50 Mb/s -2.97 Gb/s Transceivers
1550 nm, Single Mode, 40 km
SDI SFP Dual LC Connector

OptixCom Connect with Light

SDI Video Small Form Pluggable (SDI SFP)

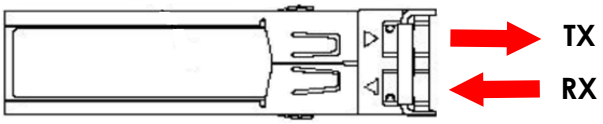
Description

OptixCom's advanced video SFP optical transceivers are deployed for the increasing demand of high definition video applications over a long distance. The design supports pathological patterns for SD, ED, HD, and 3G SDI (Serial Digital Interface) signals from 50 Mb/s to 3 Gb/s. The high data rate enables crystal clear video resolution with minimum degradation. In addition to standard optical transceiver components used in the module, a micro-controller IC is utilized to process video signals. This electrical-optical interface is also compatible with SMPTE 297-2006 standard and SFP Multi-Source Agreement (MSA) package specifications.

This particular transceiver module supports a two-way optical video link. The transceiver has >20 dB power budget for 40 km of transmission distance with standard single mode fibers. This product is RoHS compliant and typical power consumption is < 1.5 W.

Lead-Free

SDI-2970EX-TR40K



Key Features

- 1550 nm single mode optical transceiver
- 50 Mb/s – 3 Gb/s; SMPTE 297-2006 compatible
- 20 dB power budget for 40 km distance
- Support SMPTE 424M/292M/297M/259M
- Duplex LC connector optical interface
- Single 3.3V power supply
- Z-axis hot pluggable
- SFF-8472 MSA Compliant
- RoHS compliant

Ordering Information

Part Number: SDI-2970EX-TR40K

Description:

1310 nm, 50 Mb/s to 2.97 Gb/s, single mode, SDI video SFP optical transceivers, 40 km reach, 0-70°C

Applications

- ✓ Serial Digital Interface (SDI) standard
- ✓SMPTE 297-2006 compatible electrical-optical interface
- ✓Remote digital display systems or security surveillance
- ✓ Professional video broadcast
- ✓ Digital cinema system

Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	50	2970	3000	Mb/s
Supply Voltage	3.15	3.3	3.45	V
Supply Current	---	---	450	mA

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Irvine, CA 92614
Tel: (949) 679-5712 Fax: (949) 420-2134

http://www.OptixCom.com
http://www.OpticalTransceiver.com
Email: Support@OptixCom.com

Germany Office: OptixCom GmbH
Freiherr vom Stein Strasse 19, 60323
Frankfurt am Main, Germany
Tel: +49 (0)69 7953-3646

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	*Tst*	-40	85	°C
Humidity	*R.H.*	---	85	%
Soldering Temperature (10 sec. on leads)	*Tsd*	---	260	°C

Transmitter Electro-Optical Characteristics

Parameter		Symbol	Min.	Typical	Max.	Units
Differential Input Voltage [1]		ΔVi	0.4	---	1.8	V
Differential Input Impedance [2]		*Z*	90	100	110	ohm
Optical Output Power [3]		P_O	-2	0	+3	dBm
Optical Wavelength		λ_O	1480	1550	1580	nm
Spectral Width (-20 dB)		$\Delta\lambda$	---	---	1	nm
Side Mode Suppression Ratio		*SMSR*	30	---	---	dB
Extinction Ratio		*ET*	5	8	---	dB
Rise/Fall Time (20% - 80%)	SD-SDI	*Tr/Tf*	---	---	1500	ps
	HD-SDI		---	---	270	
	3G-SDI		---	---	135	
Total Jitter PRBS & Color Bar	SD-SDI	*Tj*	---	70	200	ps
	HD-SDI		---	50	135	
	3G-SDI		---	70	100	
Total Jitter Pathological	SD-SDI	*Tj*	---	200	300	ps
	HD-SDI		---	115	---	
	3G-SDI		---	120	---	

Notes:

1. Applied to AC LVPECL I/O coupling. See the design guide for proper termination.
2. Single ended will be 50 ohm for each signal line.
3. Output of coupling optical power into 9/125 μm SMF.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

