

25 Gb/s 1310 nm Single-Mode SFP28 Transceiver

SFP+ Series

- Operating data rate up to 25.78Gbps
- Rate Adaptation
- Up to 40km transmission on SMF
- High sensitivity APD photodiode and TIA
- Single +3.3V \pm 5% power supply
- Compliant with SFF-8472 & IEEE 802.3cc
- Low power consumption



Ascent's SFP28 transceivers are designed for use in 25G Gigabit Ethernet links with distances up to 40 km over single-mode fiber. These transceivers include a high sensitivity APD photo detector diode and DFB transmitter. Digital diagnostic functions are available via a 2-wire interface.

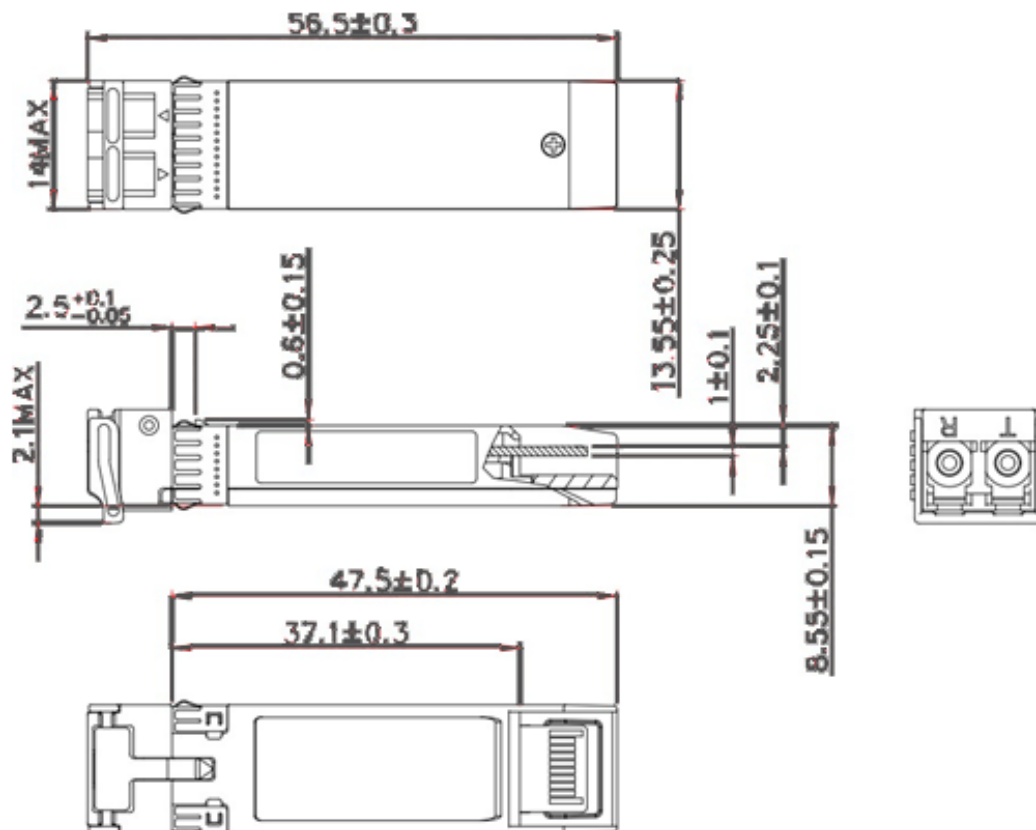
Ascent's SFP28 transceivers provide a unique enhanced digital diagnostic monitoring interface which allows real-time access to device operating parameters such as transceiver temperature, laser bias current, transmitted optical power, received optical power, and transceiver supply voltage. It also defines 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.

