

Specification

Small Form Factor Pluggable

Duplex LC Receptacle – SFP28

Optical Transceivers

(Preliminary)



Ordering Information

TAS-A1EB1-F11

Model Name	Voltage	Category	Device type	Interface	LOS	Temperature	Distance
TAS-A1EB1-F11	3.3V	With DDMI	1310 nm DFB	AC / AC Coupling	LVTTTL	0°C ~ +70°C	10km

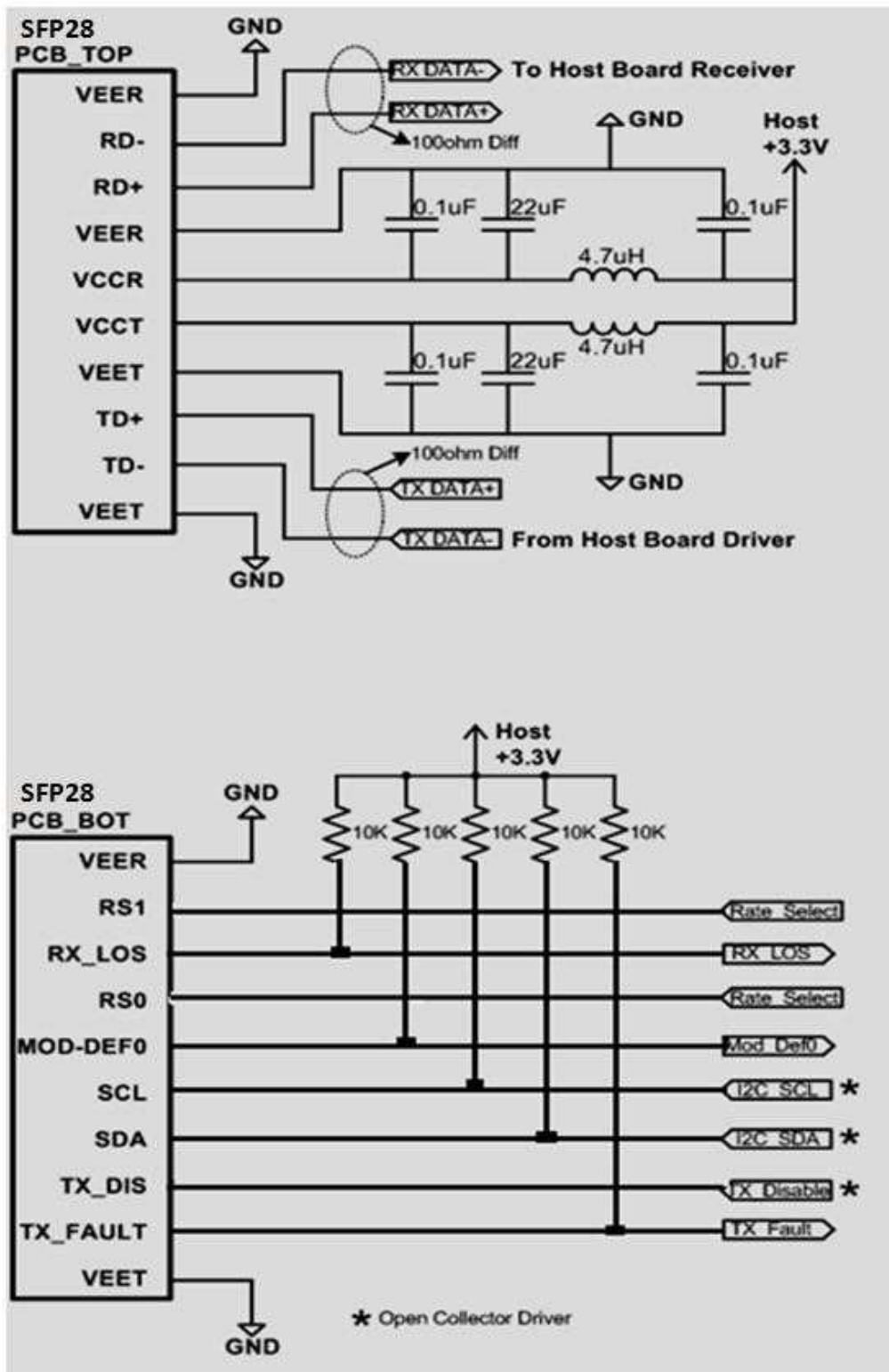
Features

- 25Gb/s serial optical interface
- 1310nm DFB transmitter, PIN photo- detector
- 2-wire interface for management specifications compliant with SFF 8472 digital diagnostic monitoring interface for optical transceivers
- Operating case temperature: 0 to 70°C
- Advanced firmware allow customer system encryption information to be stored in transceiver
- Cost effective SFP28 solution, enables higher port densities and greater bandwidth
- RoHS compliant

