Luminent
Bringing Communications to Light™

Multi- Rate SFP Transceiver
Preliminary

SFP-MR2700-SR1

Features

- Single 3.3 V supply
- 17 dB typical link budget
- -40 to 85 °C temperature operation
- 1310nm FP 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[a]		100			mVp-p
Operating Temperature (case)	T_{op}	-40		85	°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}	-10	-6	-3	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[b]	t_r			160	ps
Optical Fall time[b]	t_f			160	ps
Mean Wavelength	λ	1260	1310	1360	nm
Spectral Width (RMS)	Δλ		2	4	nm
Relative Intensity Noise	RIN			-120	dB/Hz
Reflectance Tolerance[c]	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

SFP-MR2700-SR1

Receiver Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Receive Power Low[a]	$R_{sens,low}$	-18	-23		dBm
Receive Power High	$R_{sens,high}$			-3	dBm
Damage Threshold for Receiver	$P_{in,damage}$			5	dBm
Wavelength[b]	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^{-10} BER, PRBS 2^{23}-1 for SONET, 10^{-12} BER, PRBS 2^{7}-1 for Gigabit ethernet
b) Operational over 1200-1625 nm range

Electrical Output

Parameter	Symbol	Min	Typical	Max	Unit
PECL Single ended data output swing	$V_{out,\ pp}$	400		800	mV
Data output rise time	T_r			175	ps
Data output fall time	T_f			175	ps

Timing and Electrical

Parameter	Symbol	Min	Typical	Max	Unit
Tx Disable Negate time	t_on			1	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

SFP-MR2700-SR1

Diagnostics

Parameter	Range	Accuracy	Unit	Calibration	Formula
Temperature	-40 to 85	± 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	0 to 0.5	± 3 dB	mW	External	TX_PWR(uW)=TX_PWRslope*TX_PWRad(16 bit unsigned integer) + TX_PWRoffset
RX Power	-24 to -3 dBm	± 3 dB	mW	External	RX_PWR(uW)= A0+ A1*x + A2*x^2 + A3*x^3 + A4*x^4

EEPROM Serial ID

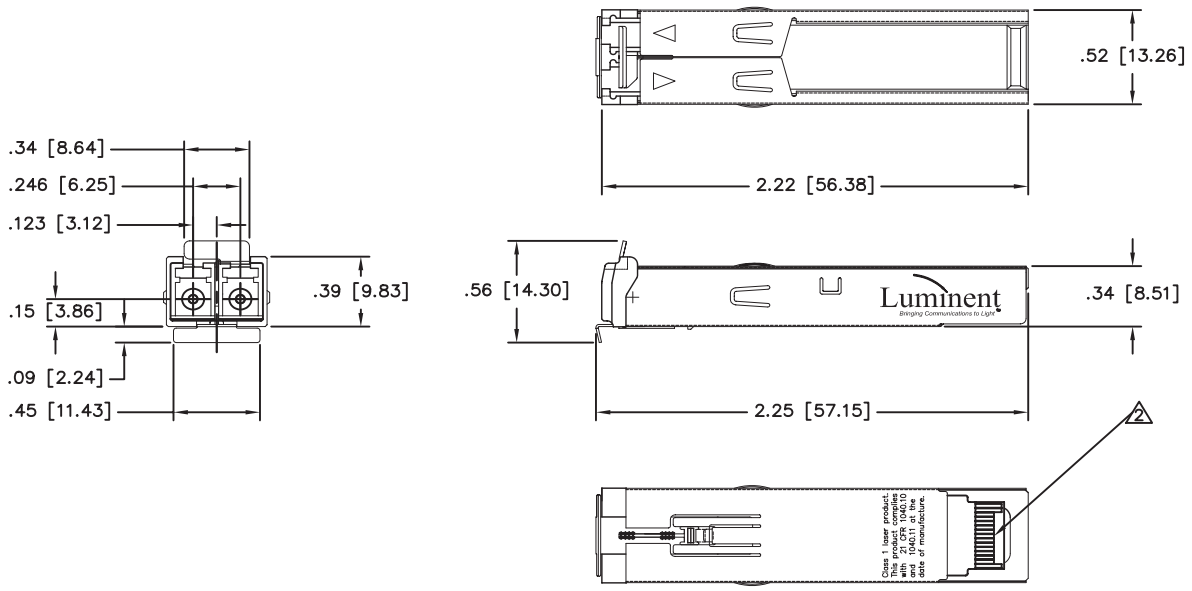
Name of Field	Description of Field	Address	Hex	ASCII
Vendor Name	SFP Vendor name(ASCII)	20	4C	L
		21	55	U
		22	4D	M
		23	49	I
		24	4E	N
		25	45	E
		26	4E	N
		27	54	T
Vendor OUI	IEEE vendor OUI code for Luminent Inc.	37	00	
		38	06	
		39	B5	
Vendor PN	Part number in ASCII, e.g. SFP-MR2700-SR1	40	53	S
		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	53	S
		50	52	R
		51	31	1