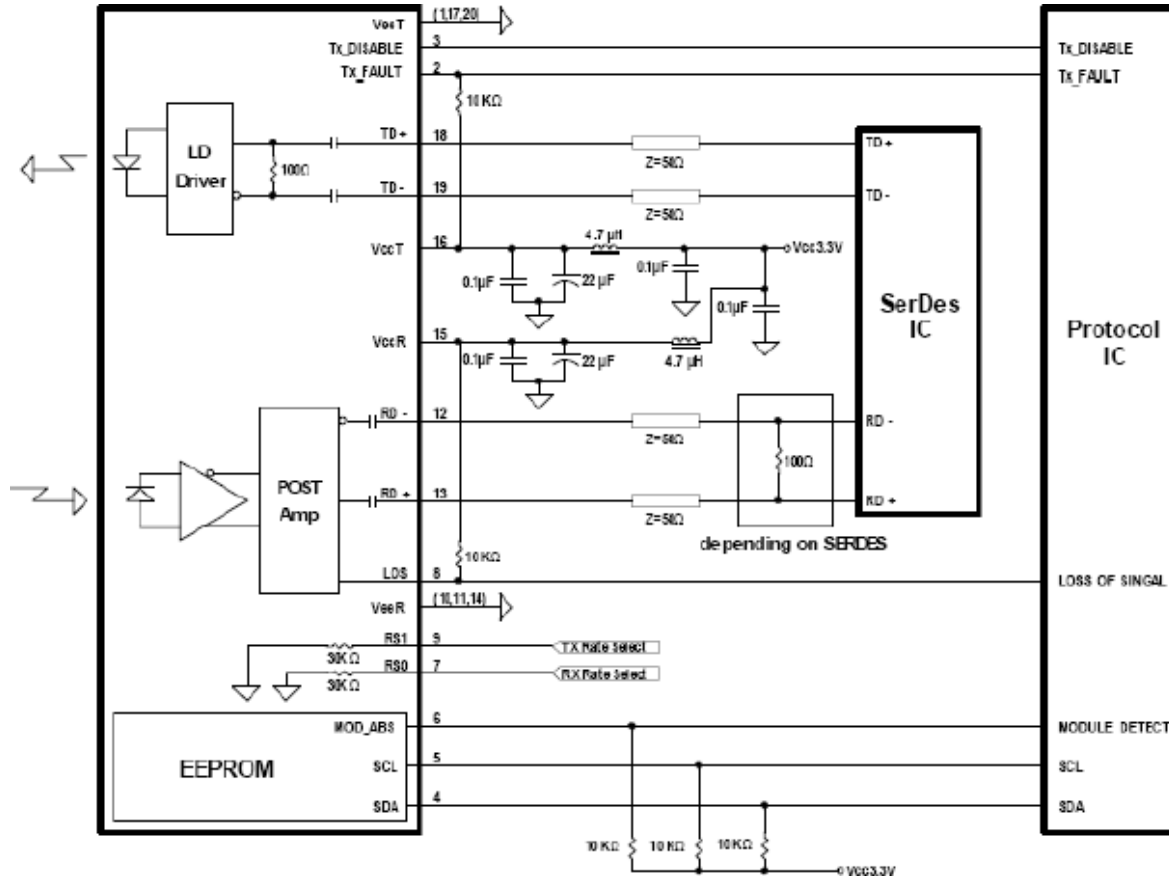
Key Features

- Operating data rate up to 25.78Gbps
- Rate Adaptation
- Up to 40km transmission distance
- High sensitivity APD photodiode and TIA
- LC single connector
- Hot pluggable 20pin connector
- Low power consumption
- Single +3.3V $\pm 5\%$ power supply
- Compliant with SFF-8472 & IEEE 802.3cc
- Fully RoHS Compliant
- Operating Temperature Range:
Commercial: 0°C to +70°C
Industrial: -40°C to +85°C

