

## 10/25 Gb/s SFP28 1310 nm 40km 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 ±5% power supply**
- **Compliant with SFF-8472 & IEEE 802.3cc**
- **Low power consumption**



Ascent's SFPP28 10/25G LR transceiver provides 10/25GBASE-ER throughput up to 40km over single mode fiber (SMF) using a wavelength of 1310nm via an LC duplex connector. It provides connectivity option for 10/25G Ethernet, 10G Ethernet at data center.

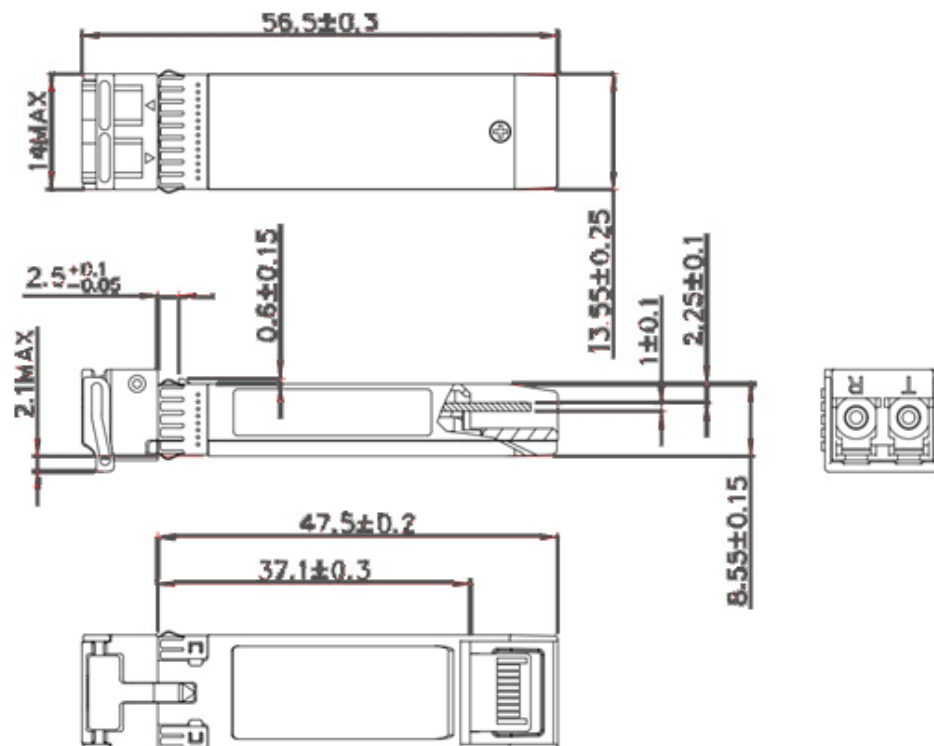
It is fully compliant with the SFP28 MSA, SFF8472, SFF-8402, SFF-8432 and applicable portions of SFF-8431 standard. an integrated fiber optic transceiver that provides a high-speed serial link at signaling rates up to 25.78 Gb/s. The module complies with SFF-8431 and SFF-8472 standards. It is suitable for 10/25G Ethernet and CPRI 10 applications and has a transmission distance of up to 40 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.

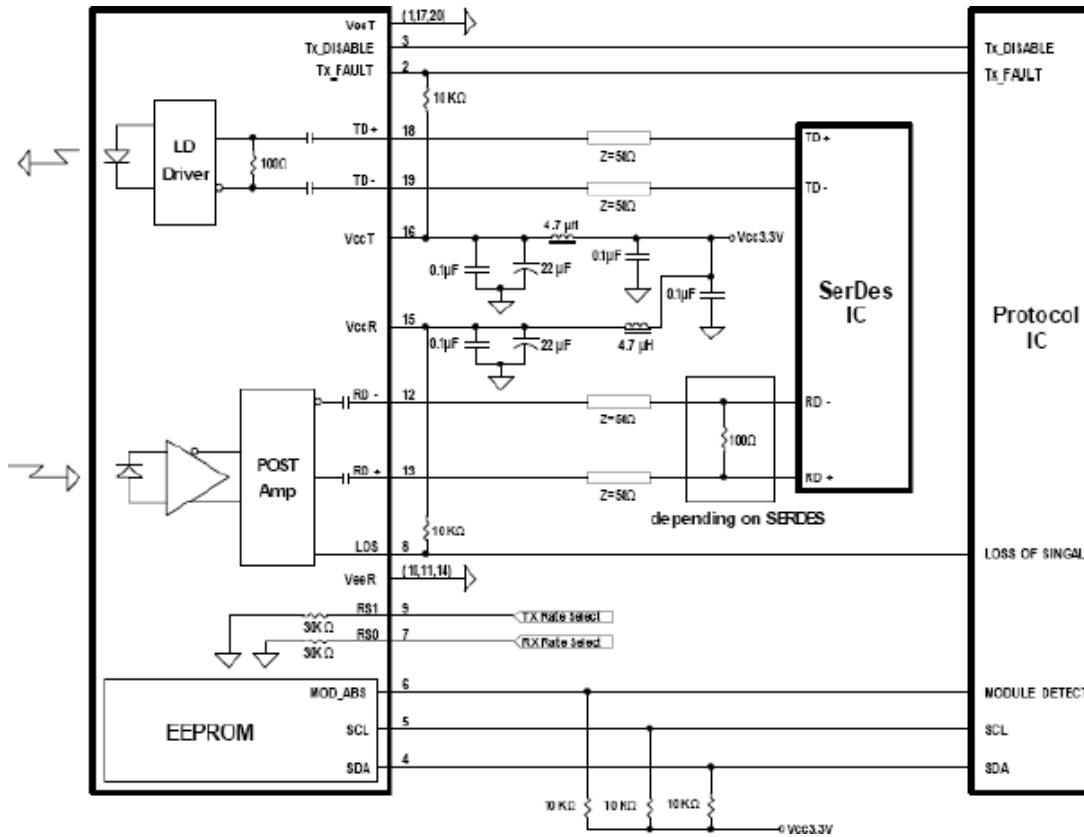
## Key Features

- Support 10Gbps and 25Gbps data links
- Operating data rate up to 25.78Gbps
- 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

