BIDI 1.25G SFP Optical Module

Features：

- Up to 1.25Gbps data link
- Integrated single fiber bi-di reactional optical subassembly
- Hot- pluggable SFP footprint
- LC pluggable optical interface
- Low power dissipation
- Metal enclosure, for lower EMI
- RoHs compliant and lead-free
- Single +3.3V power supply
- Support Digital Diagnostic Monitoring interface
- Compliant with SFF-8472
- Case operating temperature 0℃ to 70℃

Applications：

- Gigabit Ethernet
- Gigabit Fiber Channel
- Switch to switch interface

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit	note
Storage Temperature	Ts	-40		85	ºC	
Storage Ambient Humidity	HA	5		95	%	
Power Supply Voltage	VCC	-0.5		4	V	
Signal Input Voltage		-0.3		Vcc+0.3	V	
Receiver Damage Threshold		5			dBm	

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit	note
Case Operating Temperature	Tcase	0		70		
Ambient Humidity	HA	5		70	%	Non-condensing
Power Supply Voltage	VCC	3.13	3.3	3.47	V	
Power Supply Current	ICC			280	mA	
Power Supply Noise Rejection				100	MVP-P	100Hz to 1MHz
Data Rate		1.25			Gbps	TX Rate/RX Rate
Coupled Fiber	Single mode fiber					

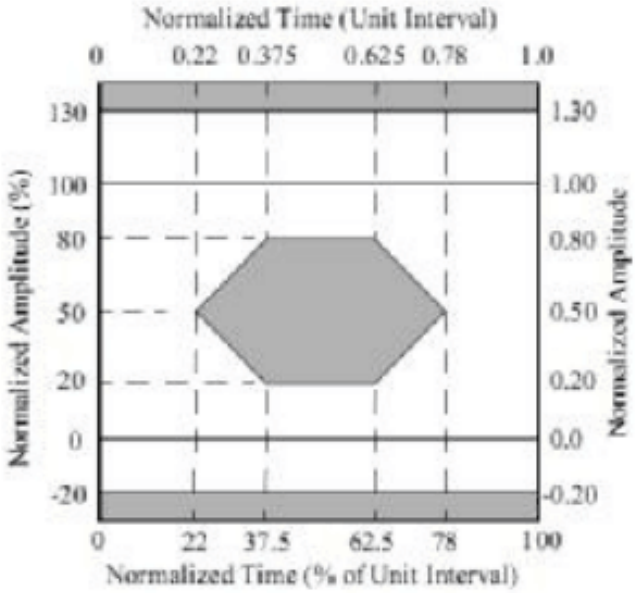
Specification of Transmitter

1.GSFP-LX-SM-1310(1550)-10-BIDI

Parameter	Symbol	Min	Typ	Max	Unit	note
Average Output Power	Pout	-9		-3	dBm	10km 1310nm/1550nm
Extinction Ratio	ER	9			dB	
Center Wavelength	λC	1290	1310	1330	nm	1310nm FP
		1520	1550	1580	nm	1550nm DFB
Spectrum Width (RMS)	σ			4	nm	FP Laser (TX:1310nm)
Spectrum Bandwidth(-20dB)	σ			1	nm	1550nm DFB
				1	nm	1310nm DFB
Transmitter OFF Output Power	P_{Off}			-45	dBm	
Differential Line Input Impedance	Rin	90	100	110	0hm	
Total Jitter (Peak-Peak)	tJ			41	PS	Note (1)
Output Eye Mask	Compliant with IEEE802.3z (class 1 laser safety)					Note (2)
Specification of Receiver						
Input Optical Wavelength	λIN	1520	1550	1580	nm	
		1460	1490	1520		
Receiver Sensitivity	PIN			-24		10km Note (3)
Input Saturation Power (Overload)	PSAT	-3			dBm	
Los Of Signal Assert	PA	-35			dBm	PIN Receiver
Los Of Signal De-assert	PD			-25	dBm	PIN Note (4)
LOS Hysteresis	PA-PD	0.5		6	dB	
Electrical Interface Characteristics of Transmitter						
Total Supply Current	ICC			A	mA	Note (5)
Transmitter Disable Input-High	VDISH	2		Vcc+0.3	V	
Transmitter Disable Input-Low	VDISL	0		0.8	V	
Transmitter Fault Input-High	VDISH	2		Vcc+0.3	V	
Transmitter Fault Input-Low	VTxFH	0		0.8	V	
Electrical Interface Characteristics of Receiver						
Total Supply Current	ICC			B	mA	Note (5)
LOSS Output Voltage-High	VLOSH	2		Vcc+0.3	V	LVTTL
LOSS Output Voltage-Low	VLOSL	0		0.8	V	

