GO2929-31CM-AO

Embrionix® GO2929-31CM Compatible TAA 3G SDI SFP Audio/Video Transceiver (SMF, 1310nm, 30km, LC, DOM, 0 to 70C)

Features

- Compliant with SMPTE 297-2006
- Supports video pathological patterns for SD-SDI, HD-SDI and 3G-SDI
- Duplex LC Connector
- Robust error free transmission of signals from 50Mbps to 3Gbps with up to 30km single-mode fiber
- Maximum distance of 10km under worst-case conditions and 3Gbps video pathological signals
- Single 3.3V Supply
- SFP Package
- Die Cast Metal Housing
- Low Power Consumption, typical 650mW
- Commercial Temperature 0 to 70 Celsius
- RoHS compliant and Lead Free

Applications:

- 3G SDI Video System
- Access and Enterprise

Product Description

This Embrionix® GO2929-31CM compatible SDI audio/video SFP transceiver provides 3G throughput up to 30km over single-mode fiber (SMF) using a wavelength of 1310nm via a duplex LC connector. It can operate at temperatures between 0 and 70C. This product features a non-MSA pin out. Additional product features include Digital Optical Monitoring (DOM) support which allows 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."

Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4.
- ESD to the LC Receptacle: compatible with IEC 61000-4-3.
- EMI/EMC: compatible with FCC Part 15 Subpart B Rules, EN55022:2010.
- Laser Eye Safety: compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1, 2.
- RoHS: compliant with EU RoHS 2.0 directive 2015/863/EU.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Maximum Supply Voltage	Vcc	-0.5		4	V
Storage Temperature	Tstg	-40		85	°C
Operating Case Temperature	Tc	0		70	°C
Operating Humidity	RH			95	%
Data Rate		50		3000	Mbps

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.15	3.3	3.45	V	
Power Supply Current	Icc			350	mA	
Supply Current	Icc		170	210	mA	1, 2
Power Consumption			650	900	mW	
Surge Current	Isurge			30	mA	Surge Above Steady State Value
Serial ID Clock Rate	F_serial_clock			400	kHz	
Tx_Disable Assert Time	T_off			10	µs	3
Tx_Disable Negate Time	T_on			1	ms	4
Rx_LOS Assert Time	T_los_on			10	ms	5
Rx_LOS De-assert Time	T_los_off			10	ms	6
I²C Clock, I²C Data	VOH	2.5		Vcc+0.3	V	
	VOL	0		0.5	V	
Transmitter						
CML/LVPECL Inputs (Differential)		400		2000	mVp-p	AC Coupled Inputs
Input Impedance (Differential)	ZIN	95	100	105	Ω	RIN>100kΩ @ DC
Tx_Disable Input Voltage - High	VIH	2		3.45	V	
Tx_Disable Input Voltage - Low	VIL	0		0.8	V	

Receiver						
CML Outputs (Differential)		400	800	950	mVp-p	AC Coupled Outputs
Maximum Back Reflection				-27	dB	

Notes:

1. Outside the specified range, performance is not guaranteed.
2. Tc=25°C, Vcc=+3.3V.
3. Time from rising edge of Tx_Disable to when the optical output falls below 10% of nominal.
4. Time from falling edge of Tx_Disable to when the modulated optical output rises above 90% of nominal.
5. Time from Rx_LOS state to Rx_LOS Assert.
6. Time from non-Rx_LOS state to Rx_LOS De-Assert.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Distance	L	10		30	km	@2.97Gbps
Transmitter						
Optical Center Wavelength	λC	1290	1310	1330	nm	1
Spectral Width	Δλ			3	nm	RMS
Optical Transmit Power	Po	-5		0	dBm	@25°C
Extinction Ratio	ER	5	7.5		dB	P1/P0
Relative Intensity Noise	RIN			-117	dB/Hz	
Total Jitter (pk-pk)	TJ		110	180	ps	2
	TJ		60	100	ps	3
	TJ		45	70	ps	4
	TJ		30	60	ps	5
Output Rise Time (20-80%)	Tr		105	165	ps	2970Mbps
	Tr		170	270	ps	1485Mbps
	Tr		300	800	ps	270Mbps
Output Fall Time (20-80%)	Tf		120	180	ps	2970Mbps
	Tf		180	270	ps	1485Mbps
	Tf		300	800	ps	270Mbps
Receiver						
Optical Input Wavelength	λ	1260		1620	nm	
Min. Optical Input Power with Pathological Test Matrix Pattern	Pmin		-22	-20	dBm	6, 7, 8
	Pmin		-22	-20	dBm	6, 9
	Pmin		-22	-20	dBm	6, 7, 10
	Pmin		-22	-20	dBm	6, 11
	Pmin		-22	-20	dBm	6, 7, 12
	Pmin		-22	-20	dBm	6, 13

