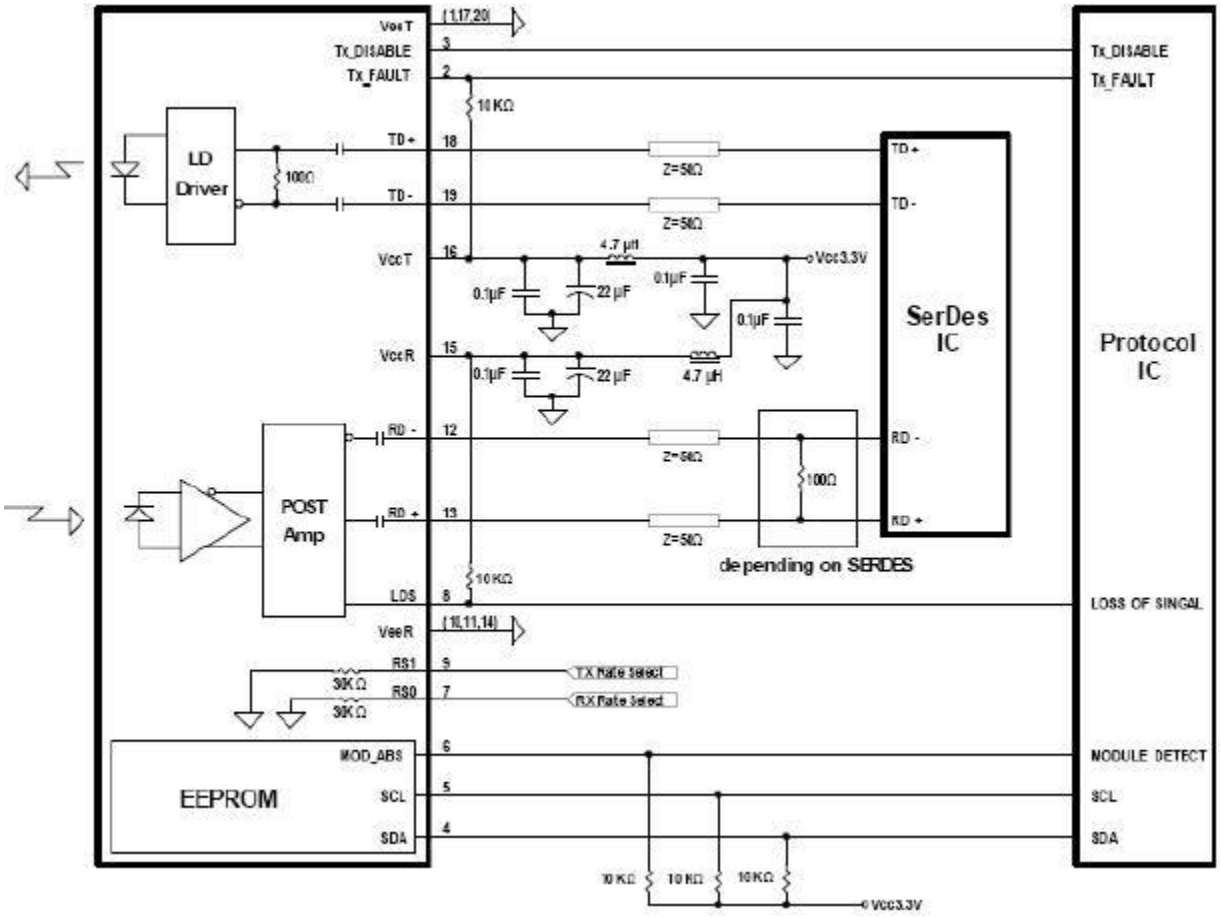
  Commercial: 0 °C to +70 °C

  Industrial: -40 °C to +85 °C

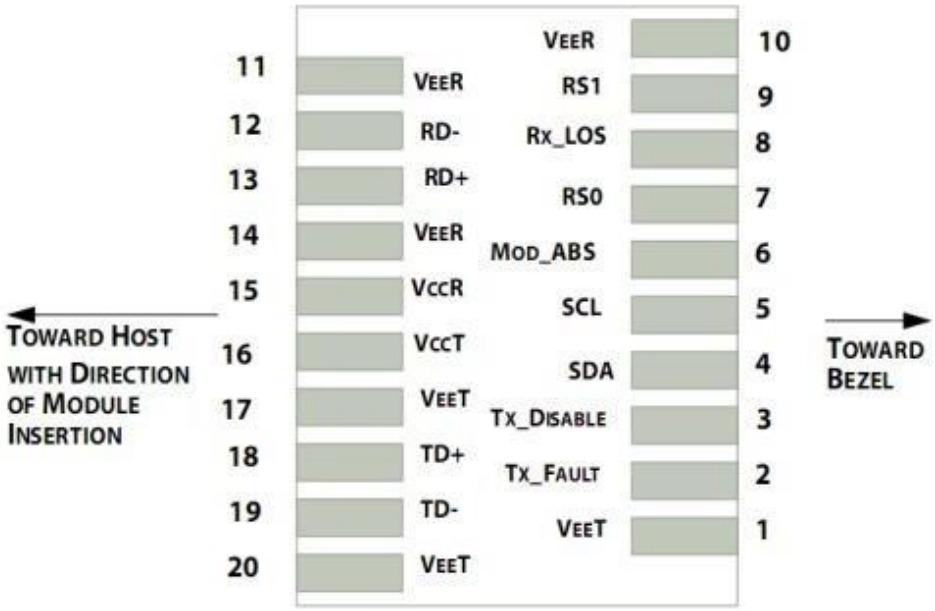
Mechanical Dimension



Recommended Interface Circuit



Pin Assignment



Pin	Logic	Symbol	Name/Description
1		VeeT	Transmitter Ground
2	LVTTL-O	Tx_Fault	Transmitter Fault - High indicates a fault condition
3	LVTTL-I	Tx_Dis	Transmitter Disable – High or open disables the transmitter
4	LVTTL-I/O	SDA	2-wire Serial Interface Data Line (MOD-DEF2)
5	LVTTL-I	SCL	2-wire Serial Interface Clock (MOD-DEF1)
6		MOD_DEF0	Module Absent, connected to VeeT or VeeR in the module
7	LVTTL-I	RS0	Rate Select 0 – Not used, Presents high input impedance
8	LVTTL-O	RX_LOS	Receiver Loss of Signal (LVTTL-O). Logic 0 indicates normal operation
9	LVTTL-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		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	Pavg	-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 2^{31} -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	Icc			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
SFP28-25LP-31-10	SFP28 plug-in, 25 Gbps, 10 km, TX=1310/RX, on two single mode fibres, LC/PC
S28-25LP-31-10A	SFP28 plug-in, 25 Gbps, 10 km, TX=1310/RX, on two single mode fibres, LC/PC, Industrial Temperature

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Specifications and product availability are subject to change without notice.

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