

**SFP-MR2700-EIR-CWDM**



**Features**

- Single 3.3 V supply
- 25dB typical link budget
- -5 to 70 °C temperature operation
- CWDM wavelength, DFB laser
- Digital Diagnostic SFF-8472 compliant
- SFP MSA SFF-8074i compliant
- Bellcore GR-468 compliant

General Operating					
Parameter	Symbol	Min	Typical	Max	Unit
Supply Voltage	$V_{CC}$	3.135	3.3	3.465	V
Total Current	$I_{CC}$			300	mA
Inrush Current	$I_{CC}'$			30	mA
Power Supply Noise Rejection <sup>a</sup>		100			mVp-p
Operating Temperature (case)	$T_{Op}$	-5		70	°C
Storage Temperature	$T_{St}$	-40		85	°C
Data Rate	DR	100		2700	Mb/s

a) 20Hz to 155MHz

Transmitter Specifications					
Parameter	Symbol	Min	Typical	Max	Unit
Optical Power	$P_{Op}$	0	2.5	5	dBm
Average Launch power of off Tx	$P_{Off}$			-30	dBm
Extinction Ratio	ER	9			dB
Eye Mask					IEEE 802.3Z, SONET/SDH compliant
Optical Jitter generation	Jgen			0.002	UI
Optical Rise time <sup>b</sup>	$t_r$			160	ps
Optical Fall time <sup>b</sup>	$t_f$			160	ps
Mean Wavelength	$\lambda$	1xxx-7nm	1xxx	1xxx+7nm	nm
Spectral Width (20dB)	$\Delta\lambda$			1	nm
Relative Intensity Noise	RIN			-120	dB/Hz
Reflectance Tolerance <sup>c</sup>	rp	-13	-8.5		dB

b) 20%-80% values

c) 1 dB degradation of receiver sensitivity

Transmitter Electrical					
Parameter	Symbol	Min	Typical	Max	Unit
Input Differential Impedence	$R_{In}$	80	100	120	Ohm
PECL Single Ended data input swing	$V_{in, pp}$	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

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<b>Receiver Specifications</b>					
<b>Parameter</b>	<b>Symbol</b>	<b>Min</b>	<b>Typical</b>	<b>Max</b>	<b>Unit</b>
Receive Power Low <sup>a</sup>	R <sub>sens,low</sub>	-18	-23		dBm
Receive Power High	R <sub>sens,high</sub>			-3	dBm
Damage Threshold for Receiver	P <sub>in,damage</sub>			5	dBm
Wavelength <sup>b</sup>	λ	1260		1360	nm
Maximum Reflectance of Receiver	RX_r			-27	dB
LOS Assert		-28			dBm
LOS De-assert				-18	dBm
LOS hysteresis		1			dB

a) at 10<sup>-10</sup> BER, PRBS 2<sup>23</sup>-1 for SONET, 10<sup>-12</sup> BER, PRBS 2<sup>7</sup>-1 for Gigabit Ethernet

b) operational over 1200 to 1625 nm range

<b>Electrical Output</b>					
<b>Parameter</b>	<b>Symbol</b>	<b>Min</b>	<b>Typical</b>	<b>Max</b>	<b>Unit</b>
PECL Single ended data output swing	V <sub>out,r pp</sub>	400		800	mV
Data output rise time	T <sub>r</sub>			175	ps
Data output fall time	T <sub>f</sub>			175	ps

<b>Timing and Electrical</b>					
<b>Parameter</b>	<b>Symbol</b>	<b>Min</b>	<b>Typical</b>	<b>Max</b>	<b>Unit</b>
Tx Disable Negate time	t <sub>on</sub>			1	ms
Tx Disable assert time	t <sub>off</sub>			10	μs
Time to initialize, including reset of TX fault	t <sub>init</sub>			300	ms
Tx fault Assert time	t <sub>fault</sub>			100	μs
Tx Disable to reset	t <sub>reset</sub>	10			μs
LOS Assert time	t <sub>loss_on</sub>			100	μs
LOS De-assert time	t <sub>loss_off</sub>			100	μs
Serial ID Clock Rate	f <sub>serial_clock</sub>			100	KHz
RX_LOS Voltage (high)		2			V
RX_LOS Voltage (low)				0.8	V
LOS output voltage-Fault	V <sub>LOS fault</sub>	2		V <sub>cc</sub>	V
LOS output voltage-Normal	V <sub>LOS normal</sub>	V <sub>ee</sub>		V <sub>ee</sub> +0.5	V
MOD_DEF (0:2)-High	V <sub>h</sub>	2		V <sub>cc</sub>	V
MOD_DEF (0:2)-Low	V <sub>l</sub>	V <sub>ee</sub>		V <sub>ee</sub> +0.5	V