	Pmin		-19	-18	dBm	6, 7, 14
	Pmin		-21	-20	dBm	6, 15
Overload	Pmax	-3			dBm	7
Maximum Back Reflection				-27	dB	
Rx_LOS - Asserted	LOSA	-30		-25	dBm	16
Rx_LOS – De-Asserted	LOSD	-26		-19	dBm	16
Rx_LOS - Hysteresis		1	3	5	dB	16

Notes:

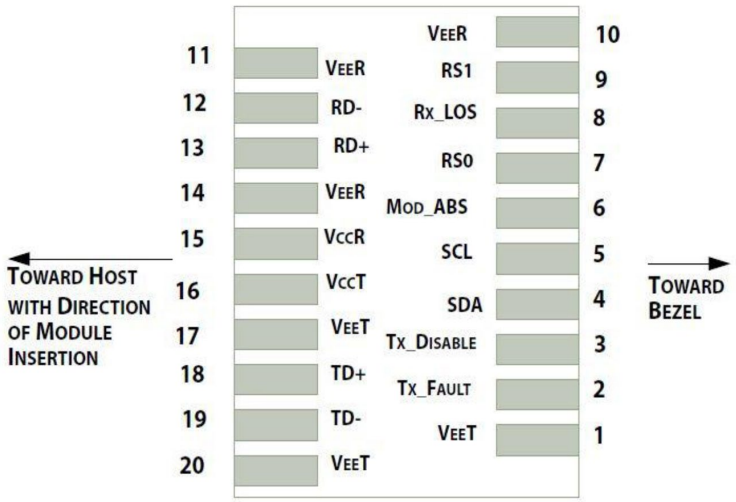
1. Tc=25°C.
2. Measured with Pathological Test Matrix Pattern @270Mbps.
3. Measured with Pathological Test Matrix Pattern @1485Mbps.
4. Measured with Pathological Test Matrix Pattern @970Mbps.
5. Measured with Color Bar Test Signal 2970/1485/270Mbps.
6. Measured at the BER less than $1E^{-12}$.
7. BER less than $1E^{-12}$ against SDI matrix check field signals for video applications. BER less than $1E^{-12}$ against PRBS 2^{23}-1 for datacom applications.
8. Pathological, SMPTE 259M, 143-360Mbps.
9. PRBS 2^{23}-1, SMPTE 259M, 143-360Mbps.
10. Pathological, SMPTE 344M, 540Mbps.
11. PRBS 2^{23}-1, SMPTE 344M, 540Mbps.
12. Pathological, SMPTE 292M, 1.485Gbps.
13. PRBS 2^{23}-1, SMPTE 292M, 1.485Gbps.
14. Pathological, SMPTE 424M, 2.97Gbps.
15. PRBS 2^{23}-1, SMPTE 424M, 2.97Gbps.
16. No Signal Pins Designated for Rx_LOS. Assert/De-Assert Levels can be monitored via the Digital Diagnostics Interface.

Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	Tx_Fault	Transmitter Fault. LVTTL-O.	2
3	Tx_Disable	Transmitter Disable. Laser output disabled on “high” or “open.” LVTT-I.	3
4	SDA	2-Wire Serial Interface Data. Same as MOD-DEF2 in INF-8074i. LVTTL-I/O.	
5	SCL	2-Wire Serial Interface Clock. Same as MOD-DEF2 in INF-8074i. LVTTL-I.	
6	MOD_ABS	Module Absent. Connect to VeeT or VeeR in the module.	4
7	RS0	Rate Select 0. Not Used.	5
8	LOS	Loss of Signal Indication. “Logic 0” indicates normal operation. LVTTL-O.	2
9	RS1	Rate Select 1. Not Used.	5
10	VeeR	Receiver Ground (Common with Transmitter Ground).	1
11	VeeR	Receiver Ground (Common with Transmitter Ground).	1
12	RD-	Receiver Inverted Data Out. AC Coupled. CML-O.	
13	RD+	Receiver Non-Inverted Data Out. AC Coupled. CML-O.	
14	VeeR	Receiver Ground (Common with Transmitter Ground).	1
15	VccR	Receiver Power Supply.	
16	VccT	Transmitter Power Supply.	
17	VeeT	Transmitter Ground (Common with Receiver Ground).	1
18	TD+	Transmitter Non-Inverted Data In. AC Coupled. CML-I.	
19	TD-	Transmitter Inverted Data In. AC Coupled. CML-O.	
20	VeeT	Transmitter Ground (Common with Receiver Ground).	1

