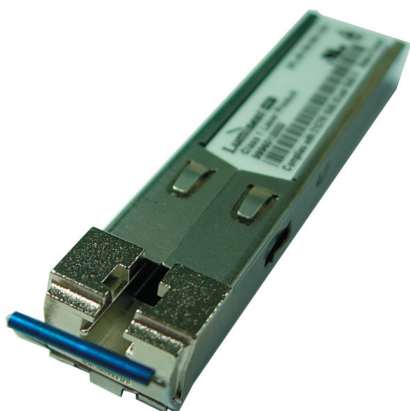


SPL-35-FE-BX



Features

- Compliant with OC3/STM-1, IEEE 802.3ah, 100BASE-BX10
- Simplex LC Connector
- Digital Diagnostic SFF-8472 Compliant
- SFP MSA SFF-8074i Compliant
- 14 dB Minimum Power Budget
- 20 km Typical reach
- Commercial and Industrial Temperature Available
- Single 3.3V Supply
- 1310nm FP Laser
- Telcordia GR-468 Compliant
- Color code Bail Latch : Blue
- RoHS-5/6 compliant product (lead exemption) (-xxA)
- RoHS-6/6 compliant product (-xxC)

General Operating Condition

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	V_{CC}	3.135	3.3	3.465	V
Total Current	I_{CC}	-	-	300	mA
Power Supply Noise Rejection		100	-	-	mVp-p
Operating Temperature (-Cxx)	T_{opr}	-5	-	70	°C
Operating Temperature (-Txx)	T_{opr}	-40	-	85	°C
Storage Temperature	T_{stg}	-40	-	85	°C
Data Rate	DR	10	-	155	Mbps

Transmitter Specifications (Optical)

Parameter	Symbol	Min	Typical	Max	Unit
Optical power	P_{op}	-14	-11	-8	dBm
Optical crosstalk	XT	-	-45	-40	dB
Average Launch power of off Tx	P_{off}	-	-	-45	dBm
Extinction Ratio	ER	6.6	-	-	dB
Eye Mask		IEEE 802.3 and SONET/SDH Compliant			
Optical Rise time (20% to 80% values)	t_r	-	-	2	ns
Optical Fall time (20% to 80% values)	t_f	-	-	2	ns
Mean Wavelength	λ	1260	1310	1360	nm
Maximum RMS width (σ)	σ	-	-	7.7	nm
Relative Intensity Noise	RIN	-	-	-120	dB/Hz
Optical Return Loss Tolerance	ORLT	-	-	12	dB

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Transmitter Specifications (Electrical)

Parameter	Symbol	Min	Typical	Max	Unit
Input Differential Impedance	R_{in}	80	100	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	Typical	Max	Unit
Receiver Power Low ^b	$R_{sens, low}$	-	-30	-28.2	dBm
Receiver Power High	$R_{sens, high}$	-8	-	-	dBm
Damage Threshold for Receiver	$P_{in, damage}$	4	-	-	dBm
Wavelength	λ	1480	-	1580	nm
LOS Assert	-	-45	-	-	dBm
LOS De-assert	-	-	-	-28.2	dBm
LOS hysteresis	-	2	-	-	dB

b) at 10⁻¹² BER, PRBS 2⁷-1

Receiver Specifications (Electrical)

Parameter	Symbol	Min	Typical	Max	Unit
PECL Single ended data output swing	$V_{out, p-p}$	185	-	1000	mV
Data output rise time	t_r	-	-	2	ns
Data output fall time	t_f	-	-	2	ns

Timing and Electrical

Parameter	Symbol	Min	Typical	Max	Unit
Tx Disable Negate time	t_{on}	-	-	25	ms
Tx Disable assert time	t_{off}	-	-	10	μ s
Time to initialize, including reset of Tx fault	t_{init}	-	-	300	ms
Tx fault Assert time	t_{fault}	-	-	100	μ s
Tx Disable to reset	t_{reset}	10	-	-	μ s
LOS Assert time	t_{loss_on}	-	-	300	μ s
LOS De-assert time	t_{loss_off}	-	-	100	μ s
Serial ID Clock Rate	f_{serial_clock}	-	-	100	KHz
RX_LOS Voltage (high)	Rx_LOS_H	2	-	-	V
RX_LOS Voltage (low)	Rx_LOS_L	-	-	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

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Digital Diagnostics (-xDA Versions only)

