

SFP28 25G 1310nm 80KM Transceiver

AE-SFP28-ZR

Product Features

- Support data rate up to 25.78125Gb/s
- Hot-Pluggable SFP Footprint and Duplex LC Connector
- Up to 80km reach for G.652 SMF
- 1310nm EML laser and Integrated SOA & PIN TIA ROSA
- Temperature Range:
 - Commercial: 0°C ~70°C
 - Industrial: -40°C ~85°C
- Power consumption
 - Commercial:2.2W
 - Industrial:2.8W

Product Applications

- 25G Ethernet
- CPRI option 10G

Standard

- Compliant to IEEE 802.3cc
- Compliant to SFF-8472 and SFF-8419
- Complies with EU Directive 2015/863/EU
- RoHS 6 compliance

General

The AE-SFP28-ZR is a single-channel, Pluggable, Fiber-Optic SFP28 for 25 Gigabit Ethernet and Infiniband EDR Applications. It is a high performance module for long-haul data communication and interconnect applications which operate at 25.78125 Gbps up to 80km. They are compliant with SFF-8431, SFF-8432. The transmitter converts serial CML electrical data into serial optical data. The receiver converts serial optical data into serial CML electrical data. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472.

Performance Specifications

Absolute Maximum Ratings						
Parameter	Symbol	Min.	Max.	Unit	Note	
Storage Temperature	T _{stg}	-40	85	°C		
Case Operating Temperature	T _C	0	70	°C	AE-SFP28-ZR	
		-40	85		AE-SFP28-ZRI	
Relative Humidity - Storage	R _{HS}	5	95	%		
Relative Humidity - Operating	R _{HO}	5	85	%		
DC Supply Voltage	V _{CC}	0	+3.6	V		
Recommended Operating Conditions						
Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Operating Case Temperature	T _C	0	-	70	°C	AE-SFP28-ZR
		-40	-	85		AE-SFP28-ZRI
Power Supply Voltage	V _{CC}	3.13	3.30	3.47	V	
Transmission Distance	TD	-	-	80	km	
Coupled fiber	Single mode fiber					9/125um SMF
Electrical Characteristics						
Transmitter						
Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Differential Input Resistance	R _{Rdin}	90	100	110	Ω	
Input Differential Voltage	R _{Vdiff}	-	-	900	mVpp	
Tx_Disable(Normal Operation)	V _{IL}	-0.3	-	0.8	V	
Tx_Disable(Laser Disable)	V _{IH}	2	-	V _{CC} +0.3	V	
Receiver						
Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Differential Resistance	T _{Rd}	90	100	110	Ω	
Output Differential Voltage	T _{Vdiff}	-	-	900	mVpp	
Differential Termination Resistance Mismatch	T _{Rdm}	-	-	10	%	
Rx Ios(Normal Operation)	V _{OL}	-0.3	-	0.4	V	
Rx Ios(Laser Disable)	V _{OH}	2	-	V _{CC} HOST	V	
Optical Characteristics						
Transmitter						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Optical Modulation Amplitude (OMA)	P _{OMA}	2	-	8	dBm	
Average Output Power	P _{OUT}	2	-	7	dBm	
Average Output Power (Laser Off)	P _{OFF}	-	-	-30	dBm	

Wavelength	λ	1295	-	1310	nm	
Spectrum Bandwidth @ -20dB	$\Delta\lambda$	-	-	1	nm	
Side mode suppression ratio	SMSR	30	-	-	dB	
Extinction ratio	ER	8	-	-	dB	
Transmitter and dispersion penalty (TDP)	-	-	-	2.7	dB	
RIN _{20OMA}	RIN	-	-	-130	dB/Hz	
Receiver						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Wavelength	λ	1295	1310	1325	nm	
Received Sensitivity	P _{SEN}	-	-	-28	dBm	1
Optical Power Overload	P _{sat}	-4	-	-	dBm	
Damage threshold	-	3	-	-	dBm	2
Rx_LOS of Signal Assert	P _A	-40	-	-	dBm	
Rx_LOS of Signal De-assert	P _D	-	-	-28	dBm	
Rx_LOS of Signal Hysteresis	P _{Hy}	0.5	-	5	dB	
Optical Return Loss Tolerance	O _{RLT}	20	-	-	dB	

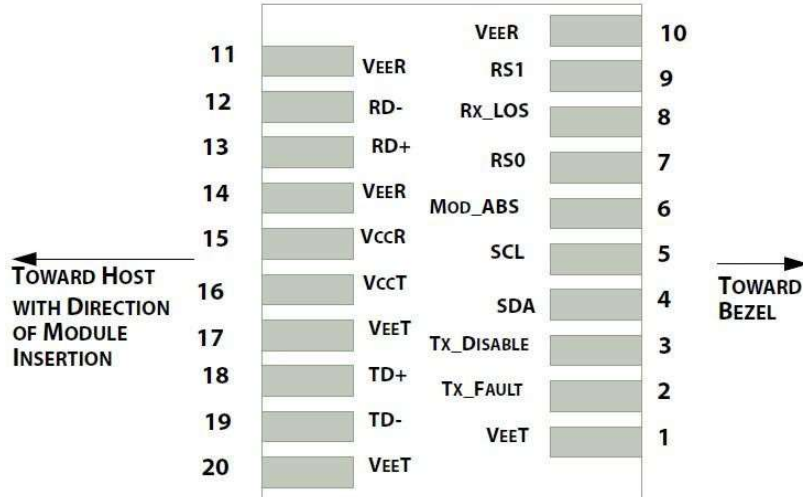
Notes:

