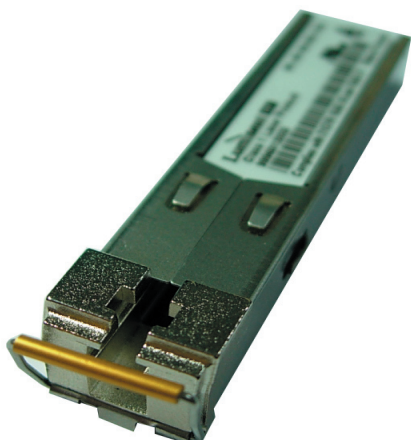


SPL-53-GB-EBX



Features

- Compliant with IEEE 802.3ah, 1000BaseBX
- Simplex LC Connector
- Digital Diagnostic SFF-8472 Compliant
- SFP MSA SFF-8074i Compliant
- 13dB Minimum Power Budget
- 20 km Minimum Reach
- Single 3.3V Supply
- 1550nm DFB Laser
- Telcordia GR-468 Compliant
- Color coded bail latch tube: Yellow
- RoHS-5/6 compliance product (lead exemption)

General Operation

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	V_{cc}	3.153	3.3	3.465	V
Total Current	I_{CC}	-	-	300	mA
Power Supply Noise Rejection		100	-	-	mVp-p
Operating Case Temperature (-Cxx)	T_{opr}	-5	-	70	°C
Operating Case Temperature (-Txx)	T_{opr}	-40	-	85	°C
Storage Temperature	T_{stg}	-40	-	85	°C
Data Rate	DR	-	1250	-	Mbps

Transmitter Specifications (Optical)

Parameter	Symbol	Min	Typical	Max	Unit
Optical Power	P_{op}	-7	-4	0	dBm
Optical Crosstalk	XT	-	-45	-40	dB
Average Launch Power (Tx:Off)	P_{off}	-	-	-45	dBm
Extinction Ratio	ER	6	-	-	dB
Eye Mask	-	IEEE 802.3ah			
Optical Rise Time (20% to 80% values)	t_r	-	-	260	ps
Optical Fall Time (20% to 80% values)	t_f	-	-	260	ps
Mean Wavelength	λ	1500	1550	1600	nm
Spectral Width (RMS)	σ	-	-	0.88	nm
Relative Intensity Noise	RIN	-	-	-120	dB/Hz
Transmitter Reflectance	-	-	-	-12	dB
Reflection Tolerance	rp	-	-	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	$R_{sens,low}$	-	-22	-20	dBm
Receiver Power High	$R_{sens,high}$	-3	-	-	dBm
Damage Threshold for Receiver	$P_{in, damage}$	0	-	-	dBm
Wavelength	λ	1260	-	1360	nm
LOS Assert	-	-45	-	-	dBm
LOS De-assert	-	-	-	-20	dBm
LOS hysteresis	-	0.5	-	-	dB
Receiver Reflectance	-	-	-	-12	dB

a) Measured at 10^{-12} BER, PRBS 27-1, 6dB ER

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	-	-	260	ps
Data output fall time	t_f	-	-	260	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	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	$t_{loss_{on}}$	-	-	100	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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Diagnostics

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 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	-7 to 0	±3	dBm	External	-	$Tx_PWR(\mu W) = Tx_PWR_{slope} * Tx_PWR_{ad}(16 \text{ bit unsigned integer}) + Tx_PWR_{offset}$
Rx Power	-20 to -3	±3	dBm	External	-	$Rx_PWR(\mu W) = A0 + A1 * x + A2 * x^2 + A3 * x^3 + A4 * x^4$

