

## AFBR-57R6ALZ-AO

Avago® AFBR-57R6ALZ Compatible TAA 4.25GBase-SX SFP Transceiver (MMF, 850nm, 550m, LC, DOM, -40 to 85C)

### Features

- INF-8074 and SFF-8472 Compliance
- Duplex LC Connector
- Industrial Temperature -40 to 85 Celsius
- Multi-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free



### Applications

- 4.25GBase Ethernet

### Product Description

This Avago® AFBR-57R6ALZ compatible SFP transceiver provides 4.25GBase-SX throughput up to 550m over multi-mode fiber (MMF) at a wavelength of 850nm using an LC connector. It is guaranteed to be 100% compatible with the equivalent Avago® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

AddOn's transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S.-made or designated country end products.")



## Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Storage Temperature	Tstg	-40		85	°C	1
Maximum Supply Voltage	Vcc	-0.5		3.6	V	
Operating Relative Humidity	RH			85	%	
Operating Case Temperature	Tc	-40		85	°C	
Power Supply Voltage	Vcc	3.14		3.46	V	
Power Supply Current	Icc			300	mA	
Surge Current	Isurge			30	mA	
Data Rate		1.25		4.25	Gbps	
50µm Core Diameter MMF OM3 2000MHz-km	L			550	m	
50µm Core Diameter MMF OM4 4700MHz-km	L			700	m	

### Notes:

- Exceeding any one of these values may destroy the device immediately.

## Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
<b>Transmitter</b>							
Differential Data Input Swing		VIN	180		850	mVp-p	1
Input Impedance (Differential)		ZIN		100		Ω	2
Tx_Disable	High		2		Vcc	V	
	Low				0.8		
Tx_Fault	High		2		Vcc+0.3	V	3
	Low				0.8		4
<b>Receiver</b>							
CML Differential Outputs		VOUT	300		850	mVp-p	1
Rx_LOS	LOS	VOH	2		Vcc+0.3	V	
	Normal	VOL			0.8		
MOD_DEF(0.2)		VOH	2			V	5
		VOL			0.8		

### Notes:

- AC coupled inputs.
- RIN>100kΩ @DC.
- Io=400uA, Host\_Vcc.
- Io=-4.0mA.

- With serial ID.

## Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Center Wavelength	$\lambda_C$	840	850	860	nm	
Spectral Width (RMS)	$\Delta\lambda$			0.45	nm	
Average Output Power	POUT	-6		-1	dBm	1
Extinction Ratio	ER	3.5			dB	
Tx_Disable Assert Time	t_off			10	us	
Tx_Disable Negate Time	t_on			1	ms	
Transmitter Dispersion Penalty	TDP			3.9	dB	
Output Optical Eye	IEEE 802.3-2005 Compliant					
Receiver						
Center Wavelength	$\lambda_C$	840		860	nm	
Receiver Sensitivity	Pmin			-15	dBm	2
Receiver Overload	Pmax	-1			dBm	2
Return Loss	ORL			-12	dB	
LOS De-Assert	LOSD			-16	dBm	
LOS Assert	LOSA	-30			dBm	
LOS Hysteresis	LOSH	0.5		6	dB	

### Notes:

- Average power figures are informative only, per IEEE802.3ae.
- Measured at the BER less than  $1E^{-12}$ , back-to-back. The measure pattern is PRBS  $2^7-1$ .