Note (1): Measure at 2^23-1 NRZ PRBS pattern

Note (2): Transmitter eye mask definition



Note (3): Measured with Light source 1550nm(1310nm), ER=10dB; BER =<10^-12 @PRBS=2^23-1 NRZ

Note (4): When LOS de-asserted, the RX data+/- output is High-level (fixed)

Note (5): A (TX) + B (RX) = 280mA (Not include termination circuit)

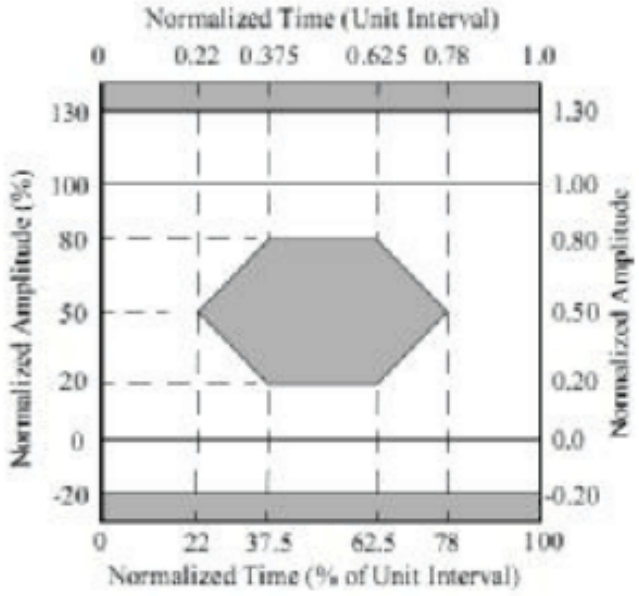
2.GSFP-LX-SM-1310(1550)-20-BIDI

Parameter	Symbol	Min	Typ	Max	Unit	note
Average Output Power	Pout	-9		-3	dBm	20km 1310nm/1550nm
Extinction Ratio	ER	9			dB	
Center Wavelength	λC	1290	1310	1330	nm	1310nm FP
		1520	1550	1580	nm	1550nm DFB
Spectrum Width (RMS)	σ			4	nm	FP Laser (TX:1310nm)
Spectrum Bandwidth(-20dB)	σ			1	nm	1550nm DFB
				1	nm	1310nm DFB
Transmitter OFF Output Power	P_{Off}			-45	dBm	
Differential Line Input Impedance	Rin	90	100	110	0hm	
Total Jitter (Peak-Peak)	tJ			41	PS	Note (1)
Output Eye Mask	Compliant with IEEE802.3z (class 1 laser safety)					Note (2)
Specification of Receiver						
Input Optical Wavelength	λIN	1520	1550	1580	nm	
		1460	1490	1520		

Receiver Sensitivity	PIN			-24		20km Note (3)
Input Saturation Power (Overload)	PSAT	-3			dBm	
Los Of Signal Assert	PA	-35			dBm	PIN Receiver
Los Of Signal De-assert	PD			-25	dBm	PIN Note (4)
LOS Hysteresis	PA-PD	0.5		6	dB	
Electrical Interface Characteristics of Transmitter						
Total Supply Current	ICC			A	mA	Note (5)
Transmitter Disable Input-High	VDISH	2		Vcc+0.3	V	
Transmitter Disable Input-Low	VDISL	0		0.8	V	
Transmitter Fault Input-High	VDISH	2		Vcc+0.3	V	
Transmitter Fault Input-Low	VTxFH	0		0.8	V	
Electrical Interface Characteristics of Receiver						
Total Supply Current	ICC			B	mA	Note (5)
LOSS Output Voltage-High	VLOSH	2		Vcc+0.3	V	LVTTL
LOSS Output Voltage-Low	VLOSL	0		0.8	V	

Note (1): Measure at 2^23-1 NRZ PRBS pattern

Note (2): Transmitter eye mask definition



Note (3): Measured with Light source 1550nm(1310nm), ER=10dB; BER =<10^-12 @PRBS=2^23-1 NRZ

Note (4): When LOS de-asserted, the RX data+/- output is High-level (fixed)

Note (5): A (TX) + B (RX) = 280mA (Not include termination circuit)

