25GBASE-ER SFP28 1310nm 40km DDM SMF Transceiver

P/N: AE-SFP28-ER

Features

- Hot-pluggable SFP28 form factor
- Up to 30Km reach for G.652 SMF without FEC
- Up to 40Km reach for G.652 SMF with FEC
- Internal CDR on both Transmitter and Receiver channel
- Transmitter: cooled 25Gb/s LAN WDM EML TOSA
- Receiver: 25Gb/s APD ROSA
- Single 3.3V power supply
- Power dissipation 1.5W
- Commercial case temperature range: 0°C to 70°C
- Duplex LC receptacle
- Digital diagnostics functions are available via the I2C interface
- RoHS-6 compliant

Applications

- 25GBASE-ER Lite Ethernet
- CPRI/eCPRI Option 10

I. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	0	3.6	V
Operating Case Temperature	Top	-40	+85	°C
Storage Temperature	Ts	-40	+85	°C
Operating Humidity	-	5	85	%
Damage Threshold, each Lane	THd	-3.0		dBm

II. Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	Tc	0		+70	°C
Power Supply Voltage	Vcc	3.13	3.3	3.47	V
Power Supply Current	Icc			500	mA
Data Rate, each lane			25.78125		Gb/s
Data Rate Accuracy		-100		100	ppm
Link distance with G.652(without FEC)				30	Km
Link distance with G.652(with FEC)				40	Km

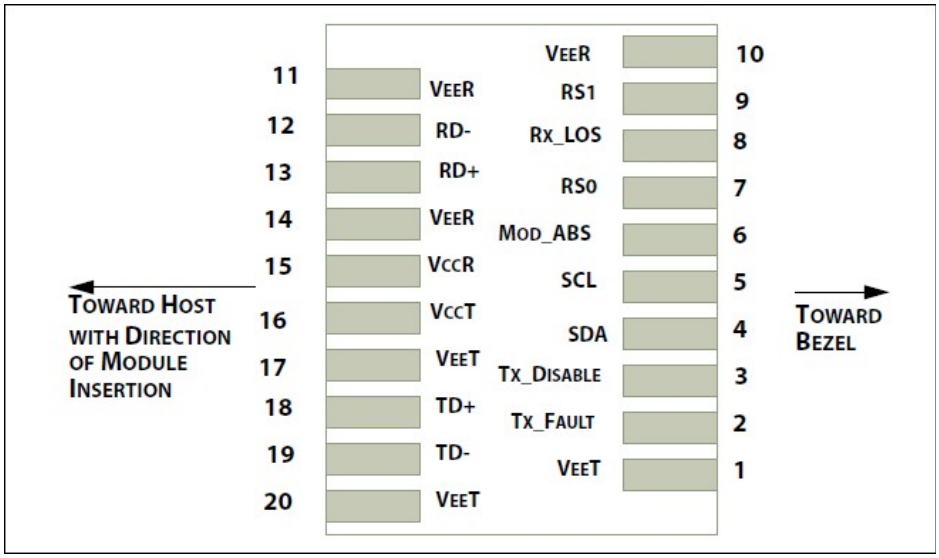
III. Optical and Electrical Characteristics

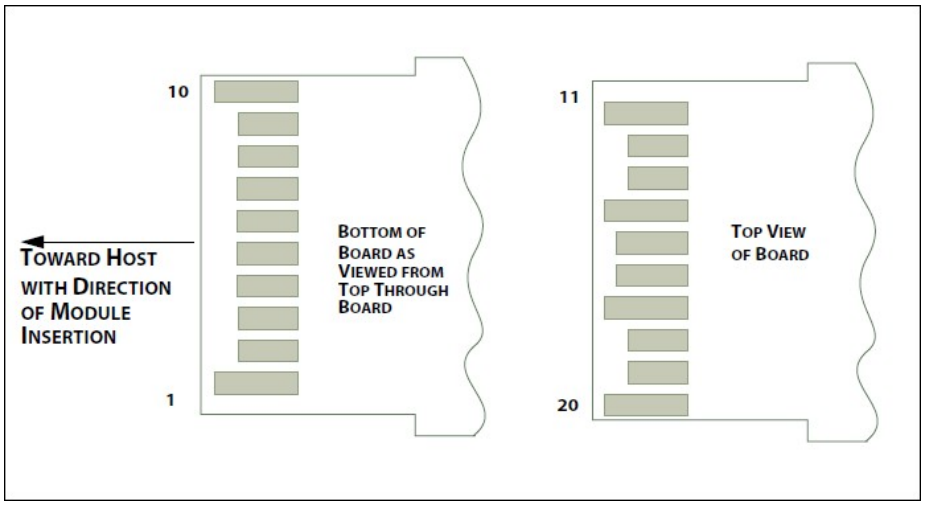
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Transmitter						
Data rate	BR		25.78		Gbps	
SDD11	TP1	CEI-28G-VSR Equation 13-19			dB	
SDC11,SCD11	TP1	CEI-28G-VSR Equation 13-20			dB	
Stressed Input Test	TP1a	CEI-28G-VSR Section 13.3.11.2.1				
Differential data input swing	VIN,PP	150		1100	mV	
Input Differential Impedance	ZIN	90	100	110	Ω	
Centre Wavelength	λc	1285.65	1286.66	1287.69	nm	
		1290.09	1291.10	1292.13	nm	
		1294.53	1295.56	1296.59	nm	
		1299.02	1300.05	1301.09	nm	
		1303.54	1304.58	1305.63	nm	
		1308.09	1309.14	1310.19	nm	
Spectral Width (-20dB)	σ			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Output Power	Pavg	0		6	dBm	
Optical Modulation Amplitude		0		4	dBm	
Extinction Ratio	ER	4			dB	
Transmitter and dispersion penalty				2.7	dB	
Rin20OMA				-130	dB/HZ	