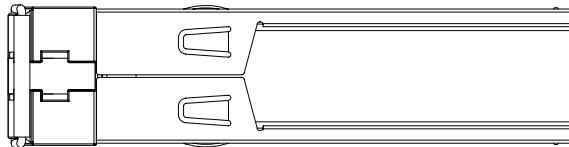
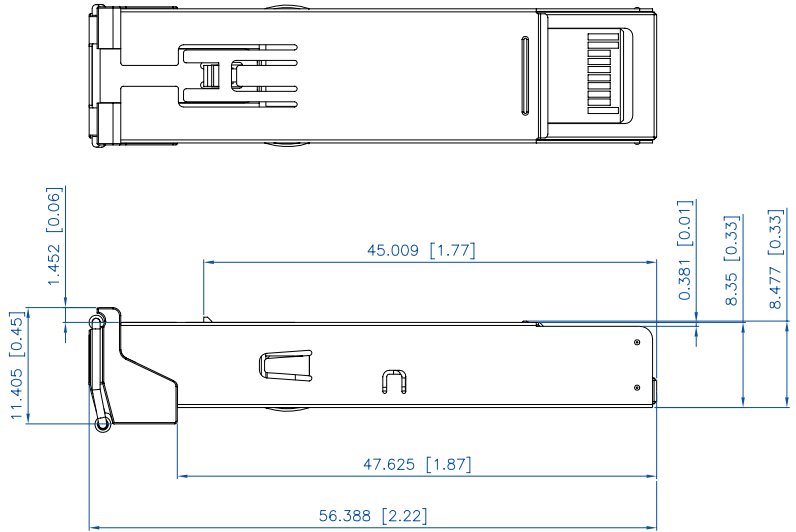
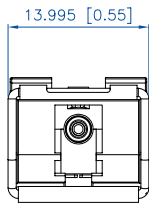
Pinout Definitions

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_DEFO	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	SFPVendor 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 Luminent Inc.	37	00	
		38	06	
		39	B5	
Vendor PN	Part number in ASCII, e.g. SPL-53-GB-EBX	40	53	S
		41	50	P
		42	4C	L
		43	35	5
		44	33	3
		45	47	G
		46	42	B
		47	45	E
		48	42	B
		49	58	X

