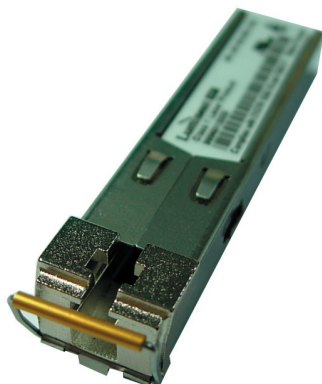


SPL-53-FE-BD



Features

- Compliant with OC3/STM-1, IEEE 802.3ah, 100BASE-BX10
- Simplex LC Connector
- Digital Diagnostic SFF-8472 Compliant
- SFP MSA SFF-8074i Compliant
- 23.2dB Minimum Power Budget
- 40km Typical Reach
- Commercial temperature available (-Cxx)
- Industrial temperature available (-Txx)
- Single 3.3V Supply
- 1550 nm DFB Laser
- Telcordia GR-468 Compliant
- Color Coded Bail Latch: Yellow
- RoHS Compliant

General Operation

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(case) (-Cxx)	T_{opr}	-5	-	70	°C
Operating Temperature(case) (-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}	-5	-2.5	0	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	1500	1550	1600	nm
Maximum RMS Width (σ)	σ	-	-	1	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 Impedence	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 ^a	$R_{sens, low}$	-	-30	-28.2	dBm
Receiver Power High	$R_{sens, high}$	-8	-	-	dBm
Damage Threshold for Receiver	$P_{in, damage}$	4	-	-	dBm
Wavelength	λ	1260	-	1360	nm
LOS Assert	-	-45	-	-	dBm
LOS De-assert	-	-	-	-28.2	dBm
LOS hysteresis	-	0.5	-	-	dB

a) 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	-	800	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

Parameter	Range	Accuracy	Unit	Calibration	Bit Value	Formula
Temperature (-CDx)	-5 to 70	±3	°C	Internal	1/256 C	$T_c(C) = T_{ad}(16 \text{ bit signed twos complement})/256$
Temperature (-TDx)	-40 to 85	±3	°C	Internal	1/256 C	$T_c(C) = T_{ad}(16 \text{ bit signed twos complement})/256$
Voltage	0 to Vcc	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	-5 to 0	±3	dBm	External	-	$Tx_PWR(\mu W) = Tx_PWR_{slope} * Tx_PWR_{rad}(16 \text{ bit unsigned integer}) + Tx_PWR_{offset}$
Rx Power	-28.2 to -8	±3	dBm	External	-	$Rx_PWR(\mu W) = A_0 + A_1 * x + A_2 * x^2 + A_3 * x^3 + A_4 * x^4$

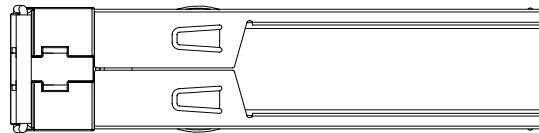
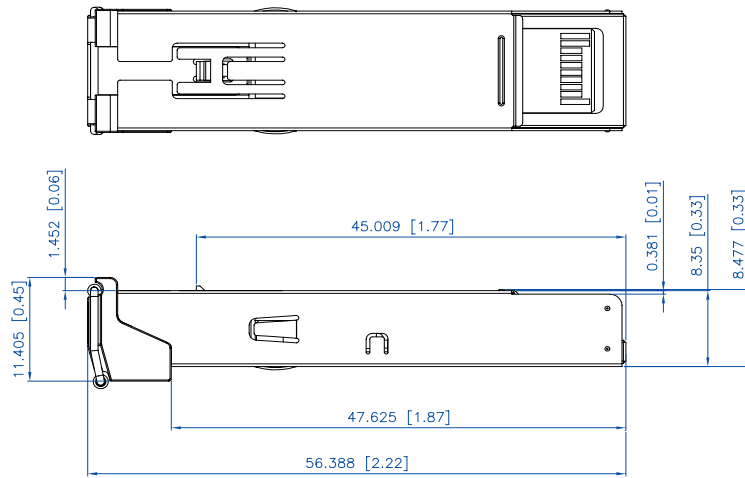
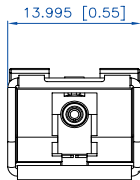
Pinout Definitions

Pin	Function	Notes
1	V _{eeT}	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 _{eeR}	RX Ground
10	V _{eeR}	RX Ground
11	V _{eeR}	RX Ground
12	RXD-	RX Data Negative
13	RXD+	RX Data Positive
14	V _{eeR}	RX GND
15	V _{CCR}	RX Power
16	V _{CCT}	TX Power
17	V _{eeT}	TX GND
18	TXD+	TX Data Positive
19	TXD-	TX Data Negative
20	V _{eeT}	TX GND