Pinout Definitions

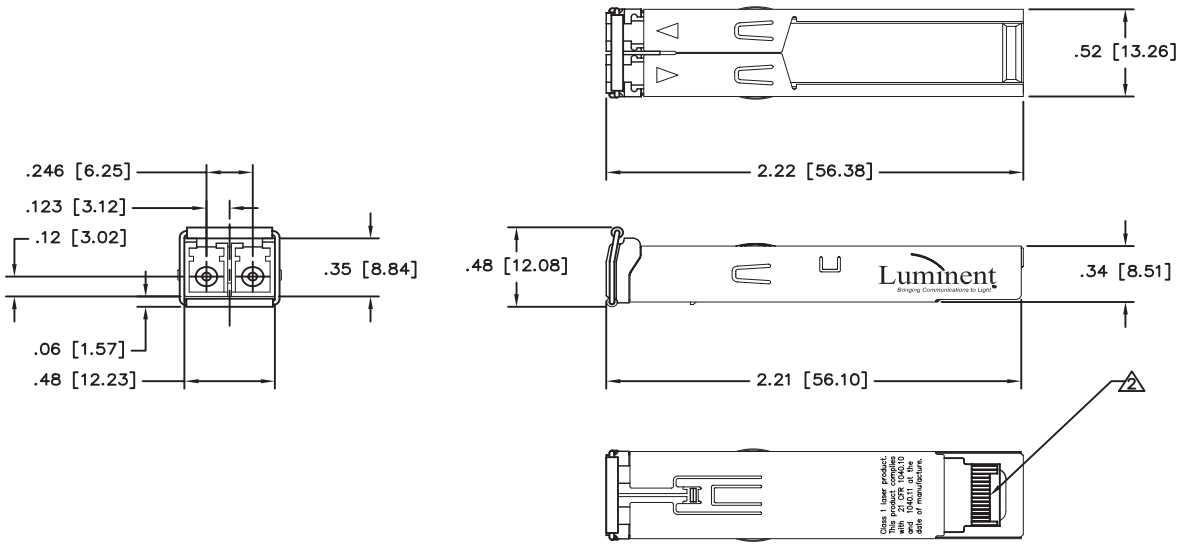
Pin	Function	Notes
1	$V_{ee}T$	TX GND
2	TX_FAULT	Open Collector
3	TX_DISABLE	Internally Pulled High
4	MOD_DEF2	Serial Data Input
5	MOD_DEF1	Serial Clock Input
6	MOD_DEF0	Internally Grounded
7	NC	Not Connected
8	LOS	Open Collector
9	$V_{ee}R$	RX Ground
10	$V_{ee}R$	RX Ground
11	$V_{ee}R$	RX Ground
12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

SFP-MR2700-SR1

Outline Drawing (I Latch)



Outline Drawing (Bail Latch)



SFP-MR2700-SR1

Ordering Information

Form Factor - Data Rate (Mb/s) - Interface (Standard Or Luminent Specified) - CWDM/DWDM -- Power Budget - wavelength - Latch type - Digital Diagnostic - Temperature Range - Cutomer Specific

- SFP

- 100
  155
  622
  1062
  1250
  2150
  2488
  2700
  DRXXX= Dual Rate with highest datarate indicated
  MRXXXX= Multirate with highest datarate indicated
  Blank= Datarate that is called out in for factor(XFP, XENPAK)

- SR1
  IR1
  IR2
  LR1
  LR2
  LR3
  LR(for CWDM
  LX
  XD
  ZX
  ELX= Extended LX
  EIR= Extended IR
  ELR= Extended LR
  MELX= Multimode 2 Km

- Blank = non WDM
  CWDM
  ITU

- (Separator)

- Blank=Standard compliant interfaces
  BXX=Budget with
  XX=lowest Tx less Receiver Sens

- Blank=Standard
  XXXX=CWDM ch. DFB
  ITUXXX where XXX=channel number

- Blank=Latch N/A
  A= Regular
  B=Bail latch
  C=I-Latch

- Blank=No Diagnostic
  D1= External Calibration
  D2= Internal Calibration

- Blank=Commercial
  T=Industrial Temperature (-40 to85)
  R=Reduced Industrial Temperature (-20 to 85)

- Blank=Standard Procedure
  Labelling, Serial number, or Shipping Instructions etc.

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.

Legal Notice

IMPORTANT NOTICE!
All information contained in this document is subject to change without notice, at Luminent's sole and absolute discretion. Luminent warrants performance of its products to current specifications only in accordance with the company's standard one-year warranty; however, specifications designated as "preliminary" are given to describe components only, and Luminent expressly disclaims any and all warranties for said products, including express, implied, and statutory warranties, warranties of merchantability, fitness for a particular purpose, and non-infringement of proprietary rights. Please refer to the company's Terms and Conditions of Sale for further warranty information.

Luminent assumes no liability for applications assistance, customer product design, software performance, or infringement of patents, services, or intellectual property described herein. No license, either express or implied, is granted under any patent right, copyright, or intellectual property right, and Luminent makes no representations or warranties that the product(s) described herein are free from patent, copyright, or intellectual property rights. Products described in this document are NOT intended for use in implantation or other life support applications where malfunction may result in injury or death to persons. Luminent customers using or selling products for use in such applications do so at their own risk and agree to fully defend and indemnify Luminent for any damages resulting from such use or sale.

THE INFORMATION CONTAINED IN THIS DOCUMENT IS PROVIDED ON AN "AS IS" BASIS. Customer agrees that Luminent is not liable for any actual, consequential, exemplary, or other damages arising directly or indirectly from any use of the information contained in this document. Customer must contact Luminent to obtain the latest version of this publication to verify, before placing any order, that the information contained herein is current.