155 Mbps SFP Transceiver

SFP-O3D-XLR

Features

- Designed for SFF-8472 and SFF-8074i compliance (SFP)
- 100 - 155 Mbps data rates
  - SONET OC-3/STM-1
  - Fast Ethernet
- Class 1 laser (Tx): 1550 nm
- 170 km distance
- Digital Diagnostics (SFF-8724)
- Commercial temperature rating

General Operations				
Parameter	**Symbol**	**Min.**	**Max.**	**Unit**
Supply Voltage	V_{cc}	3.135	3.465	V
Total Current	I_{cc}	-	300	mA
Power Supply Noise Rejection[a]	PSR	100	-	mV_{p-p}
Operating Temperature of SFP Case[b]	T_{op}	-5	70	ºC
Storage Temperature	T_{st}	-40	85	ºC
Data Rate OC-3/STM-1	DR	100	155	Mbps

a) 20 Hz to 155 MHz
b) Maximum Relative Humidity is 85%, non-condensing

Transmitter Specifications (Optical)				
Parameter	**Symbol**	**Min**	**Max**	**Unit**
Optical Power	P_{op}	1	5	dBm
Average Launch Power (Tx: Off)	P_{off}	-	-45	dBm
Extinction Ratio	ER	10	-	dB
Eye Mask	SONET/SDH Compliant			
Optical Jitter Generation	J_{gen}	-	0.002	UI
Optical Rise Time[c]	t_r	-	1000	ps
Optical Fall Time[c]	t_f	-	1000	ps
Mean Tx Wavelength: 1550	λ	1500	1580	nm
Spectral Width (20 dB)	Δλ	-	1	nm
Side Mode Suppression Ratio	SMSR	30	-	dB
Dispersion Penalty (150 km)	DP	-	2	dB
Relative Intensity Noise	RIN	-	-120	dB/Hz
Reflection Tolerance	rp	-24	-	dB

c) 20% - 80% values

Transmitter Specifications (Electical)				
Parameter	**Symbol**	**Min**	**Max**	**Unit**
Input Differential Impedence	R_{in}	80	120	Ω
PECL Single-Ended Data Input Swing	$V_{in,p-p}$	250	1200	mV
TxFault_Fault	V_{fault}	2	V_{cc}	V
TxFault_Normal	V_{normal}	V_{ee}	V_{ee} + 0.5	V
TxDisable_Disable	V_d	2	V_{cc}	V
TxDisable_Enable	V_{en}	V_{ee}	V_{ee} + 0.8	V

Receiver Specifications (Optical)				
Parameter	**Symbol**	**Min**	**Max**	**Unit**
Receive Power[d]	$R_{sens,low/high}$	-42 (sensitivity)	-8 (saturation)	dBm
Damage Threshold for Receiver	$P_{in,damage}$	4	-	dBm
Mean Rx Wavelength: 1550[e]	λ	1480	1580	nm
LOS Assert	LOSA	-52	-	dBm
LOS De-assert	LOSD	-	-42	dBm
LOS Hysteresis	HYS	0.5	-	dB

d) at 10^{-10} BER, PRBS 2^{23}-1
e) Operational over 1200 nm to 1625 nm range

Receiver Specifications (Electrical)				
Parameter	**Symbol**	**Min**	**Max**	**Unit**
PECL Single Ended Data Output Swing	$V_{out,p-p}$	185	800	mV
Data Output Rise Time	t_r	-	2	ns
Data Output Fall Time	t_f	-	2	ns

Timing and Electrical				
Parameter	**Symbol**	**Min**	**Max**	**Unit**
Tx Disable Negate Time	t_on	-	5	ms
Tx Disable Assert Time	t_off	-	10	µs
Time To Initialize, Including Reset of Tx Fault	t_init	-	300	ms
Tx Fault Assert Time	t_fault	-	100	µs
Tx Disable To Reset	t_reset	10	-	µs
LOS Assert Time	t_loss_on	-	100	µs
LOS De-assert Time	t_loss_off	-	100	µs
Serial ID Clock Rate	f_serial_clock	-	100	KHz
RX_LOS Voltage (High)	-	2	-	V
RX_LOS Voltage (Low)	-	-	0.8	V
LOS Output Voltage-Fault	V_{LOS} fault	2	V_{cc}	V
LOS Output Voltage-Normal	V_{LOS}normal	V_{ee}	V_{ee} + 0.5	V
MOD_DEF (0:2)-High	V_h	2	V_{cc}	V
MOD_DEF (0:2)-Low	V_l	V_{ee}	V_{ee} + 0.5	V

