

Specification

Small Form Factor Pluggable

Duplex LC Receptacle – SFP28

Optical Transceivers Module


25GBASE-SR

Dual Rate



Ordering Information

TAS-A1EH1-837

Model Name	TAS-A1EH1-837	Notes
Voltage	3.3V	
Device type	850 nm VSCSEL	
Interface	CML/CML	
Temperature	0 ~ +70°C	
Distance	70m OM3/ 100m OM4	
Latch Color	Black 	

■ Features

- 25Gbps serial optical interface.
- 850nm VCSEL transmitter.
- 2-wire interface for management specifications compliant with SFF 8472 digital diagnostic monitoring interface for optical transceivers
- Operating case temperature : 0 to 70°C
- All-metal housing for superior EMI performance
- Low power consumption (Typical: 0.6W, Max: 1.0W)
- Advanced firmware allows customer system encryption information to be stored in transceiver
- Cost effective SFP28 solution, enables higher port densities and greater bandwidth
- RoHS compliant
- Down compatible to lower bit rates at 10Gbps

■ Applications

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

Fiber type	850nm OFL Bandwidth	Supported Distances
50µm MMF	OM4 (3500 MHz-km)	Up to 100
50µm MMF	OM3 (2000 MHz-km)	Up to 70

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_ABS	Module Absent, Grounded in the module	
7	LVTTL-I	RS0	Rx Rate Select: Low =≤10.3 Gbps Ethernet (Low Bandwidth) High =24.33Gbps or 25.78 Gbps (High Bandwidth)	
8	LVTTL-O	RX_LOS	Receiver Loss of Signal Indication Active LOW	
9	LVTTL-I	RS1	Rx Rate Select: Low =≤10.3 Gbps Ethernet (Low Bandwidth) High =24.33Gbps or 25.78 Gbps (High Bandwidth)	
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	3.6	V
Storage Temperature	Ts	-40	85	°C
Operating Case Temperature	Top	0	70	°C
Relative Humidity	RH	5	85	%

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	3.135	3.3	3.465	V
Power Supply Current	Icc			300	mA

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	840	850	860	nm	
Average Optical Power	Po	-8.4		2.4	dBm	
Optical Power OMA	25.78Gbps or 24.33Gbps 10.3Gbps or 9.8Gbps	Poma -6.4 -5.2		3	dBm	1
Transmitter and Dispersion Eye Closure @25.78Gbps	TDEC			4.3	dB	
Extinction Ratio @25.78Gbps	ER	2			dB	
Transmitter Dispersion Penalty @ 10.3Gbps	TDP			2.5	dB	
Receiver						
Center Wavelength	λ	840	850	860		
Stressed Receiver OMA Sensitivity	25.78Gbps or 24.33Gbps 10.3Gbps or 9.8Gbps	RxSens		-5.2 -7.5		
Unstressed Receiver OMA Sensitivity@ 10.3Gbps	RxSEN			-10.1		

Average Receiver Power @25.78Gbps	RxP _{Min}	-10.3		2.4	2
Receiver Reflectance				-12	
LOS Assert	LOS _A	-30			
LOS De-Assert	LOS _D			-13	
LOS Hysteresis	LOS _H	0.5			

Notes:

1. Class 1 Laser Safety limit per FDA/CDRH, and EN (IEC) 60825 laser safety standards.
2. Average receive power (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.

■ Electrical Characteristics

Parameter		Symbol	Min.	Typical	Max	Unit	Notes
Power Consumption				0.6	1.0	W	
Data Rate	High Bandwidth			25		Gbps	1
	Low Bandwidth			10			2

Notes:

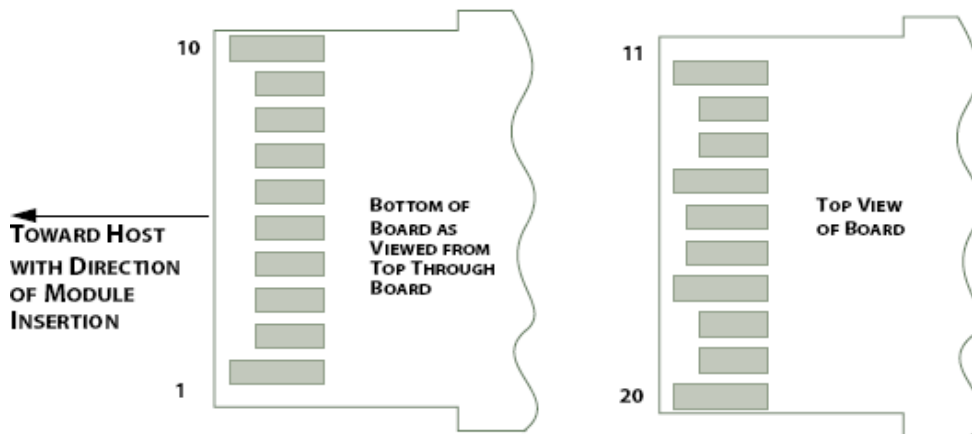
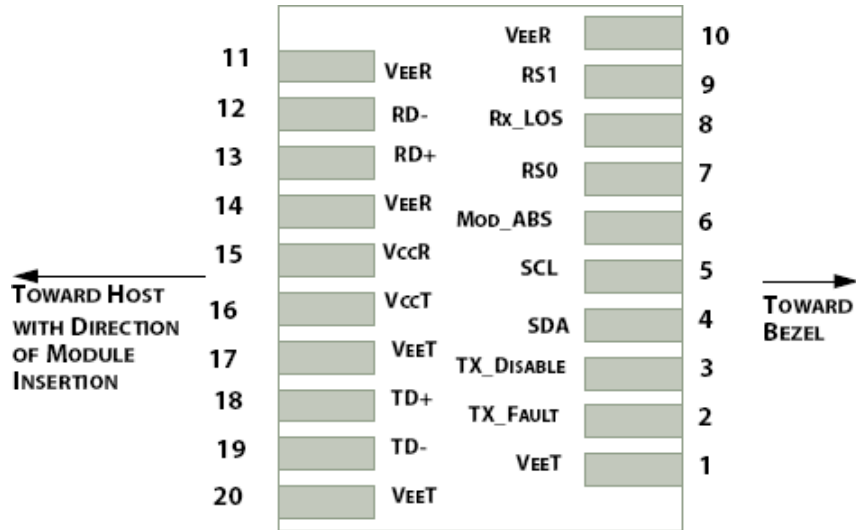
1. BER of 5E-5 at 25.78Gbps Ethernet data rate (IEEE 802.3by).
2. BER of 10E-12 at 10.3Gbps Ethernet data rate.