SPL-53-FE-BD

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	40	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 Luminent Inc.	37	00	
		38	06	
		39	B5	
Vendor P/N	Part number in ASCII, e.g. SPL-53-FE-BD-CDA	40	53	S
		41	50	P
		42	4C	L
		43	35	5
		44	33	3
		45	46	F
		46	45	E
		47	42	B
		48	44	D
		49	43	C
		50	44	D
		51	41	A

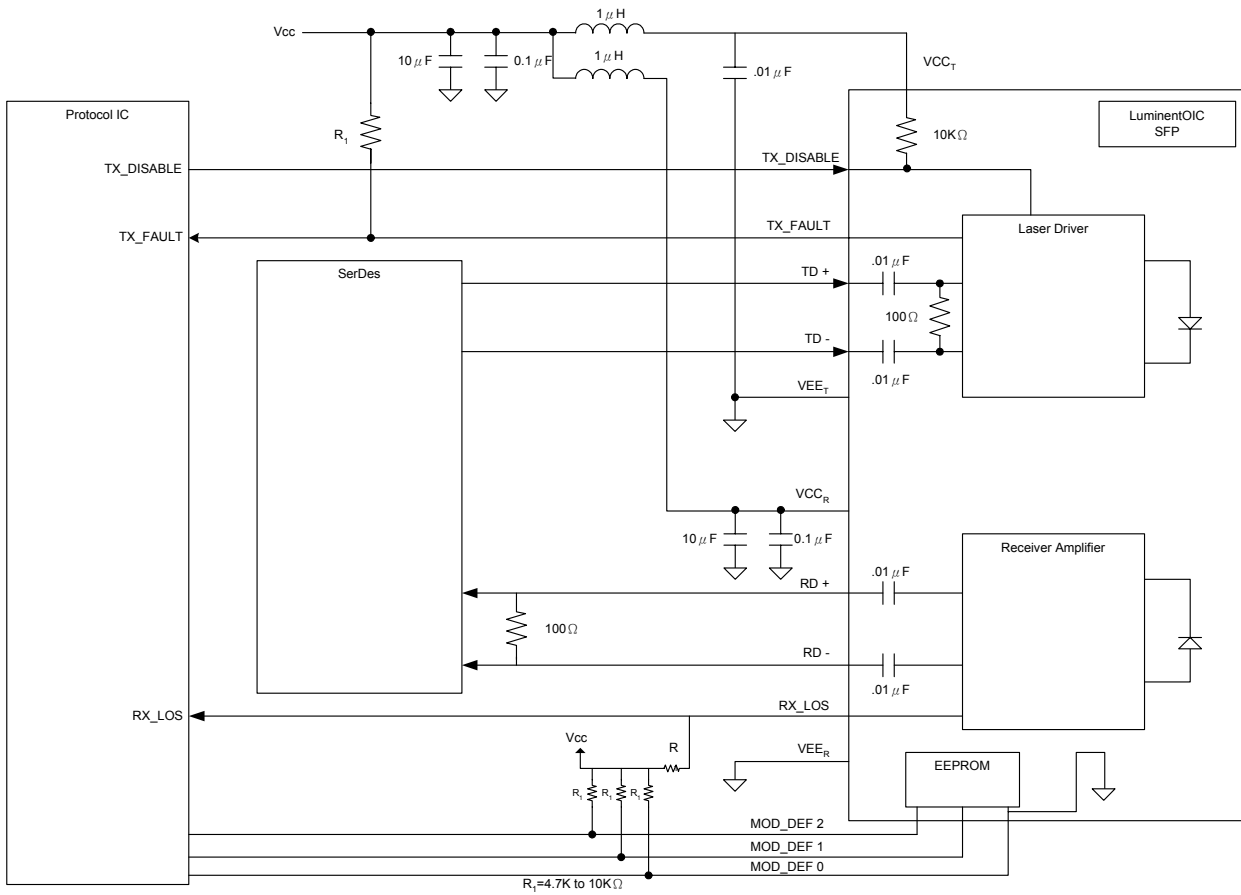
LC Connector Mechanical



Units in mm (inches)

SPL-53-FE-BD

Suggested Transceiver Interface



SPL-53-FE-BD

Ordering Information

Available Options:
 SPL-53-FE-BD-CDA
 SPL-53-FE-BD-CNA
 SPL-53-FE-BD-TDA
 SPL-53-FE-BD-TNA

Part numbering Definition:

S P L - 5 3 - F E - B D - Temperature Diagnostic Revision

- SPL = LC connector
- Wavelength
53 = Tx 1550nm/Rx 1310nm
- Data Rate
FE = Fast Ethernet (100Mbps)
- Standard
BD = 40km reach
- Operating Temperature
C = Commercial temperature (-5 to 70°C)
T = Industrial temperature (-40 to 85°C)
- D = Digital Diagnostic (SFF-8472)
N = No Digital Diagnostic
- Revision
A = RoHS compliant

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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