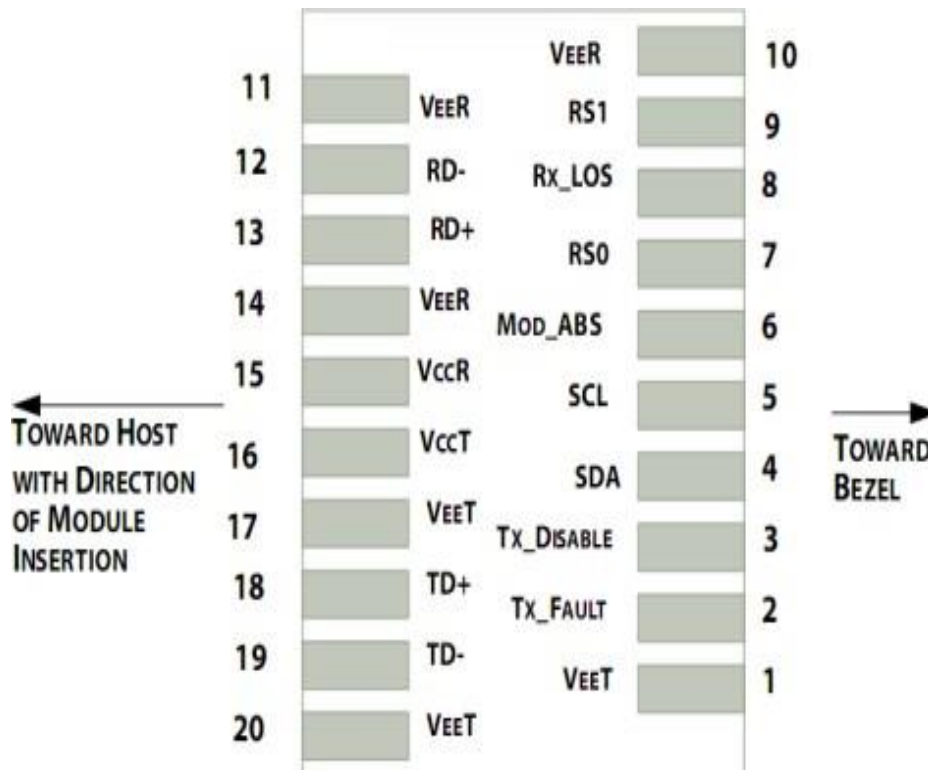
## Mechanical Dimension



## 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 <sub>s</sub>	-40		85	°C
Relative Humidity	RH	5		95	%

### Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Case Temperature	T <sub>c</sub>	0		70	°C	1
		-40		85		2
Power Supply Voltage	V <sub>CC</sub>	3.14	3.30	3.46	V	
Bit Rate	BR		25.78125		Gbps	
Bit Error Ratio	BER			5*10 <sup>-5</sup>		
Max Supported Link Length	L			80	km	Over SMF

**Note1, 2:** See order information

### Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
<b>Transmitter</b>						
Center Wavelength	λ	1290		1330	nm	
Side-mode Suppression Ratio	SMSR	30			dB	
Average Optical Power	P <sub>avg</sub>	-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 <sub>off</sub>			-20	dBm	
Extinction Ratio	ER	4		-	dB	
Optical Return Loss Tolerance		-		20	dB	
Transmitter Reflectance				-26	dB	
<b>Receiver</b>						
Center Wavelength	λ <sub>c</sub>	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
<b>Transmitter</b>						
Input Differential Impedance	R <sub>IN</sub>		100		Ω	
Single-ended Data Input Swing	V <sub>IN</sub>	90		450	mVp-p	
Transmit Disable Voltage	V <sub>DIS</sub>	2		V <sub>CCHOST</sub>	V	
Transmit Enable Voltage	V <sub>EN</sub>	V <sub>EE</sub>		V <sub>EE</sub> +0.8	V	
Transmit Fault Assert Voltage	V <sub>FA</sub>	2		V <sub>CCHOST</sub>	V	
Transmit Fault De-Assert Voltage	V <sub>FDA</sub>	V <sub>EE</sub>		V <sub>EE</sub> +0.4	V	
<b>Receiver</b>						
Single-ended Data Output Swing	V <sub>OD</sub>	200		450	mVp-p	
LOS Fault	V <sub>LOSFT</sub>	2		V <sub>CCHOST</sub>	V	
LOS Normal	V <sub>LOSNR</sub>	V <sub>EE</sub>		V <sub>EE</sub> +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
JS28-25LP-31-40	SFP28 plug-in, 25 Gbps, 40 km, TX=1310/RX, on two single mode fibres, LC/PC, Compatible with Juniper
JS28-25LP-31-40A	SFP28 plug-in, 25 Gbps, 40 km, TX=1310/RX, on two single mode fibres, LC/PC, Compatible with Juniper, 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, 12<sup>th</sup> 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](http://www.ascentcomtec.com)

**EMAIL:** [sales@ascentcomtec.com](mailto:sales@ascentcomtec.com)

Specifications and product availability are subject to change without notice.  
Copyright © 2024 Ascent Communication Technology Limited. All rights reserved.  
Ver. ACT\_SFP28-25LP-31-40\_Datasheet\_V1b\_Apr\_2023