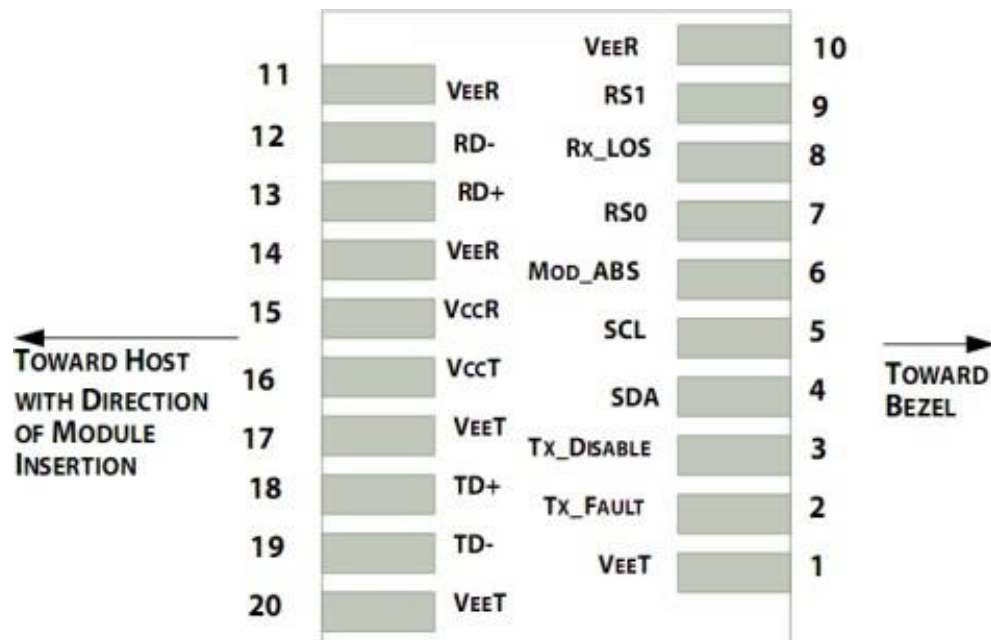
Mechanical Dimension



Recommended Interface Circuit



Pin Assignment



Pin	Symbol	Name	Description
1,17,20	VeeT	Transmitter Ground	Connected to signal ground on the host board
2	Tx Fault	Transmitter Fault Out (OC)	Module transmitter fault output
3	Tx Disable	Transmitter Disable In (LVTTL)	Module transmitter disable control
4	SDA	Module Definition Identifiers	Serial ID with SFF 8472 Diagnostics
5	SCL		Module Definition pins should be pulled up to Host Vcc with 10 kΩ resistors
6	MOD_ABS		
7	RS0	Receiver Rate Select (LVTTL) Transmitter Rate Select (LVTTL)	Rate select 0(Rx):Low=CDR Bypass ; High=CDR Select Rate select
9	RS1	Rate Select (LVTTL)	1(Tx):Low=CDR Bypass ; High=CDR Select
8	LOS	Loss of Signal Out (OC)	Receiver loss of signal
10,11,14	VeeR	Receiver Signal Ground	Connected to signal ground on the host board
12	RD	Receiver Negative DATA Out (CML)	Receiver inverted data output, internally AC coupled and terminated
13	RD+	Receiver Positive DATA Out (CML)	Receiver non-inverted data output, internally AC coupled and terminated
15	VccR	Receiver Power Supply	Receiver Power 3.3V Supply
16	VccT	Transmitter Power Supply	Transmitter Power 3.3V Supply
18	TD+	Transmitter Positive DATA In (CML)	Transmitter non-inverted data input, internally AC coupled and terminated
19	TD-	Transmitter Negative DATA In (CML)	Transmitter inverted data Input, internally AC coupled and terminated

Specifications

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Storage Temperature	T _s	-40		85	°C
Relative Humidity	RH	5		95	%

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}	3.14	3.30	3.46	V	
Bit Rate	BR		25.78125		Gbps	
Bit Error Ratio	BER			5*10 ⁻⁵		
Max Supported Link Length	L			80	km	Over SMF

Note1, 2: See order information

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Center Wavelength	λ	1290		1330	nm	
Side-mode Suppression Ratio	SMSR	30			dB	
Average Optical Power	P _{avg}	-2		6.0	dBm	
Optical Modulation Amplitude	TxOMA	0			dBm	
Transmitter and Dispersion Penalty	TDP			2.7	dB	
Average Launch Power of OFF Transmitter	P _{off}			-20	dBm	
Extinction Ratio	ER	4		-	dB	
Optical Return Loss Tolerance		-		20	dB	
Transmitter Reflectance				-26	dB	
Receiver						
Center Wavelength	λ _c	1290	-	1330	nm	
Damage Threshold		-3			dBm	
Receive Power Overload				-5	dBm	
Receiver Reflectance				-26	dB	
Receiver Sensitivity	S			-19	dBm	1
LOS Assert	LOSA	-30	-		dBm	
LOS De-assert	LOSD	-	-	-21	dBm	
LOS Hysteresis		0.5			dB	

Note:

1. Measured at 25.78Gb/s, ER>4dBm, PRBS 2 31 -1 and BER better than or equal to 5E-5.

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}	V	
Transmit Enable Voltage	V _{EN}	V _{EE}		V _{EE} +0.8	V	
Transmit Fault Assert Voltage	V _{FA}	2		V _{CCHOST}	V	
Transmit Fault De-Assert Voltage	V _{FDA}	V _{EE}		V _{EE} +0.4	V	
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-31-40	SFP28 plug-in, 25 Gbps, 40 km, TX=1310/RX, on two single mode fibres, LC/PC
S28-25LP-31-40A	SFP28 plug-in, 25 Gbps, 40 km, TX=1310/RX, on two single mode fibres, LC/PC, Industrial Temperature

Contact Information



Ascent Communication Technology Ltd

AUSTRALIA

140 William Street, Melbourne
Victoria 3000, AUSTRALIA
Phone: +61-3-8691 2902

CHINA

Unit 1933, 600 Luban Road
200023, Shanghai, CHINA
Phone: +86-21-60232616

EUROPE

Pfarrer-Bensheimer-Strasse 7a
55129 Mainz, GERMANY
Phone: +49 (0) 6136 926 3246

Hong Kong SAR

Unit 9, 12th Floor, Wing Tuck Commercial Centre
177 Wing Lok Street, Sheung Wan, Hong Kong SAR
Phone: +852-2851 4722

USA

2710 Thomes Ave
Cheyenne, WY 82001, USA
Phone: +1 203 350 9822

VIETNAM

11th Floor, Hoa Binh Office Tower
106 Hoang Quoc Viet Street, Nghia Do Ward
Cau Giay District, Hanoi 10649, VIETNAM
Phone: +84-24-37955917

WEB: www.ascentcomtec.com

EMAIL: sales@ascentcomtec.com

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Ver. ACT_SFP28-25LP-31-40_Datasheet_V1c_Apr_2023