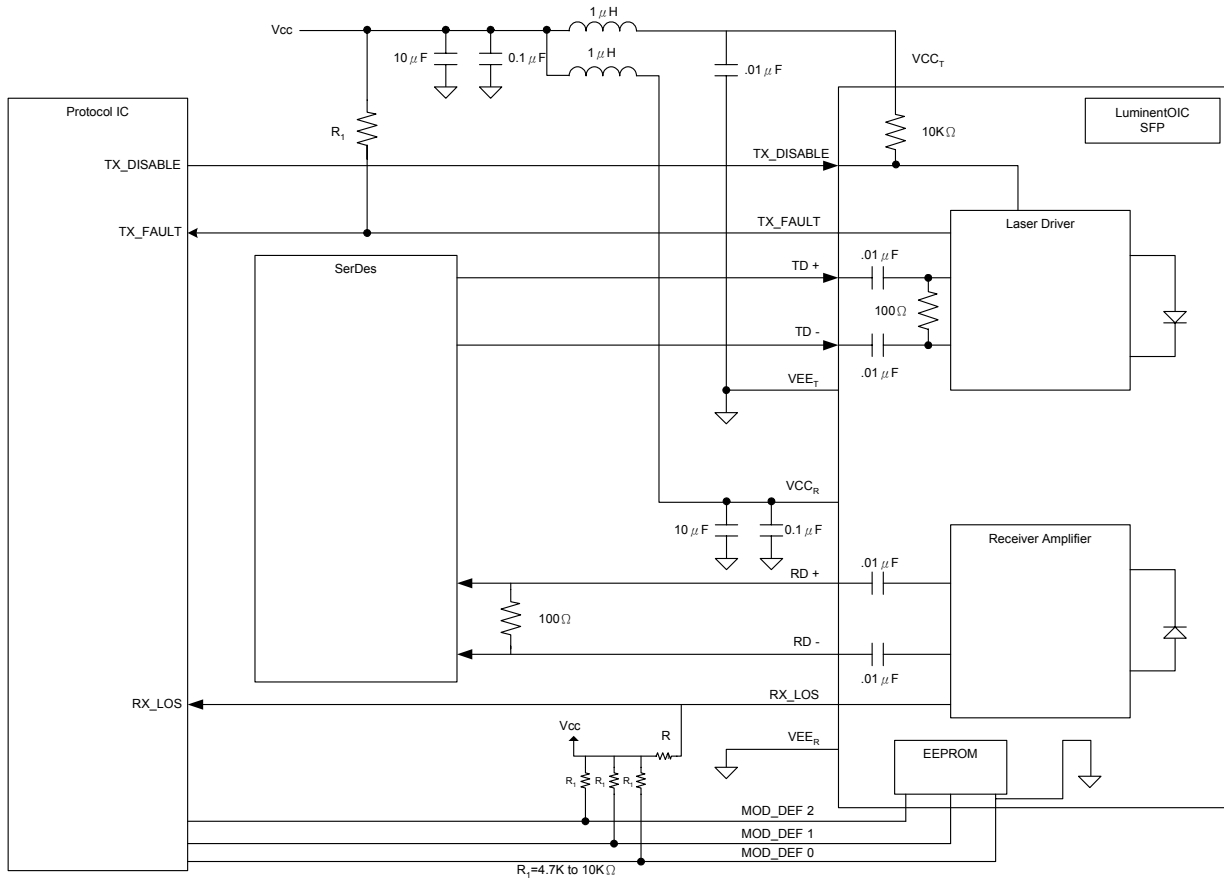
Mechanicals



Units in mm (inches)

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Suggested Transceiver Interface

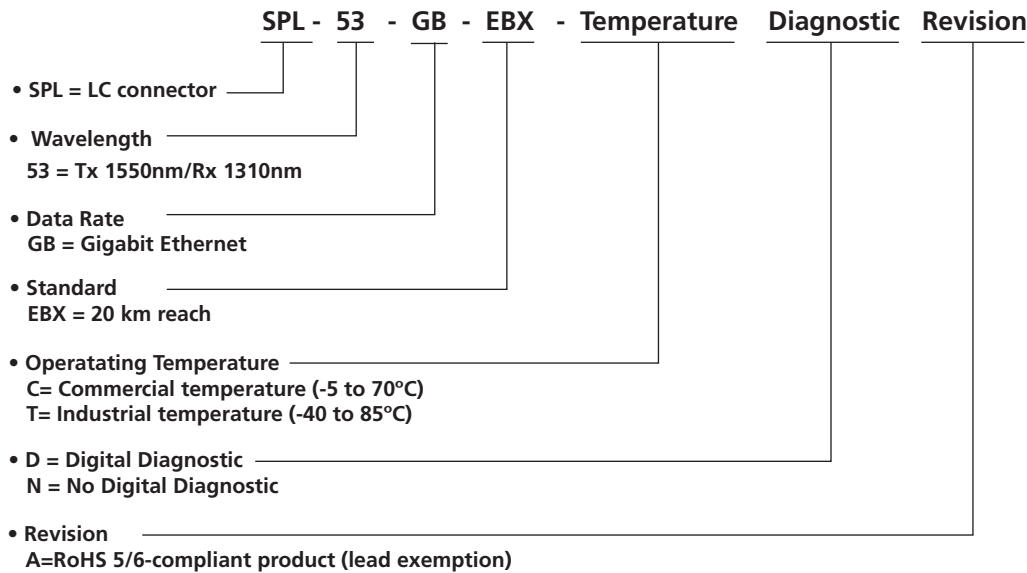


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Ordering Information

- Available Options:**
 SPL-53-GB-EBX-CNA
 SPL-53-GB-EBX-TNA
 SPL-53-GB-EBX-CDA
 SPL-53-GB-EBX-TDA

Part numbering Definition:



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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