

Technical Datasheet

AFBR-5921ALZ-C

Avago Broadcom® Compatible 2x5 SFF 2.5Gbps Transceiver

+3.3V, LC, Multi-Mode, 850nm, 300m, Extended Temperature

FEATURES

- 2x5 Pin Package, Single-Mode Transceiver
- RoHS Compliant, Lead Free
- FP Laser Diode Transmitter
- 3.3V power supply
- LC duplex optical interface
- CML Differential Inputs
- CML Outputs and (LV)TTL signal detect
- Class 1 Laser International Safety Standard IEC 825 Compliant
- Extended Operating Temperature Range: -10°C to 85°C
- 850nm VCSEL Transmitter
- Link lengths at 2.125 GBd:
 - 0.5 to 300 m – 50/125 µm MMF
 - 0.5 to 150 m – 62.5/125 µm MMF
- Link lengths at 1.0625 GBd:
 - 0.5 to 500 m – 50/125 µm MMF
 - 0.5 to 300 m – 62.5/125 µm MMF

APPLICATIONS

- Fiber Channel Switch Infrastructure
- Other optic links

DESCRIPTION

ATGBICS AFBR-5921ALZ-C transceiver module is the perfect solution for high-speed communication networks. These transceiver modules support data rates up to 2.5Gbps. The module is fully compliant with the 2X5 standard package defined by the Small Form Factor Multi-Sourcing Agreement (MSA).

This transceiver module provides the system designer with solutions for Telecom, Datacom, and other Fiber Channel applications.

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Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units	Note
Storage Temperature	TST	-40	+85	°C	-
Relative Humidity	RH	5	95	%	-
Supply Voltage	VCC	0	+3.6	V	-

Recommended Operating Environment and Electrical Characteristics:

Parameter	Symbol	Min	Typ	Max	Units	Note
Supply Voltage	VCC	+3.1	+3.3	+3.5	V	-
Supply Current	Icc	-	-	260	mA	-
Operating Case Temperature	TOP	0	-	+70	°C	1
		-10	-	+85		2
Data Rate	B			5	Gbps	-
Soldering temperature		-	-	260	°C	3
Soldering duration		-	-	10	Sec	3

Notes:

1. Standard level
2. Industrial level
3. Not recommended wave soldering

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Optical Parameters

Transceiver Optical Characteristics (Ambient Operating Temperature $T_a = +25 \pm 5^\circ\text{C}$, $V_{CC} = 3.3 \pm 0.2\text{V}$)

Parameter	Symbol	Min	Typ	Max	Units	Notes
Average Launch Power	$P_{o, \text{Avg}}$	-8		0	dBm	
Output Center Wavelength	c	840	850	860	nm	
Output Spectrum Width	σ			0.45	nm	RMS(σ)
Laser Off Power	P_{off}			-30	dBm	
Extinction Ratio	ER	8.2			dB	
Relative Intensity Noise	RIN			-128	dB/Hz	12dB reflection
Transmitter Dispersion Penalty	TDP			3.9	dB	
Optical Return Loss Tolerance				12	dB	

Receiver Optical Specifications ($T_a = +25 \pm 5^\circ\text{C}$, $V_{CC} = 3.3 \pm 0.2\text{V}$)

Parameter	Symbol	Min	Typ	Max	Units	Notes
Input Center Wavelength	c	840	850	860	nm	
Receiver Sensitivity	Sen1			-16	dBm	
Receiver Overload	P _{MAX}	-1			dBm	
LOS -- Deasserted	LOSD			-16	dBm	Transition: low to high
LOS -- Asserted	LOSA	-30			dBm	Transition: high to low
Los Hysteresis	LOSH	0.5	-	-	dB	
Receiver Reflectance				-12	dB	

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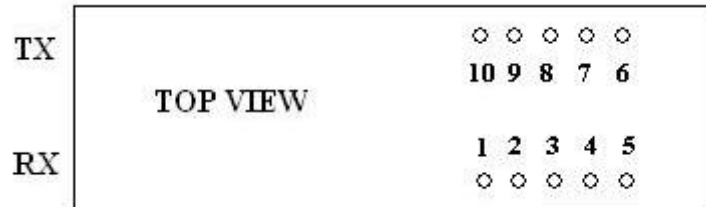
Electrical Parameters

Transceiver Electrical Characteristics (Ambient Operating Temperature $T_a=+25\pm 5^\circ\text{C}$, $V_{CC} = 3.3\pm 0.2\text{V}$)