Digital Diagnostics					
Parameter	**Range**	**Accuracy**	**Unit**	**Calibration**	**Formula**
Temperature	-5 to 70	± 3	° C	Internal	Tc(C)=Tad(16 bit signed twos complement)/256
Voltage	0 to V_{cc}	0.1	V	Internal	V(Volts)=Vad(16 bit unsigned integer)*0.1
Bias Current	0 to 120	5	mA	External	I(mA)=Islope*Iad(16 bit unsigned integer)+Ioffset
TX Power	1 to 5	±3	dBm	External	TX_PWR(µW)=TX_PWRslope*TX_PWRad(16 bit unsigned integer +TX_PWRoffset
RX Power	-42 to -10	±5	dBm	External	RX_PWR(µW)=A0+A1*x+A2*x^2+A3*x^3+A4*x^4

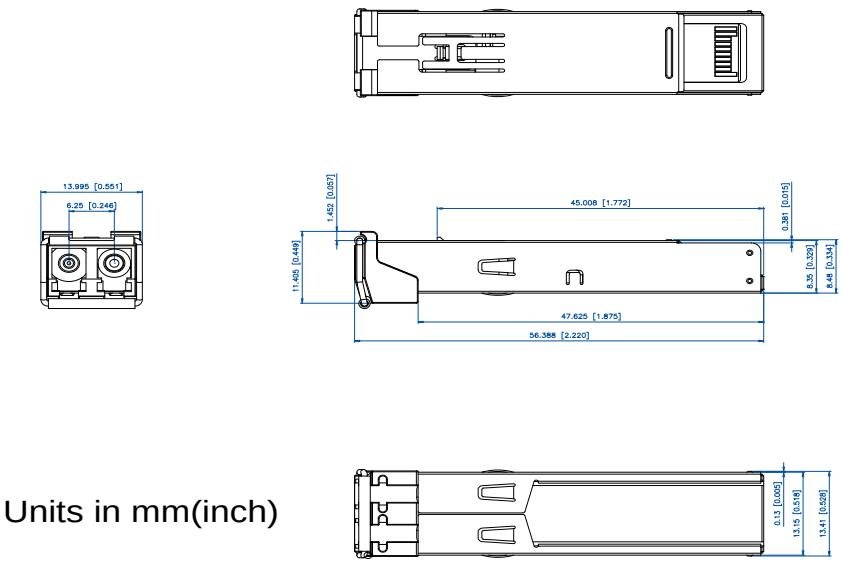
Pin	Function	Notes
1	$V_{ee}T$	TX GND
2	TX_FAULT	Open Collector
3	TX_DISABLE	Internally Pulled High
4	MOD_DEF2	Serial Data Input
5	MOD_DEF1	Serial Clock Input
6	MOD_DEF0	Internally Grounded
7	NC	Not Connected
8	LOS	Open Collector
9	$V_{ee}R$	RX Ground
10	$V_{ee}R$	RX Ground
11	$V_{ee}R$	RX Ground
12	RXD-	RX Data Negative
13	RXD+	RX Data Positive
14	$V_{ee}R$	RX GND
15	V_{ccR}	RX Power
16	V_{ccT}	TX Power
17	$V_{ee}T$	TX GND
18	TXD+	TX Data Positive
19	TXD-	TX Data Negative
20	$V_{ee}T$	TX GND

Ordering Information						
Model	**Description**	**Data Rate (Mbps)**	**Wavelength (nm)**	**Connector**	**Bail Latch Color**	**Distance Range (km)**
SFP-O3D-XLR	SFP FE/OC3 Transceiver	100 - 155	1550	Dual LC	White	60 - 170

Connectivity Unlimited™

Datasheet

Outline Drawing



Units in mm(inch)

Regulatory Compliances

RoHS directive; China RoHS; California RoHS Law, USA and Canada UL listing; 21CFR 1040.10 and 1040.11; SFP MSA SFF-8074i; SFF-8472; Telecordia GR-468; GR-253/STM G.957 compliance

Warnings

Handling Precautions: This device is susceptible to damage as a result of electrostatic descharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

Laser Safety: Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indeirect radiation.

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