1. Test pattern: PRBS31. BER<5x10⁻⁵;
2. The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level. The receiver does not have to operate correctly at this input power

Digital Diagnostics						
Parameter	Range	Accuracy	Unit	Calibration		
Temperature	-40 to 85	±3	°C	Internal		
Voltage	3.13 to 3.47	±3%	V	Internal		
Tx Bias Current	0 to 100	±10%	mA	Internal		
Tx Output Power	2 to 7	±3	dB	Internal		
Rx Input Power	-28 to -4	±3	dB	Internal		
Communication Interface Timing Characteristics						
Parameter	Symbol	Min.	Typical	Max.	Unit	Note
TX_Disable Assert Time	t _{off}	-	-	100	us	
TX_Disable Negate Time	t _{on}	-	-	2	ms	
Time to Initialize Include Reset of TX_FAULT	t _{int}	-	-	300	ms	
TX_FAULT from Fault to Assertion	t _{fault}	-	-	100	us	
TX_Disable Time to Start Reset	t _{reset}	10	-	-	us	
Receiver Loss of Signal Assert Time	T _{A,RX_LOS}	-	-	100	us	

Receiver Loss of Signal Deassert Time	T _{d,RX_LOS}	-	-	100	us	
Rate-Select Change Time	t _{ratesel}	-	-	10	us	

Pin Assignment



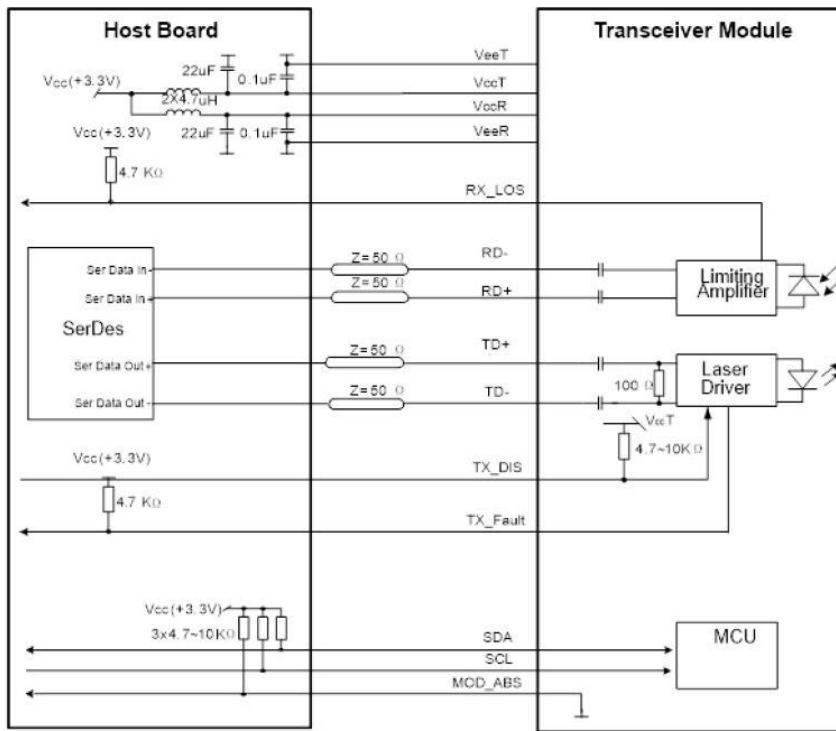
Pin out of Connector Block on Host Board

Pin No.	Name	Function	Notes
1	VeeT	Transmitter Ground	1
2	Tx Fault	Transmitter Fault - High indicates a fault condition	2
3	Tx Disable	Transmitter Disable – High or open disables the transmitter	
4	SDL	2-wire Serial Interface Data Line (MOD-DEF2)	3
5	SCL	2-wire Serial Interface Clock (MOD-DEF1)	3
6	MOD-ABS	Module Absent, connected to VeeT or VeeR in the module	
7	RS0	Rate Select 0	5
8	RX_LOS	Receiver Loss of Signal(LVTTL-O). Logic 0 indicates normal operation	4
9	RS1	Rate Select 1	1
10	VeeR	Receiver Ground	1
11	VeeR	Receiver Ground	1
12	RD-	Inverse Received Data out (CML-O), AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	VeeR	Receiver Ground	1
15	VccR	Receiver Power Supply	
16	VccT	Transmitter Power Supply	
17	VeeT	Transmitter Ground	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VeeT	Transmitter Ground	1

Note:

1. Module ground pins GND are isolated from the module case.
2. Tx_Fault is an open collector/drain output, which should be pulled up with a 4.7k – 10k Ohms resistor on Hostboard.
3. Should be pulled up with 4.7k–10kohms on host board to a voltage between 2.0V and 3.6V.
4. LOS is open collector output. Should be pulled up with 4.7k–10kohms on host board to a voltage between 2.0V and 3.6V.
5. RS0 and RS1 pins are pulled low to GND with a resistor > 30KΩ in module.

Recommended Interface Circuit



Outline Dimensions