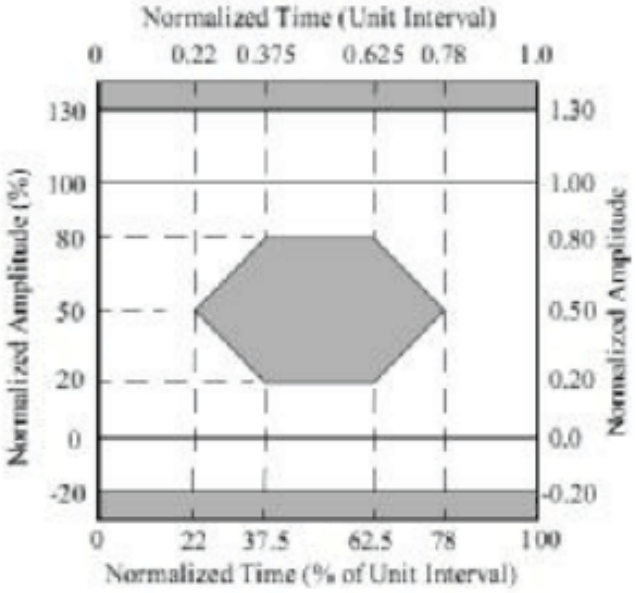
3.GSFP-LX-SM-1310(1550)-40-BIDI

Parameter	Symbol	Min	Typ	Max	Unit	note
Average Output Power	Pout	-5		0	dBm	40km 1310nm/1550nm
Extinction Ratio	ER	9			dB	
Center Wavelength	λC	1290	1310	1330	nm	1310nm DFB
		1520	1550	1580	nm	1550nm DFB
Spectrum Width (RMS)	σ			4	nm	FP Laser (TX:1310nm)
Spectrum Bandwidth(-20dB)	σ			1	nm	1550nm DFB
				1	nm	1310nm DFB
Transmitter OFF Output Power	P_{Off}			-45	dBm	
Differential Line Input Impedance	Rin	90	100	110	0hm	
Total Jitter (Peak-Peak)	tJ			41	PS	Note (1)
Output Eye Mask	Compliant with IEEE802.3z (class 1 laser safety)					Note (2)
Specification of Receiver						
Input Optical Wavelength	λIN	1520	1550	1580	nm	
		1460	1490	1520		
Receiver Sensitivity	PIN			-24		40km Note (3)
Input Saturation Power (Overload)	PSAT	-3			dBm	
Los Of Signal Assert	PA	-35			dBm	PIN Receiver
Los Of Signal De-assert	PD			-25	dBm	PIN Note (4)
LOS Hysteresis	PA-PD	0.5		6	dB	
Electrical Interface Characteristics of Transmitter						
Total Supply Current	ICC			A	mA	Note (5)
Transmitter Disable Input-High	VDISH	2		Vcc+0.3	V	
Transmitter Disable Input-Low	VDISL	0		0.8	V	
Transmitter Fault Input-High	VDISH	2		Vcc+0.3	V	
Transmitter Fault Input-Low	VTxFH	0		0.8	V	

Electrical Interface Characteristics of Receiver						
Total Supply Current	ICC			B	mA	Note (5)
LOSS Output Voltage-High	VLOSH	2		Vcc+0.3	V	LVTTL
LOSS Output Voltage-Low	VLOSL	0		0.8	V	

Note (1): Measure at 2^23-1 NRZ PRBS pattern

Note (2): Transmitter eye mask definition



Note (3): Measured with Light source 1550nm(1310nm), ER=10dB; BER =<10^-12 @PRBS=2^23-1 NRZ

Note (4): When LOS de-asserted, the RX data+/- output is High-level (fixed)

Note (5): A (TX) + B (RX) = 280mA (Not include termination circuit)