## Pin Descriptions

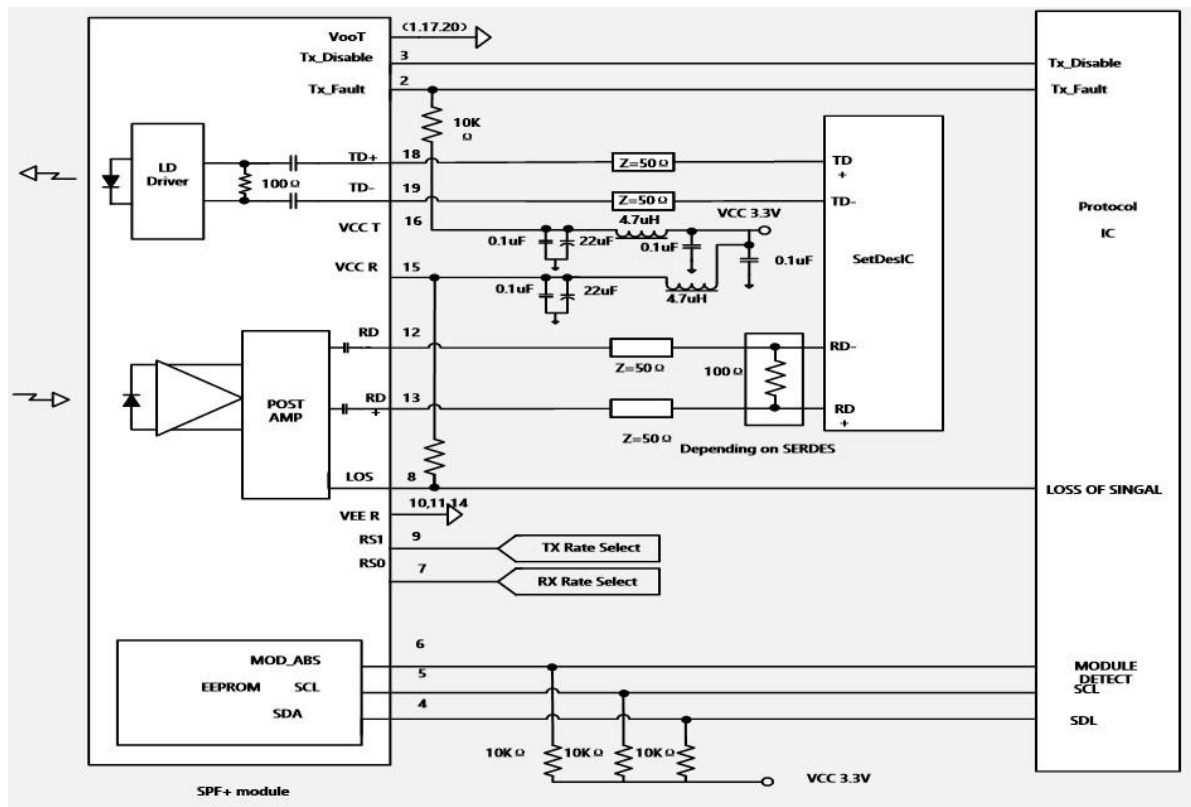
Pin	Symbol	Name/Description	Plug Seq.	Notes
1	VeeT	Transmitter Ground.	1	5
2	Tx_Fault	Transmitter Fault Indication.	3	1
3	Tx_Disable	Transmitter Disable.	3	2, module disables on “high” or “open”
4	SDA	Transmitter Disable.	3	3, 2-wire serial ID interface
5	SCL	Module Definition 2.	3	3, 2-wire serial ID interface
6	MOD_ABS	Module Definition 1.	3	3
7	RS0	Rx Rate Select (LVTTL).	3	Not used
8	LOS	Loss of Signal.	3	4
9	RS1	Tx Rate Select (LVTTL).	1	Not used
10	VeeR	Receiver Ground.	1	5
11	VeeR	Receiver Ground.	1	5
12	RD-	Inverted Received Data Out.	3	6
13	RD+	Received Data Out.	3	6
14	VeeR	Receiver Ground.	1	5
15	VccR	Receiver Power.	2	7, 3.3V $\pm$ 5%
16	VccT	Transmitter Power.	2	7, 3.3V $\pm$ 5%
17	VeeT	Transmitter Ground.	1	5
18	TD+	Transmit Data In.	3	8
19	TD-	Inverted Transmit Data In.	3	8
20	VeeT	Transmitter Ground.	1	5