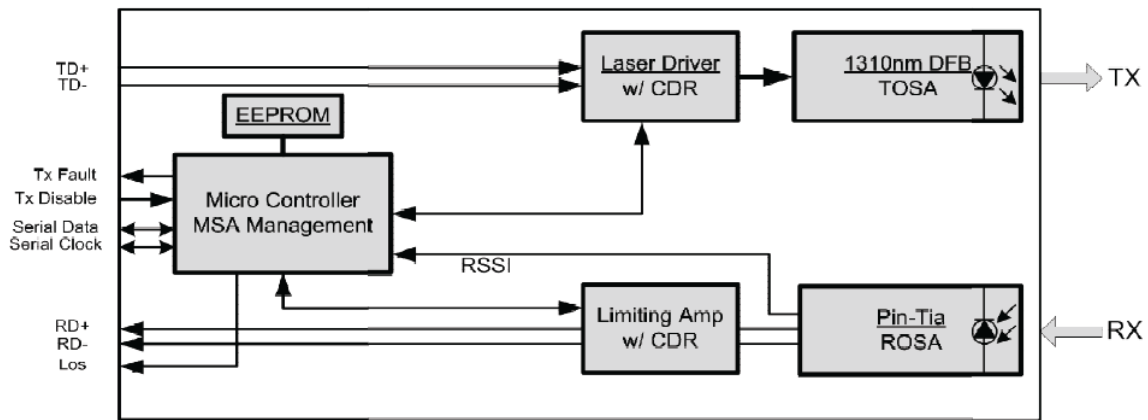
Applications

- High-speed storage area networks
- Computer cluster cross-connect
- Custom high-speed data pipes

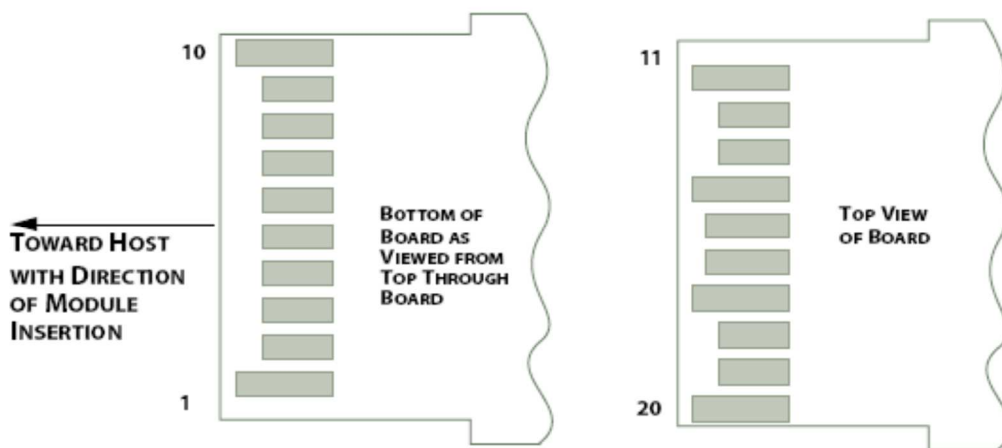
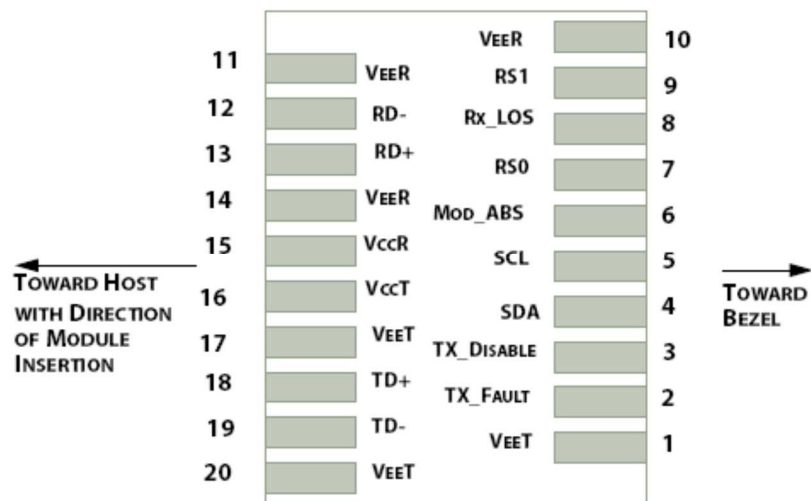
Proposed Application Schematics