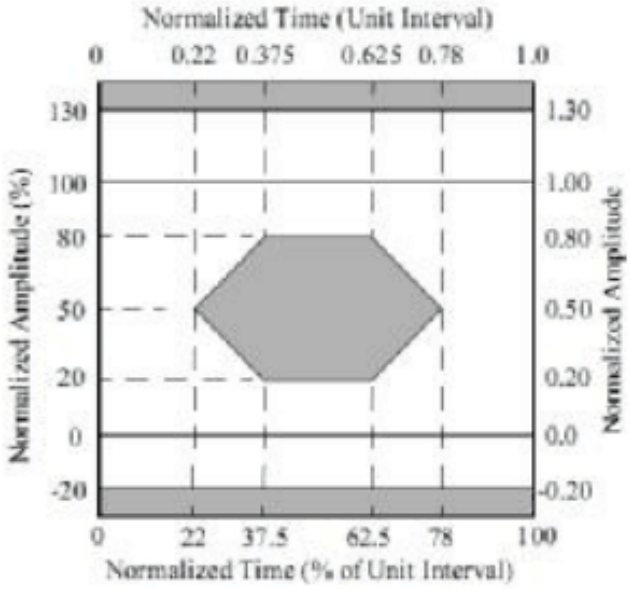
4.GSFP-LX-SM-1490(1550)-80-BIDI

5.Parameter	Symbol	Min	Typ	Max	Unit	note
Average Output Power	Pout	-2		+3	dBm	80km 1490nm/1550nm
Extinction Ratio	ER	9			dB	
Center Wavelength	λC	1460	1490	1520	nm	1490nm-DFB
		1520	1550	1580	nm	1550nm-DFB
Spectrum Bandwidth(-20dB)	σ			1	nm	1550nm DFB
				1	nm	1490nm DFB
Transmitter OFF Output Power	P_{Off}			-45	dBm	
Differential Line Input	Rin	90	100	110	0hm	

Impedance						
Total Jitter (Peak-Peak)	tJ			260	PS	Note (1)
Output Eye Mask	Compliant with IEEE802.3z (class 1 laser safety)					Note (2)
Specification of Receiver						
Input Optical Wavelength	λIN	1520	1550	1580	nm	
		1460	1490	1520		
Receiver Sensitivity	PIN			-24	dBm	80km Note (3)
Input Saturation Power (Overload)	PSAT	-3			dBm	
Los Of Signal Assert	PA	-35			dBm	PIN Receiver
Los Of Signal De-assert	PD			-25	dBm	PIN Note (4)
LOS Hysteresis	PA-PD	0.5		6	dB	
Electrical Interface Characteristics of Transmitter						
Total Supply Current	ICC			A	mA	Note (5)
Transmitter Disable Input-High	VDISH	2		Vcc+0.3	V	
Transmitter Disable Input-Low	VDISL	0		0.8	V	
Transmitter Fault Input-High	VDISH	2		Vcc+0.3	V	
Transmitter Fault Input-Low	VTxFH	0		0.8	V	
Electrical Interface Characteristics of Receiver						
Total Supply Current	ICC			B	mA	Note (5)
LOSS Output Voltage-High	VLOSH	2		Vcc+0.3	V	LVTTL
LOSS Output Voltage-Low	VLOSL	0		0.8	V	

Note (1): Measure at 2^23-1 NRZ PRBS pattern

Note (2): Transmitter eye mask definition



Note (3): Measured with Light source 1550nm(1490nm), ER=10dB; BER =<10^-12 @PRBS=2^23-1 NRZ

Note (4): When LOS de-asserted, the RX data+/- output is High-level (fixed)

Note (5): A (TX) + B (RX) < 280mA (Not include termination circuit)

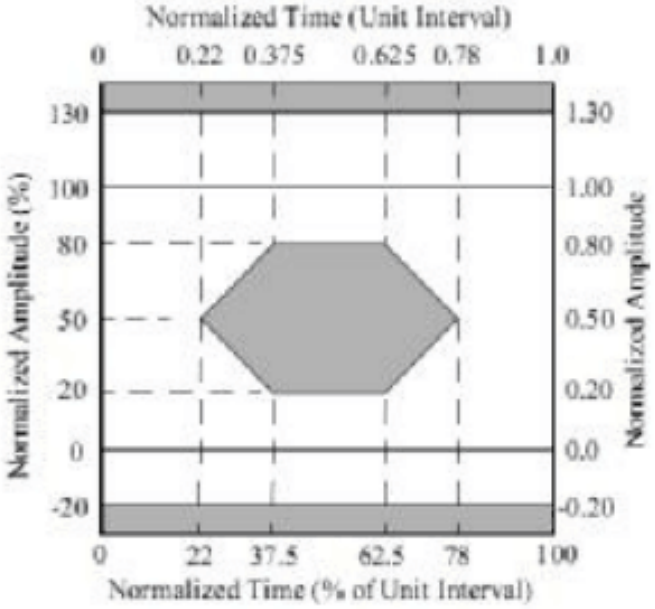
5.GSFP-LX-SM-1490(1550)-120-BIDI

6.Parameter	Symbol	Min	Typ	Max	Unit	note
Average Output Power	Pout	0		5	dBm	120km 1490nm/1550nm
Extinction Ratio	ER	9			dB	
Center Wavelength	λC	1460	1490	1520	nm	1490nm-DFB
		1520	1550	1580	nm	1550nm-DFB
Spectrum Bandwidth(-20dB)	σ			1	nm	1550nm DFB
				1	nm	1490nm DFB
Transmitter OFF Output Power	P_{Off}			-45	dBm	
Differential Line Input Impedance	Rin	90	100	110	0hm	
Total Jitter (Peak-Peak)	tJ			260	PS	Note (1)
Output Eye Mask	Compliant with IEEE802.3z (class 1 laser safety)					Note (2)
Specification of Receiver						

