

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



SDI Video Small Form Pluggable (SDI SFP)

Description

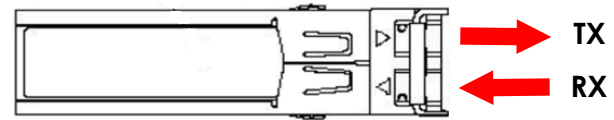
OptixCom's advanced video SFP optical transceivers are deployed for the increasing demand of high definition video applications over a long distance. The design supports pathological patterns for SD, ED, HD, and 3G SDI (Serial Digital Interface) signals from 50 Mb/s to 3 Gb/s. The high data rate enables 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

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

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

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

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	T_{st}	-40	85	°C
Humidity	$R.H.$	---	85	%
Soldering Temperature (10 sec. on leads)	T_{sd}	---	260	°C

Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage ¹	ΔV_i	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	---	---	1500	ps
	HD-SDI	---	---	270	
	3G-SDI	---	---	135	
Total Jitter PRBS & Color Bar	SD-SDI	---	70	200	ps
	HD-SDI	---	50	135	
	3G-SDI	---	70	100	
Total Jitter Pathological	SD-SDI	---	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 μ m SMF.

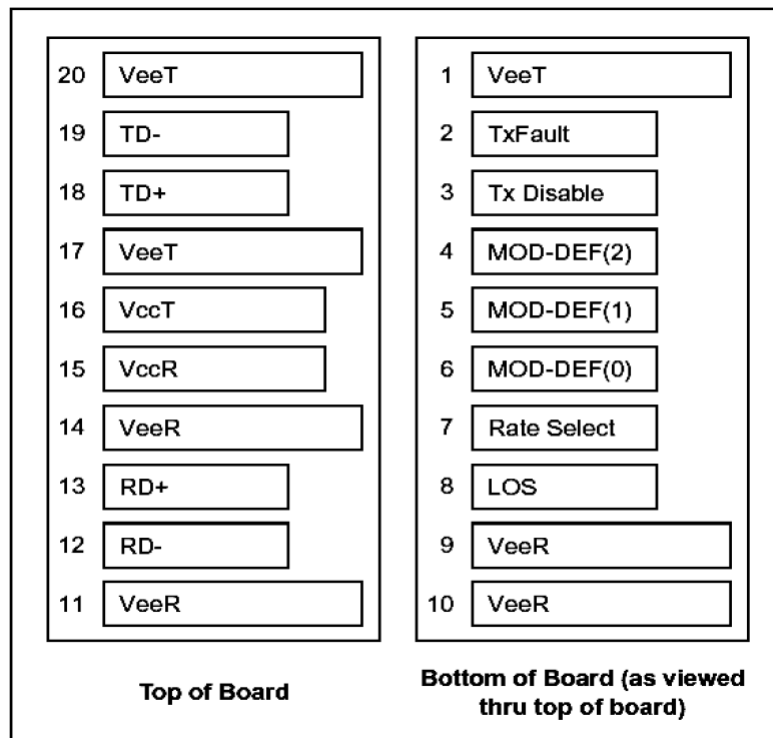
**Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11**



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	μ s
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	μ s
TX Disable Time to Start Reset	T_{reset}	10	---	---	μ s

PIN Assignment and Description



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Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage ¹	ΔV_i	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	---	---	-25	dBm
	HD-SDI	P_i	---	-23	
	3G-SDI	---	---	-22	
Receiver (Pathological) ³	SD-SDI	---	---	-25	dBm
	HD-SDI	P_i	---	-23	
	3G-SDI	---	---	-22	
Rise/Fall Time (20% - 80%)	SD-SDI	---	---	1500	ps
	HD-SDI	T_r/T_f	---	270	
	3G-SDI	---	---	135	
Total Jitter PRBS & Color Bar	SD-SDI	---	70	200	Ps
	HD-SDI	T_j	50	135	
	3G-SDI	---	70	100	
Total Jitter Pathological	SD-SDI	---	200	300	ps
	HD-SDI	T_j	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, 2⁷ - 1 PRBS data pattern, and > 1x10⁻¹² of Bit-Error-Rate (BER)

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