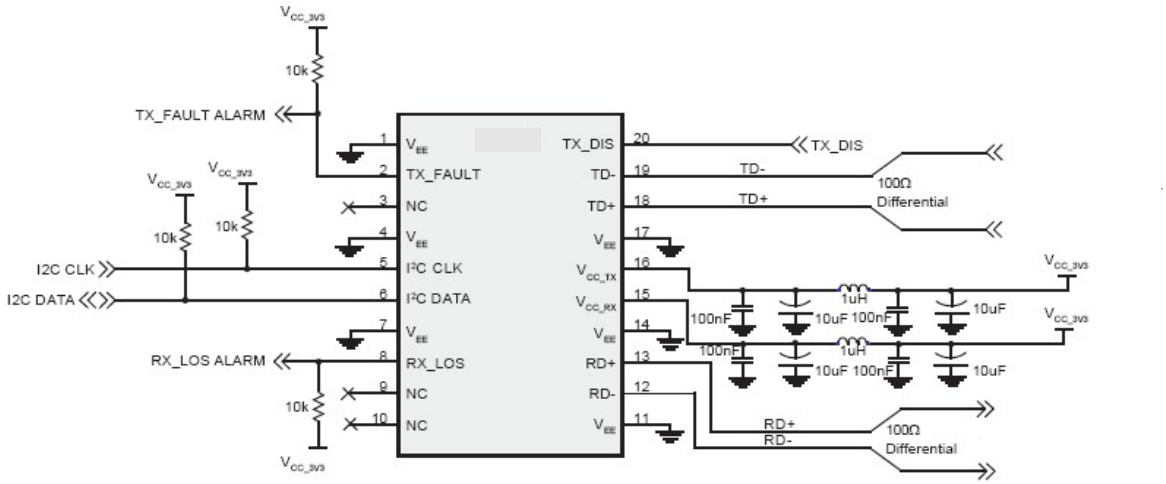
Notes:

1. The module signal ground contacts, VeeR and VeeT, should be isolated from the module case.
2. This contact is an open collector/drain output and should be pulled up to the Host_Vcc with resistor in the range 4.7kΩ-10kΩ. Pull-ups can be connected to one or several power supplies; however, the host board design shall ensure that no module contract has voltage exceeding module VccT/R +0.5V.
3. Tx_Disable is an input contact with a 4.7kΩ-10kΩ pull-up resistor to VccT inside module.
4. MOD_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull the contract up to Host_ Vcc with a resistor in the range from 4.7kΩ-10kΩ. MOD_ABS is asserted “High” when the SFP+ module is physically absent from a host slot.
5. Internally pulled down per SFF-8431.

