Datasheet

SFP Bidirectional Transceivers

SFP-GD-BX34 and SFP-GD-BX43

Features

- 1.25 Gbps data rate
- Single-mode
- IEEE 802.3ah, 1000BASE-BX compliances
- Simplex LC connector
- 11 dB minimum link budget
- 22 km reach
- Single 3.3 V supply
- 1310 nm FP laser (SFP-GD-BX34)
- 1490 nm DFB laser (SFP-GD-BX43)
- Digital Diagnostic SFF-8472 compliance
- Telcordia GR-468 compliance
- RoHS and China RoHS compliance
- SFP MSA SFF-8074i compliance
- 21CFP 1040.10 and 1040.11 compliance
- TÜV compliance
- Commercial temperature rating
- Class 1 Laser
- Color coded bail latch: Blue or Purple

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
Power Supply Noise Rejection		100	-	-	mV_{p-p}
Operating Temperature	T_{opr}	-5	-	70	°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}	-9	-6	-3	dBm
Optical Crosstalk		XT	-	-45	-40	dB
Average Launch Power Of Off Tx		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:	**SFP-GD-BX34**	λ	1260	1310	1360	nm
	SFP-GD-BX43	λ	1480	1490	1500	nm
Spectral Width (RMS):	**SFP-GD-BX34**	σ	-	-	3.5	nm
	SFP-GD-BX43	σ	-	-	0.88	nm
Relative Intensity Noise		RIN	-	-	-120	dB/Hz
Transmitter Reflectance		-	-	-	-12	dB
Optical Return Loss Tolerance		ORLT	-	-	12	dB

Transmitter Specifications (Electical)					
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	Vd	2	-	V_{cc}	V
TxDisable_Enable	V_{en}	V_{ee}	-	V_{ee}+0.8	V

Receiver Specifications (Optical)						
Parameter		**Symbol**	**Min**	**Typical**	**Max**	**Unit**
Receive Power Low[a]		$R_{sens,low}$	-	-22	-20	dBm
Receive Power High[a]		$R_{sens,high}$	-3	-	-	dBm
Damage Threshold For Receiver		$P_{in,damage}$	0	-	-	dBm
Wavelength:	**SFP-FD-BX35**[b]	λ	1480	-	1580	nm
	SFP-FD-BX53	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 2^7-1, 6 dB ER
b) Receiver performance can be maintained over a broader wavelength range of 1480 to 1580 nm

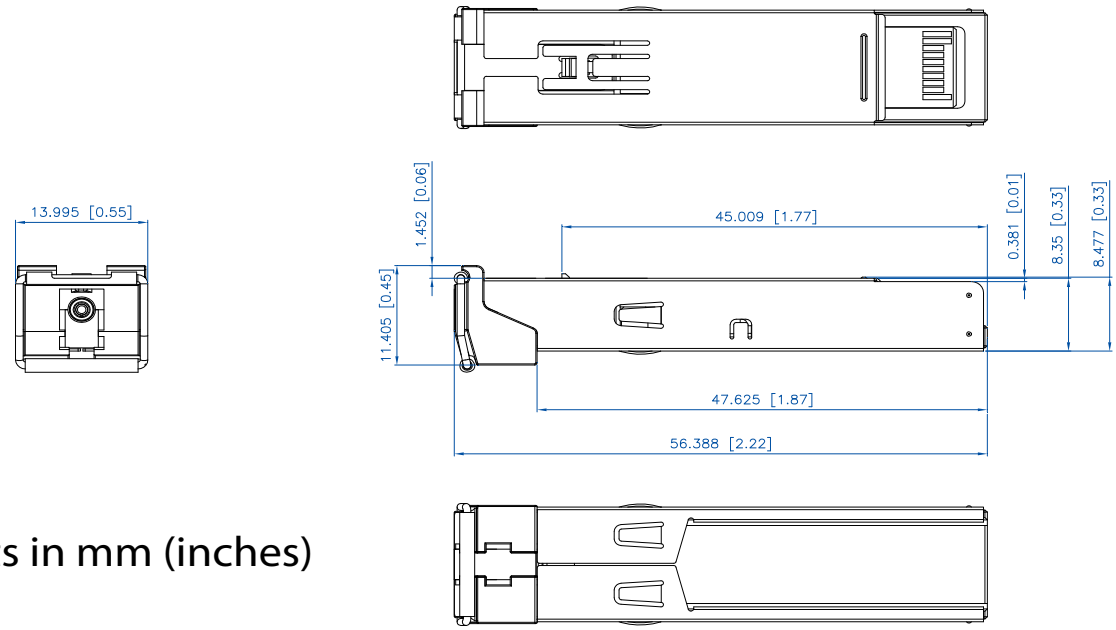
Receiver Specifications (Electrical)					
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**
PECL Single Ended Data Output Swing	$V_{out,p-p}$	185	-	800	mV
Data Output Rise Time	t_r	-	-	500	ns
Data Output Fall Time	t_f	-	-	500	ns

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)	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

Digital Diagnostics						
Parameter	**Range**	**Accuracy**	**Unit**	**Calibration**	**Bit Value**	**Formula**
Temperature	-5 to 70	± 3	° C	Internal	1/256 C	Tc(C)=Tad(16 bit signed twos complement)/256
Voltage	0 to V_{cc}	0.1	V	Internal	100µV	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	-9 to -3	±3 dB	dBm	External	-	TX_PWR(µW)=TX_PWRslope*TX_PWRad(16 bit unsigned integer) +TX_PWRoffset
RX Power	-20 to -3	±3 dB	dBm	External	-	RX_PWR(µW)=A0+A1*x+A2*x^2+A3*x^3+A4*x^4

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_{ccR}	RX Power
16	V_{ccT}	TX Power
17	$V_{ee}T$	TX GND
18	TXD+	TX Data Positive
19	TXD-	TX Data Negative
20	$V_{ee}T$	TX GND

Outline Drawing



Units in mm (inches)

Ordering Information

Model	Description	Data Rate (Mbps)	Wavelength (nm)	Bail Latch Color	Distance Range (km)
SFP-GD-BX34	SFP Bidirectional Transceiver	Gigabit Ethernet	1310/1490	Blue	0 -22
SFP-GD-BX43	SFP Bidirectional Transceiver	Gigabit Ethernet	1490/1310	Purple	0 -22

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