Input Optical Wavelength	λIN	1520	1550	1580	nm	
		1460	1490	1520		
Receiver Sensitivity	PIN			-30	dBm	120km Note (3)
Input Saturation Power (Overload)	PSAT	-9			dBm	
Los Of Signal Assert	PA	-45			dBm	PIN Receiver
Los Of Signal De-assert	PD			-30	dBm	PIN Note (4)
LOS Hysteresis	PA-PD	0.5		6	dB	
Electrical Interface Characteristics of Transmitter						
Total Supply Current	ICC			A	mA	Note (5)
Transmitter Disable Input-High	VDISH	2		Vcc+0.3	V	
Transmitter Disable Input-Low	VDISL	0		0.8	V	
Transmitter Fault Input-High	VDISH	2		Vcc+0.3	V	
Transmitter Fault Input-Low	VTxFH	0		0.8	V	
Electrical Interface Characteristics of Receiver						
Total Supply Current	ICC			B	mA	Note (5)
LOSS Output Voltage-High	VLOSH	2		Vcc+0.3	V	LVTTL
LOSS Output Voltage-Low	VLOSL	0		0.8	V	

Note (1): Measure at 2^7-1 NRZ PRBS pattern

Note (2): Transmitter eye mask definition



Note (3): Measured with Light source 1550nm(1490nm), ER=10dB; BER =<10^-12 @PRBS=2^7-1 NRZ

Note (4): When LOS de-asserted, the RX data+/- output is High-level (fixed)

Note (5): A (TX) + B (RX) <280mA (Not include termination circuit)

Ordering Information

Model	Description
GSFP-LX-SM-1310-10-BIDI	GE BIDI SFP, 10km, 1.25Gbps, Tx 1310nm, Rx 1550nm, SFP form-factor, single LC/UPC receptacle connector, 0-70°C Commercial temperature, DDM
GSFP-LX-SM-1550-10-BIDI	GE BIDI SFP, 10km, 1.25Gbps, Tx 1550nm, Rx 1310nm, SFP form-factor, single LC/UPC receptacle connector, 0-70°C Commercial temperature, DDM
GSFP-LX-SM-1310-20-BIDI	GE BIDI SFP, 20km, 1.25Gbps, Tx 1310nm, Rx 1550nm, SFP form-factor, single LC/UPC receptacle connector, 0-70°C Commercial temperature, DDM
GSFP-LX-SM-1550-20-BIDI	GE BIDI SFP, 20km, 1.25Gbps, Tx 1550nm, Rx 1310nm, SFP form-factor, single LC/UPC receptacle connector, 0-70°C Commercial temperature, DDM
GSFP-LX-SM-1310-40-BIDI	GE BIDI SFP, 40km, 1.25Gbps, Tx 1310nm, Rx 1550nm, SFP form-factor, single LC/UPC receptacle connector, 0-70°C Commercial temperature, DDM
GSFP-LX-SM-1550-40-BIDI	GE BIDI SFP, 40km, 1.25Gbps, Tx 1550nm, Rx 1310nm, SFP form-factor, single LC/UPC receptacle connector, 0-70°C Commercial temperature, DDM
GSFP-LX-SM-1490-80-BIDI	GE BIDI SFP, 80km, 1.25Gbps, Tx 1490nm, Rx 1550nm, SFP form-factor, single LC/UPC receptacle connector, 0-70°C Commercial temperature, DDM
GSFP-LX-SM-1550-80-BIDI	GE BIDI SFP, 80km, 1.25Gbps, Tx 1550nm, Rx 1490nm, SFP form-factor, single LC/UPC receptacle connector, 0-70°C Commercial temperature, DDM
GSFP-LX-SM-1490-120-BIDI	GE BIDI SFP, 120km, 1.25Gbps, Tx 1490nm, Rx 1550nm, SFP form-factor, single LC/UPC receptacle connector, 0-70°C Commercial temperature, DDM
GSFP-LX-SM-1550-120-BIDI	GE BIDI SFP, 120km, 1.25Gbps, Tx 1550nm, Rx 1490nm, SFP form-factor, single LC/UPC receptacle connector, 0-70°C Commercial temperature, DDM