■ Digital Diagnostic Functions

The following digital diagnostic characteristics are defined over the Recommended Operating Environment unless otherwise specified. It is compliant to SFF8472 Rev11 with internal calibration mode. For external calibration mode please contact our sales.

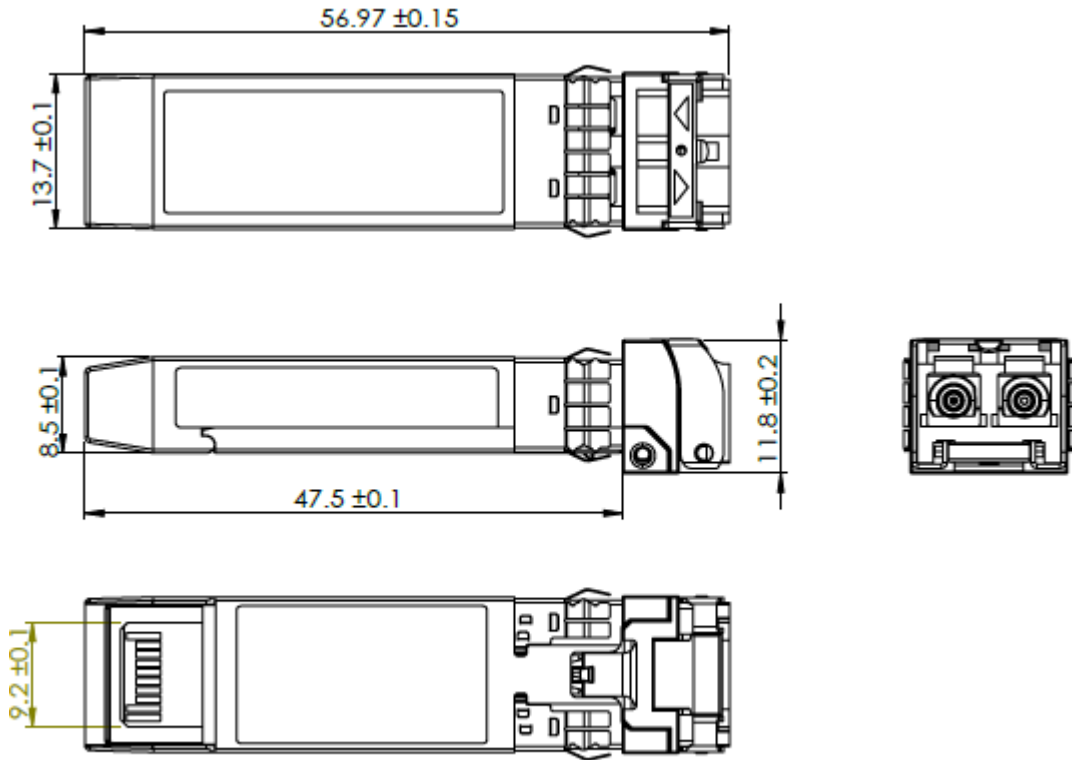
Parameter	Symbol	Min.	Max	Unit	Notes
Temperature monitor absolute error	DMI_Temp	-3	3	°C	Over house temp
Laser power monitor absolute error	DMI_TX	-3	3	dB	1
RX power onitor absolute error	DMI_RX	-3	3	dB	1
Supply voltage monitor absolute error	DMI_VCC	-3	3	%	Full range
Bias current monitor	DMI_Ibias	-10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

Pin Definition and Descriptions



■ Mechanical

Comply to 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 Class 1 Laser 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. 56, MAY 8, 2019.

Caution:

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Attention: L'utilisation de commandes ou de réglages ou l'exécution de procédures autres que celles spécifiées dans le document peut entraîner une exposition à des radiations dangereuses.

■ Contact Information

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■ Revision History

Date	Version	Description
11/09/2018	1.0	Initial release
02/22/2019	1.1	1. Footer style change. 2. Contact information has been added on the last page.
11/12/2020	1.2	1. Change data sheet format 2. Update the spec. for dual rate (10G bps/ 25G bps)
09/28/2023	1.3	Updated mechanism drawing on page 7