Transceiver Block Diagram



Pin Definition and Descriptions



PIN	Logic	Symbol	Name / Description	Note
1		VeeT	Module Transmitter Ground	1
2	LVTTL-O	TX_Fault	Module Transmitter Fault	
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_DEF0	Module Definition, Grounded in the module	
7	LVTTL-I	RS0	Receiver Rate Select, default is high for 8G/10G application, when set to low by system, transceiver will set the bandwidth to under 4.25G to improve the sensitivity at low data rate	
8	LVTTL-O	RX_LOS	Receiver Loss of Signal Indication Active LOW	
9	LVTTL-I	RS1	Transmitter Rate Select, default input is high for 8G/10G application, when set to low by system, transceiver will set the TX optical output to be compliant with low data rate fiber channel specifications	
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 Transmitter 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

Note:

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.

Absolute Maximum Ratings

Parameters	Symbol	Min.	Max.	Unit
Power Supply Voltage	VCC	-0.5	3.6	V
Storage Temperature	Ts	-40	85	°C
ESD Tolerance on all pins			1	KV HBM
Operating Case Temperature	Top	0	70	°C
Relative Humidity	RH	5	95	%

Recommended Operating Environment

Recommended Operating Environment specifies parameters for which the electrical and optical characteristics hold unless otherwise noted.

Parameters	Symbol	Min.	Typical	Max	Unit
Power Supply Voltage	Vcc	3.13	3.3	3.47	V
Power Supply Current	Icc		240	350	mA
Operating Case Temperature	Top	0	25	70	°C
Date Rate, each Lane			25.78		Gb/s

Optical Characteristics

The following optical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

Parameter	Symbol	Min.	Typical	Max	Unit	Notes
Transmitter						
Center Wavelength	λ	1260	1310	1360	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Optical Power	POavg	-5		1	dBm	
Extinction Ratio	ER	3.5			dB	
Transmitter eye mask definition		(X1, X2, X3, Y1, Y2, Y3) = (0.31, 0.4, 0.45, 0.34, 0.38, 0.4)				1
Receiver						
Center Wavelength	λ	1260		1620	nm	
Receiver Sensitivity (OMA)	Sens (OMA)			-10.4	dBm	for BER = 5×10^{-5}
LOS Assert	LOSA	-20			dBm	
LOS Deassert	LOSD			11	dBm	
LOS Hysteresis	LOSH			6	dB	
Conditions of Stressed Receiver Sensitivity Test (Note 5)						
Vertical Eye Closure Penalty, each Lane			1.9		dB	
Stressed Eye J2 Jitter			0.27		UI	
Stressed Eye J4 Jitter			0.39		UI	
SRS Eye Mask Definition		(X1,X2, X3, Y1, Y2, Y3)= (0.24, 0.5, 0.5, 0.24, 0.24, 0.4)				1

Notes:

1. Hit ratio 5×10^{-5} per sample.

Digital Diagnostic Functions

The following digital diagnostic characteristics are defined over the Recommended Operating Environment unless otherwise specified. It is compliant to SFF8472 Rev10.2 with internal calibration mode. For external calibration mode please contact our sales staff.

Parameter	Symbol	Min.	Max	Unit	Notes
Temperature monitor absolute error	DMI_Temp	-3	3	°C	Over temp
Laser power monitor absolute error	DMI_TX	-2	2	dB	1
RX power monitor absolute error	DMI_RX	-2	2	dB	1
Supply voltage monitor absolute error	DMI_VCC	-0.1	0.1	V	Full range
Bias current monitor	DMI_Ibias	-10%	10%	mA	

Notes:

1. Due to measurement accuracy of different single mode fibers, there could be an additional +/-1 dB fluctuation, or a +/- 3 dB total accuracy.

