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	Vd	2	V_{cc}	V
TxDisable_Enable	Ven	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

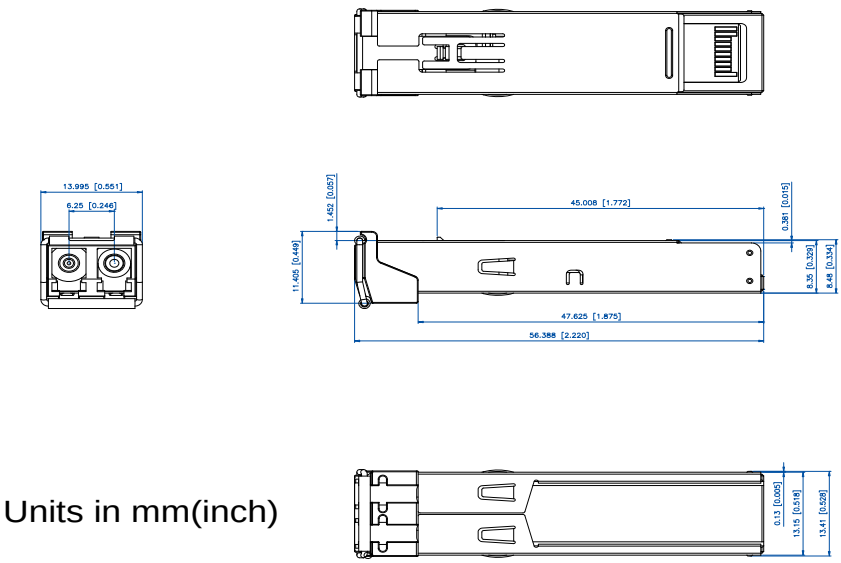
Pin	Function	Notes
1	$V_{ee}T$	TX GND
2	TX_FAULT	Open Collector
3	TX_DISABLE	Internally Pulled High
4	MOD_DEF2	Serial Data Input
5	MOD_DEF1	Serial Clock Input
6	MOD_DEF0	Internally Grounded
7	NC	Not Connected
8	LOS	Open Collector
9	$V_{ee}R$	RX Ground
10	$V_{ee}R$	RX Ground
11	$V_{ee}R$	RX Ground
12	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.

MRV has more than 50 offices throughout the world. Addresses, phone numbers and fax numbers are listed at www.mrv.com.
Please e-mail us at **sales@mrv.com** or call us for assistance.

MRV Los Angeles
20415 Nordhoff St.
Chatsworth, CA 91311
800-338-5316
818-773-0900

MRV Boston
295 Foster St.
Littleton, MA 01460
800-338-5316
978-952-4700

MRV International
Business Park Moerfelden
Waldeckerstrasse 13
64546 Moerfelden-Walldorf
Germany
Tel. (49) 6105/2070
Fax (49) 6105/207-100