Optical return loss tolerance					20	dB	
Transmitter reflectance					-26	dB	
Average Launch Power OFF transmitter		Poff			-30	dBm	
Transmitter eye definition {X1,X2,X3,Y1,Y2,Y3}Hit ratio 5E-5			{0.31,0.4,0.45,0.34,0.38,0.4}				1
TX Disable	Disable		2.0		Vcc	V	
	Enable		0		0.8	V	
TX Fault	Fault		2.0		Vcc	V	
	Normal		0		0.8	V	
Receiver							
Data rate		BR		25.78		Gbps	
SDD22		TP4	CEI-28G-VSR Equation13-19			dB	
SDC22, SCD22		TP4	CEI-28G-VSR Equation 13-21			dB	
SCC22		TP4			-2	dB	
Transition Time,20% to 80%		TP4	9.5			ps	
Vertical Eye Closure(VEC)		TP4			5.5	dB	
Eye Width at E-15 probability		EW15	0.57			UI	
Eye Height at E-15 probability		EH15	228			mV	
Average Receive Power			-23		-5	dBm	
Unstressed Receiver Sensitivity (OMA)		SEN1			-19	dBm	BER=1E-12
		SEN2			-21	dBm	BER=5E-5
Receiver Reflectance					-26	dB	
LOS De-Assert		LOSD		-11		dBm	
LOS Assert		LOSA		-30		dBm	
LOS Hysteresis			0.5			dB	
Differential data output swing		Vout,PP	300		900	mV	
LOS		High	2.0		Vcc	V	
		Low			0.8	V	

Notes 1: Transmitter eye compliant to IEEE 802.3cc 25G-ER;

IV. Pin Definitions





V. Pin Descriptions

PIN	Logic	Symbol	Name / Description	Note
1		VeeT	Module Transmitter Ground	1
2	LVTTL-O	TX_Fault	Module Transmitter Fault	2
3	LVTTL-I	TX_Dis	Transmitter Disable; Turns off transmitter laser output	
4	LVTTL-I/O	SDA	2-Wire Serial Interface Data Line	2
5	LVTTL-I	SCL	2-Wire Serial Interface Clock	2
6		MOD_ABS	Module Definition, Grounded in the module	
7	LVTTL-I	RS0	Receiver Rate Select	
8	LVTTL-O	RX_LOS	Receiver Loss of Signal Indication Active LOW	
9	LVTTL-I	RS1	Transmitter Rate Select (not used)	
10		VeeR	Module Receiver Ground	1

11		VeeR	Module Receiver Ground	1
12	CML-O	RD-	Receiver Inverted Data Output	
13	CML-O	RD+	Receiver Data Output	
14		VeeR	Module Receiver Ground	1
15		VccR	Module Receiver 3.3 V Supply	
16		VccT	Module Receiver 3.3 V Supply	
17		VeeT	Module Transmitter Ground	1
18	CML-I	TD+	Transmitter Non-Inverted Data Input	
19	CML-I	TD-	Transmitter Inverted Data Input	
20		VeeT	Module Transmitter Ground	1

Notes:

1. Module ground pins GND are isolated from the module case.

2. Shall be pulled up with 4.7K-10Kohms to a voltage between 3.15V and 3.45V on the host board.

VI. Ordering information

Part Number	Product Description
AE-SFP28-ER	SFP28, 25.78Gb/s,1310nm, SMF, 40KM, LC connector, 0°C to +70°C