Parameter	Symbol	Min	Typ	Max	Units	Notes
High-Speed Signal (CML) Interface Specification						
Input Data Rate			-	5	Gb/s	
Differential Input Impedance	Rin		100		Ω	Internally AC coupled
Single Ended Output Voltage Tolerance		-0.3		4	V	
Common mode voltage tolerance		15			mV	
Tx Input Diff Voltage	VI	90		350	mV	
Tx Fault	VoL	-0.3		0.4	V	At 0.7mA
Output Data Rate			-	5	Gb/s	
Differential Output Impedance	Rout		100		Ω	
Single Ended Output Voltage Tolerance		-0.3		4	V	
Rx Output Diff Voltage	Vo	150		425	mV	
Rx Output Rise and Fall Time	Tr/Tf	30			ps	20% to 80%
Low-Speed Signal (LVTTTL) Interface Specification						
Input High Voltage		2.0		$V_{CC}+0.3$	V	
Input Low Voltage		GND		0.8	V	
Output High Voltage		2.4		V_{CC}	V	
Output Low Voltage		GND		0.5	V	

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Pin Assignment



Pin Function Definitions

Pin #	Pin Name	Description	Note
1	VEER	Receiver Ground	-
2	VCCR	Receiver Power Supply	-
3	SD	Signal Detect. (LV)PECL or (LV)TTL output	1
4	RD-	Inv. Received Data Out	-
5	RD+	Received Data Out	-
6	VCCT	Transmitter Power Supply	-
7	VEET	Transmitter Ground	-
8	TDIS	Transmitter Disable	2
9	TD+	Transmit Data In	-
10	TD-	Inv. Transmit Data In	-

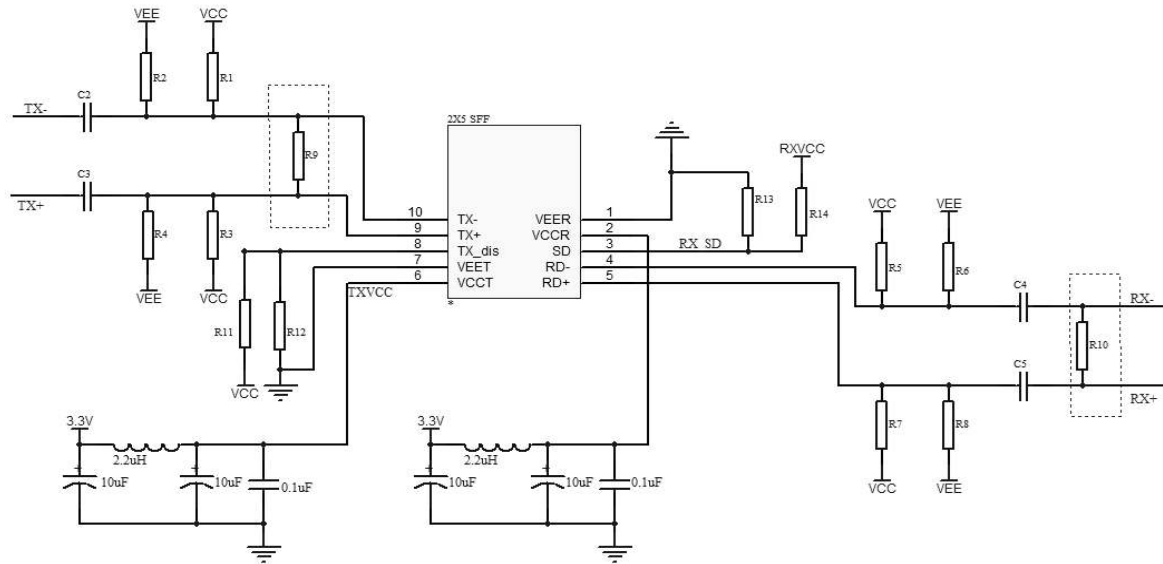
Notes:

1: (LV)PECL-Normal optical input levels to the receiver result in logic “1” output, pull-down 130Ω or 270Ω resistor, (LV)TTL-Normal optical input levels to the receiver result in logic “0” output, pull-up 10kΩ resistor.

2: This is an input that is used to shut down the transmitter optical output. Transmitter on in logic “0”.

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Recommended Circuit



R1=R3=R5=R7=130Ω, R2=R4=R6=R8=82Ω, C2=C3=C4=C5=104p, R5=R10=100Ω=NC,
R11=R12=10K,

SD=LVPECL:R14=10K=NC, R13=130Ω,SD=LVTTTL:R14=10K, R12=130Ω=NC.

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Mechanical Dimensions (units: mm)