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**Diagnostics**

Parameter	Range	Accuracy	Unit	Calibration	Formula
Temperature	-5 to 70	± 3	°C	Internal	$T_c(C) = T_{ad}(16 \text{ bit signed twos complement})/256$
Voltage	0 to $V_{cc}$	0.1	V	Internal	$V(\text{Volts}) = V_{ad}(16 \text{ bit unsigned integer}) * 0.1$
Bias Current	0 to 120	5	mA	External	$I(\text{mA}) = I_{slope} * I_{ad}(16 \text{ bit unsigned integer}) + I_{offset}$
TX Power	0 to 0.5	± 3 dB	mW	External	$TX\_PWR(\text{uW}) = TX\_PWR_{slope} * TX\_PWR_{ad}(16 \text{ bit unsigned integer}) + TX\_PWR_{offset}$
RX Power	-24 to -3 dBm	± 3 dB	mW	External	$RX\_PWR(\text{uW}) = A_0 + A_1 * x + A_2 * x^2 + A_3 * x^3 + A_4 * x^4$

**EEPROM Serial ID**

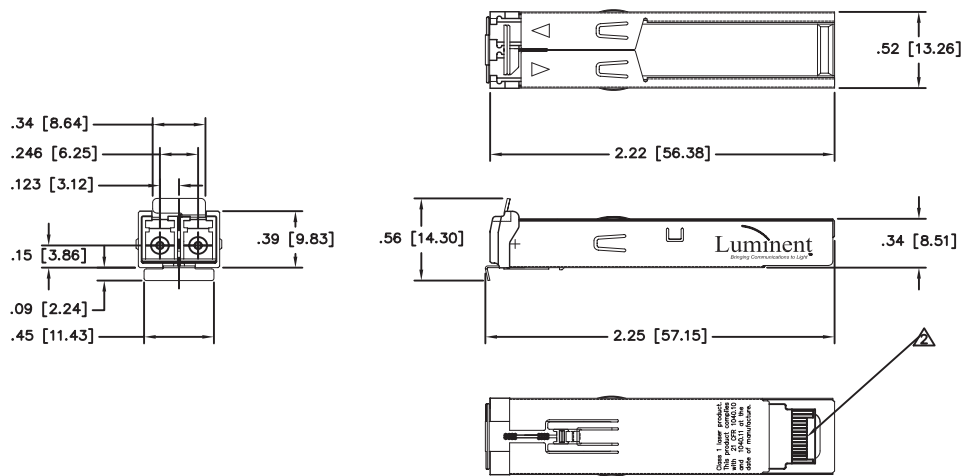
Name of Field	Description of Field	Address	Hex	ASCII
Vendor Name	SFP Vendor name(ASCII)	20	4C	L
		21	55	U
		22	4D	M
		23	49	I
		24	4E	N
		25	45	E
		26	4E	N
		27	54	T
Vendor OUI	IEEE vendor OUI code for Luminent Inc.	37	00	
		38	06	
		39	B5	
Vendor PN	Part number in ASCII, e.g. SFP-MR2700-EIR-CWDM	40	53	S
		41	46	F
		42	50	P
		43	4D	M
		44	52	R
		45	32	2
		46	37	7
		47	30	0
		48	30	0
		49	45	E
		50	49	I
		51	52	R
		52	43	C
		53	57	W
54	44	D		
55	4D	M		

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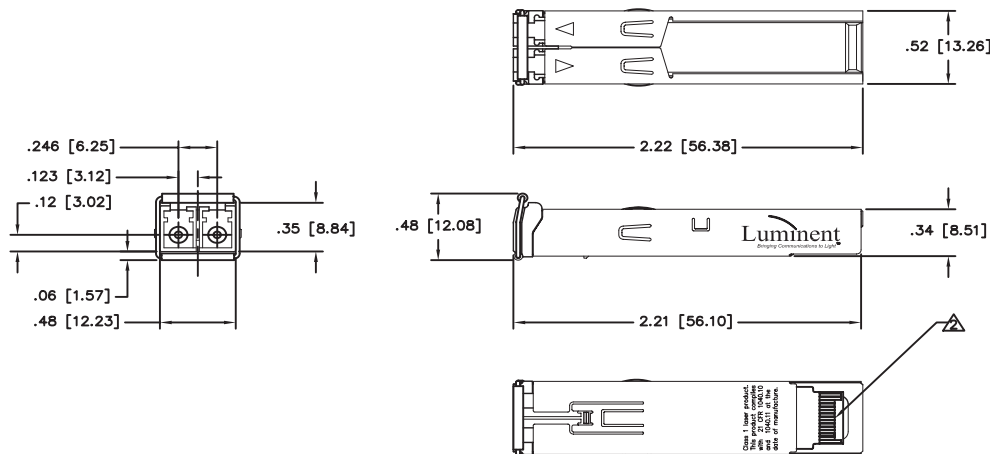
**Pinout Definitions**

Pin	Function	Notes
1	V <sub>ee</sub> 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 <sub>ee</sub> R	RX Ground
10	V <sub>ee</sub> R	RX Ground
11	V <sub>ee</sub> R	RX Ground
12	RXD-	RX Data Negative
13	RXD+	RX Data Positive
14	V <sub>ee</sub> R	RX GND
15	V <sub>cc</sub> R	RX Power
16	V <sub>cc</sub> T	TX Power
17	V <sub>ee</sub> T	TX GND
18	TXD+	TX Data Positive
19	TXD-	TX Data Negative
20	V <sub>ee</sub> T	TX GND

**Outline Drawing (I Latch)**



**Outline Drawing (Bail Latch)**





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Warnings

**Handling Precautions:** This device is susceptible to damage as a result of electrostatic discharge (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 indirect radiation.

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