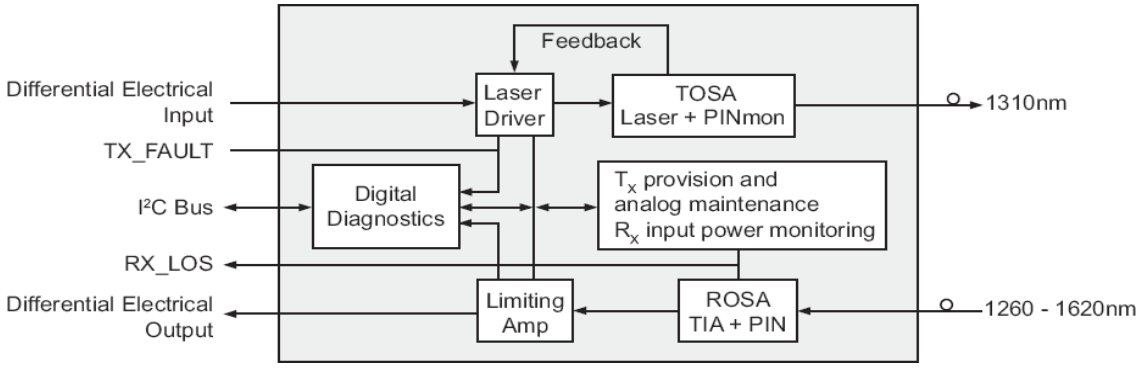


Pin-Out of Connector Block on the Host Board

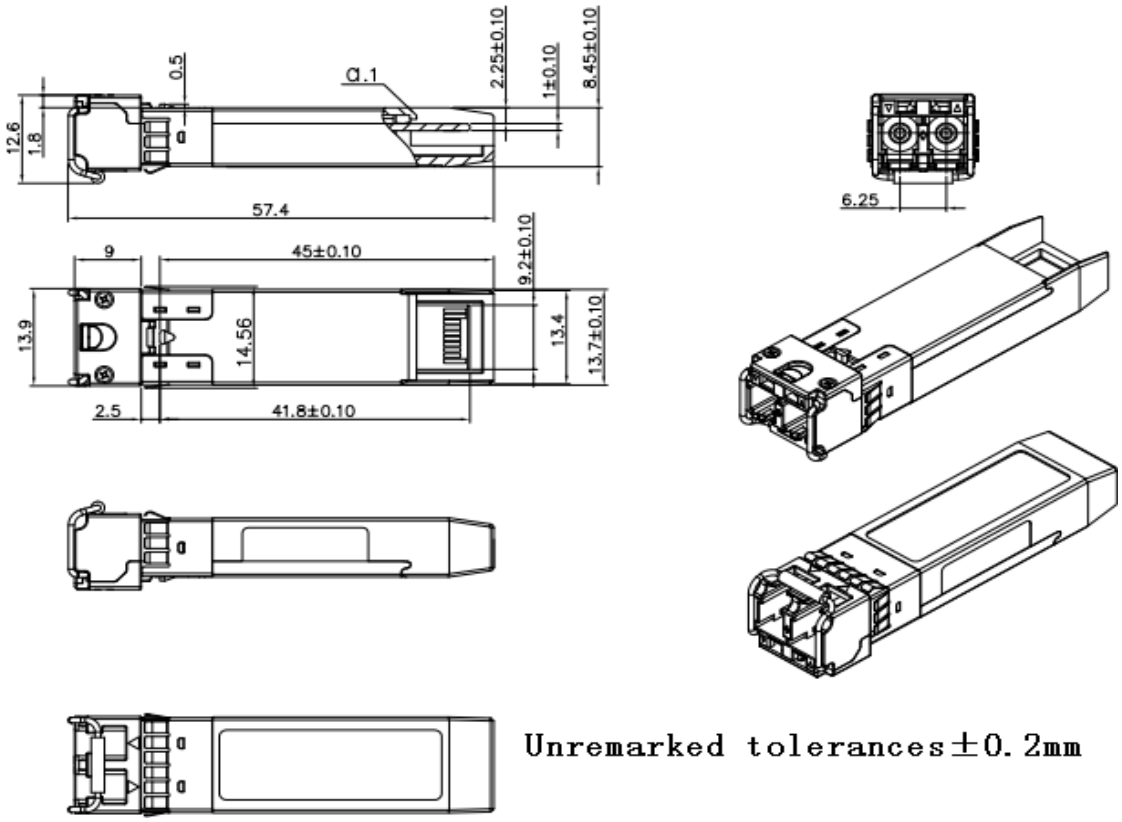
Recommended Circuit Schematic



Functional Description of Transceiver

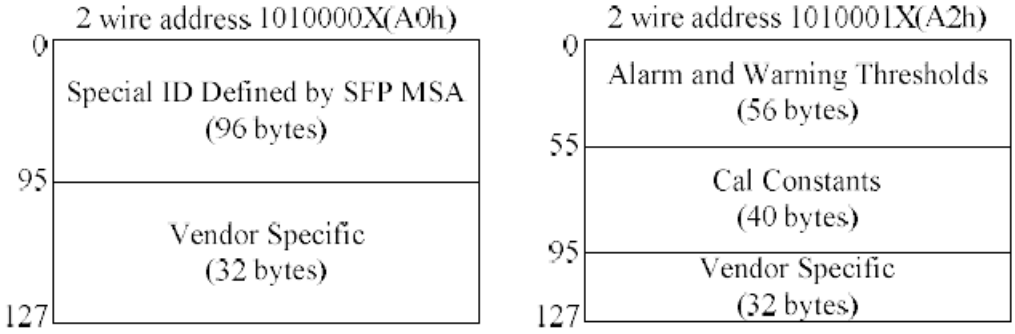


Mechanical Specifications



EEPROM Information

EEPROM memory map-specific data field description is as below:



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 in engrained 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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