Electrical Characteristics

The following electrical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

Parameter	Symbol	Min.	Typical	Max	Unit	Notes
Transmitter						
Differential Input	VIH - VIL	200		1000	mVp-p	
Input Voltage -Low	VTDIS,L	0		0.8	V	
Input Voltage -High	VTDIS,H	2.0		Vcc	V	
Out Voltage - Low	VOL	0		0.4	dB	
Out Voltage - High	VOH	2.0		Vcc	dB	
SCL, SDA--High		2.5		Vcc+0.3		

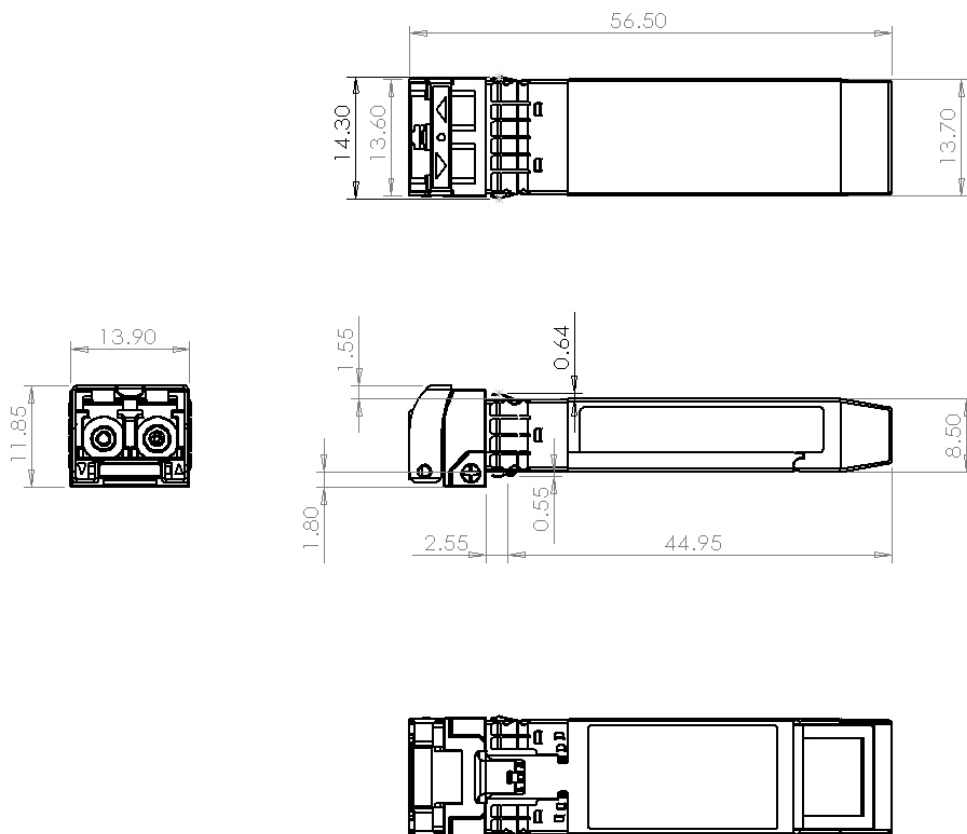
SCL, SDA--Low		0		0.5		
Receiver						
Differential Input	VIH - VIL	500	800	1000	mVp-p	
Out Voltage - Low	VOL	0		0.4	dB	
Out Voltage - High	VOH	2.4		Vcc	dB	

Notes:

1. Vcm is generated by the host. Specification includes effects of ground offset voltage.
2. From 250MHz to 30GHz.

Mechanical

Comply with SFF-8432 rev. 5.0, the improved Pluggable form factor specification.



ESD

Normal ESD precautions are required during the handling of this module. This transceiver is shipped in ESD protective packaging. It should be removed from the packaging and handled only in an ESD protected environment.

LASER Safety

This is a laser class 1 product according to IEC/EN60825-1:2014 (Third Edition). This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.

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