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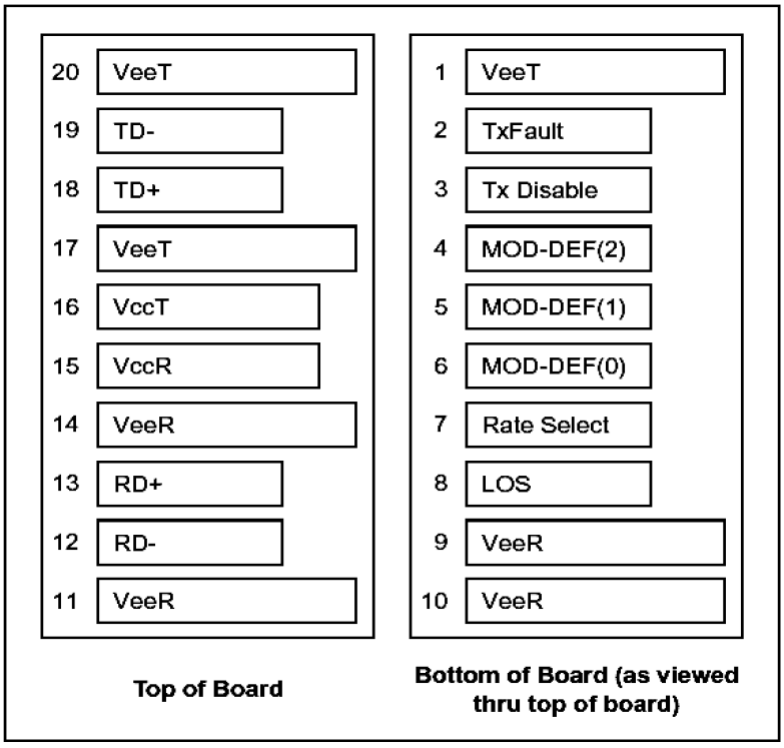
Transmitter Electro-Optical Characteristics (Cont'd)

Parameter	Symbol	Min.	Typical	Max.	Units
TX Disable Voltage – High	V_{DH}	2.0	---	V_{CC}	V
TX Disable Voltage - Low	V_{DL}	0	---	0.8	V
TX Fault Output - High	V_{FH}	2.0	---	V_{CC}	V
TX Fault Output - Low	V_{FL}	0	---	0.8	V
TX Disable Assert Time	T_{ass}	---	---	10	µs
TX Disable Deassert Time	T_{disass}	---	---	1.0	ms
Serial ID Clock Rate	f_C	---	---	280	kHz
Time to Initialize	T_{as}	---	---	300	ms
TX Fault from Fault to Assertion	T_{fault}	---	---	100	µs
TX Disable Time to Start Reset	T_{reset}	10	---	---	µs

PIN Assignment and Description



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Receiver Electro-Optical Characteristics

Parameter		Symbol	Min.	Typical	Max.	Units
Differential Output Voltage [1]		ΔVi	0.6	0.8	1.0	V
Differential Impedance [2]		Z	90	100	110	ohm
RX Signal Loss – Deasserted		P_{RL-}	-29	---	---	dBm
RX Signal Loss – Asserted		P_{RL+}	---	---	-22	dBm
Receiver Overload		P_{max}	+0	---	---	dBm
Optical Wavelength		λ_o	1260	---	1580	nm
Signal Detect Hysteresis		$P_{RL+} - P_{RL-}$	1	---	---	dB
Receiver Sensitivity (PBRS)[3]	SD-SDI	P_I	---	---	-25	dBm
	HD-SDI		---	---	-23	
	3G-SDI		---	---	-22	
Receiver (Pathological)[3]	SD-SDI	P_I	---	---	-25	dBm
	HD-SDI		---	---	-23	
	3G-SDI		---	---	-22	
Rise/Fall Time (20% - 80%)	SD-SDI	T_r/T_f	---	---	1500	ps
	HD-SDI		---	---	270	
	3G-SDI		---	---	135	
Total Jitter PRBS & Color Bar	SD-SDI	T_j	---	70	200	Ps
	HD-SDI		---	50	135	
	3G-SDI		---	70	100	
Total Jitter Pathological	SD-SDI	T_j	---	200	300	ps
	HD-SDI		---	115	---	
	3G-SDI		---	120	---	
RX Signal Loss Output - High		V_{RL+}	2.0	---	V_{CC}	V
RX Signal Loss Output - Low		V_{RL-}	0	---	0.8	V
RX Signal Loss Assert Time		T_{RL+}	---	---	100	µs
RX Signal Loss Deassert Time		T_{RL-}	---	---	100	µs

Notes:

1. Applied to AC LVPECL I/O coupling. See the design guide for proper termination.
2. Single ended will be 50 ohm for each signal line.
3. Test at 3 Gb/s, $2^7 - 1$ PRBS data pattern, and > $1x10^{-12}$ of Bit-Error-Rate (BER)

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