Parameter	Range	Accuracy	Unit	Calibration	Bit Value	Formula
Temperature (-TDA)	-40 to 85	±3	°C	Internal	1/256 C	$T_c(C) = T_{ad}(16 \text{ bit signed twos complement})/256$
Temperature (-CDA)	-5 to 70	±3	°C	Internal	1/256 C	$T_c(C) = T_{ad}(16 \text{ bit signed twos complement})/256$
Voltage	0 to V _{CC}	0.1	V	Internal	100μV	$V(\text{Volts}) = V_{ad}(16 \text{ bit unsigned integer}) * 0.1$
Bias Current	0 to 120	5	mA	External	-	$I(\text{mA}) = I_{slope} * I_{ad}(16 \text{ bit unsigned integer}) + I_{offset}$
Tx Power	-14 to -8	±3	dBm	External	-	$Tx_PWR(\mu W) = Tx_PWR_{slope} * Tx_PWR_{ad}(16 \text{ bit unsigned integer}) + Tx_PWR_{offset}$
Rx Power	-28.2 to -8	±3	dBm	External	-	$Rx_PWR(\mu W) = A0 + A1 * x + A2 * x^2 + A3 * x^3 + A4 * x^4$

Pinout Definitions

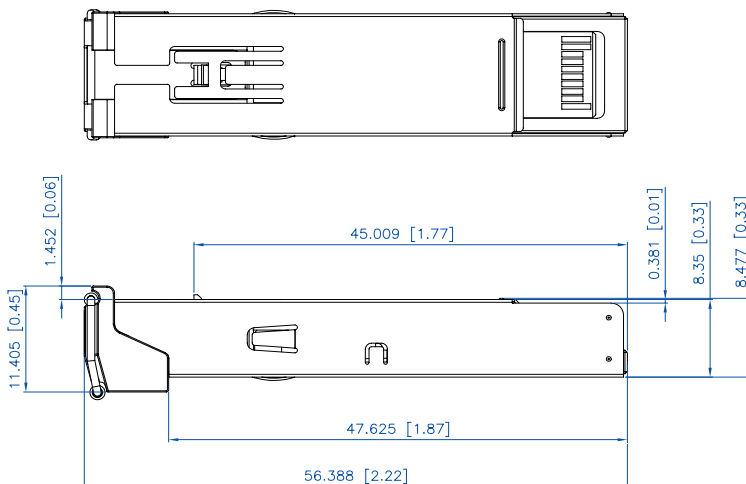
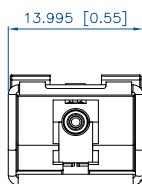
Pin	Function	Notes
1	V _{ee} T	TX GND
2	TX_FAULT	Open Collector
3	TX_DISABLE	Internally Pulled High
4	MOD_DEF2	Serial Data Input
5	MOD_DEF1	Serial Clock Input
6	MOD_DEF0	Internally Grounded
7	NC	Not Connected
8	LOS	Open Collector
9	V _{ee} R	RX Ground
10	V _{ee} R	RX Ground
11	V _{ee} R	RX Ground
12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

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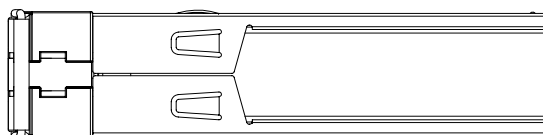
EEPROM Serial ID				
Name of Field	Discription of Field	Address	Hex	ASCII
Vendor Name	SFP Vendor name (ASCII)	20	4C	L
		21	55	U
		22	4D	M
		23	49	I
		24	4E	N
		25	45	E
		26	4E	N
		27	54	T
		28	4F	O
		29	49	I
		30	43	C
Vendor OUI	IEEE vendor OUI code for LuminentOIC	37	00	
		38	06	
		39	B5	
Vendor P/N	Part number in ASCII, e.g. SPL-35-FE-BX-TDA	40	53	S
		41	50	P
		42	4C	L
		43	33	3
		44	35	5
		45	46	F
		46	45	E
		47	42	B
		48	58	X
		49	54	T
		50	44	D
		51	41	A