### Notes:

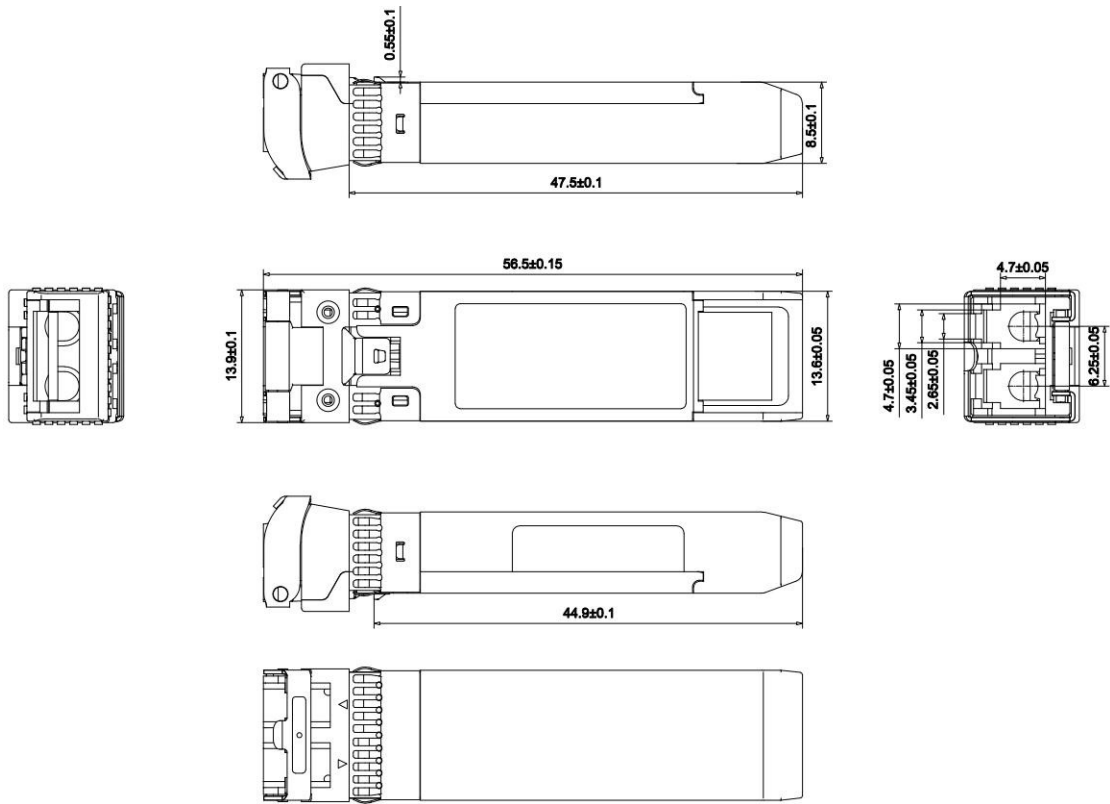
1. Tx\_Fault is an open collector/drain output that should be pulled up with a 4.7k $\Omega$  to 10k $\Omega$  resistor on the host board. Pull-up voltage between 2.0V and VccT/R+0.3V. When “high,” output indicates a laser fault of some kind. “Low” indicates normal operation. In the “low” state, the output will be pulled to <0.8V.
2. Tx\_Disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7k $\Omega$  to 10k $\Omega$  resistor. It states are:  
Low (0V-0.8V): Transmitter On  
(>0.8V, <2.0V): Undefined  
High (2.0V–3.465V): Transmitter Disabled  
Open: Transmitter Disabled.
3. Modulation absent. Connected to the VeeT or VeeR in the module.
4. LOS (Loss of Signal) is an open collector/drain output that should be pulled up with a 4.7k $\Omega$  to 10k $\Omega$  resistor. Pull-up voltage between 2.0V and VccT/R+0.3V. When “high,” this output indicates the received optical power is below the worst-case receiver sensitivity (as defined by the standard in use). “Low” indicates normal operation. In the “low” state, the output will be pulled to <0.8V.

5. VeeR and VeeT may be internally connected within the SFP module.
6. RD-/+. These are the differential receiver outputs. They are AC-coupled, 100 differential lines which should be terminated with 100 (differential) at the user SERDES. The AC coupling is done inside the module and is thus not required on the host board. The voltage swing on these lines will be between 400mV and 2000mV differential (200mV–1000mV single-ended) when properly terminated.
7. VccR and VccT are the receiver and transmitter power supplies. They are defined as  $3.3V \pm 5\%$  at the SFP connector pin. Maximum supply current is 300mA. Recommended host board power supply filtering is shown below. Inductors with DC resistance of less than  $1\Omega$  should be used to maintain the required voltage at the SFP input pin with 3.3V supply voltage. When the recommended supply-filtering network is used, hot-plugging of the SFP transceiver module will result in an in-rush current of no more than 30mA greater than the steady state value. VccR and VccT may be internally connected within the SFP transceiver module.
8. TD-/+. These are the differential transmitter inputs. They are AC-coupled, differential lines with 100 differential terminations inside the module.

### Recommended Circuit Schematic



Mechanical Specifications



## About AddOn Networks

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is ingrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.



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