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LC Connector Mechanicals

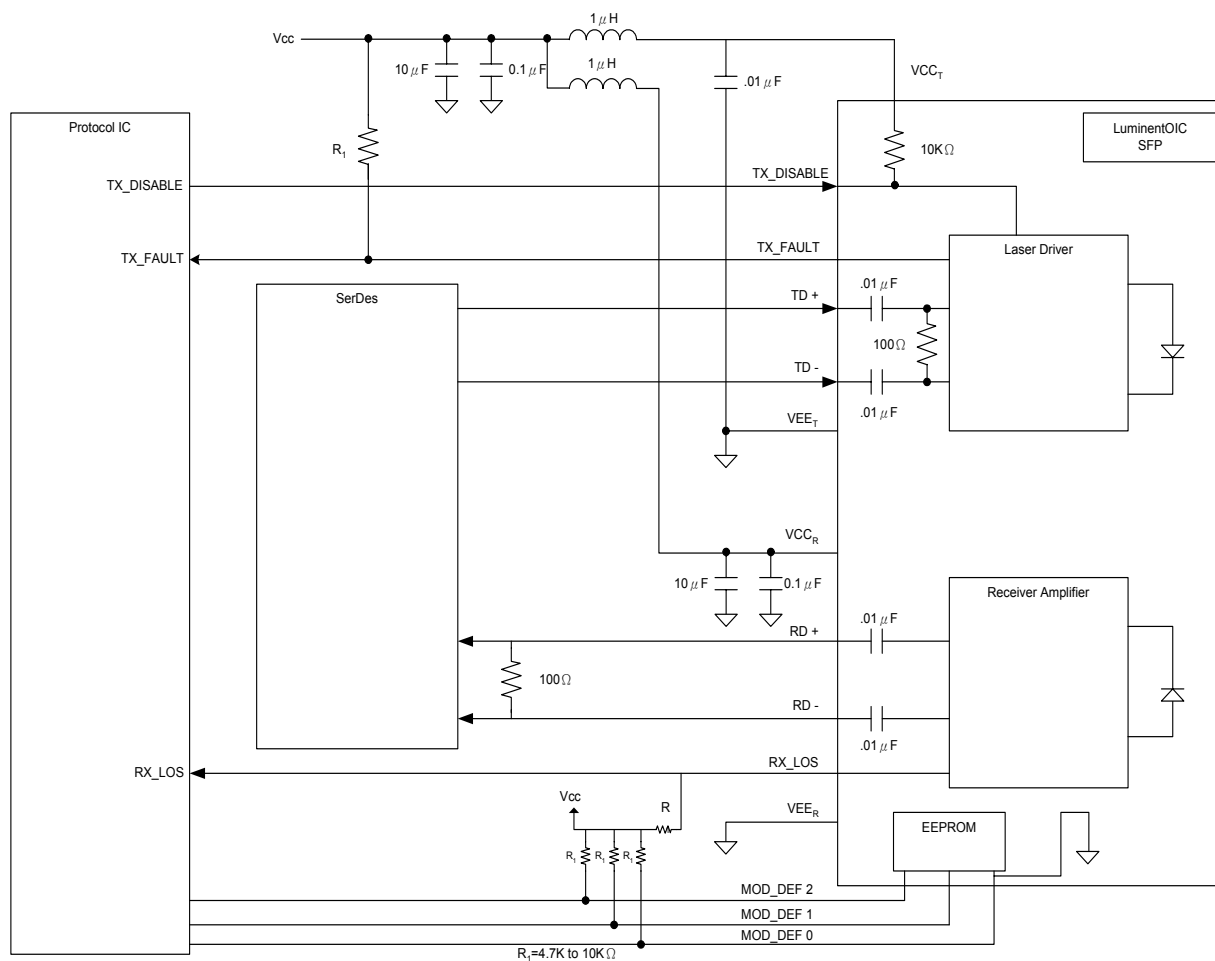


Units in mm (inches)



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Suggested Transceiver Interface



SPL-35-FE-BX

Ordering Information

Available Options:

SPL-35-FE-BX-CDA	SPL-35-FE-BX-CDC
SPL-35-FE-BX-TDA	SPL-35-FE-BX-TDC
SPL-35-FE-BX-CNA	SPL-35-FE-BX-CNC
SPL-35-FE-BX-TNA	SPL-35-FE-BX-TNC

Part numbering Definition:

	S	P	L	-	3	5	-	F	E	-	B	X	-	Temperature	Diagnostic	Revision
• SPL = LC connector	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
• Wavelength	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
35 = Tx 1310nm/Rx 1530nm	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
• Data Rate	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
FE = Fast Ethernet (100Mbps)	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
• Standard	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
BX = 100BASE-BX10	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
• Operatating Temperature	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
C = Commercial temperature (-5 to 70°C)	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
T = Industrial temperature (-40 to 85°C)	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
• D = Digital Diagnostic (SFF-8472)	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
N = No Digital Diagnostic	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
• Design Revision	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
A = RoHS-5/6 compliant product (lead exemption)	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
C = RoHS-6/6 compliant product (no exemption)	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

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 Notes:

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