1.25G SFP Optical module

Features：

- Up to 1.25Gbps data rate
- Duplex LC receptacle optical interface compliant
- Single +3.3V power supply
- DDM function implemented
- Hot-pluggable
- Receiver Loss of Signal Output
- AC coupling of PECL signals
- Serial ID module on MOD(0-2)
- International Class 1 laser safety certified
- Transmitter disable input
- Operating temperature range: 0℃~+70℃
- RoHS Compliant

Applications：

- Gigabit Ethernet
- Switch to switch interface
- Switched backplane applications

Standard:

- Compliant with SFP MSA (INF-8074i)
- Compliant with SFF-8472 v9.3
- Compliant with IEEE802.3z Gigabit Ethernet

Absolute Maximum Ratings

Parameter	Symbol	Uint.	Min	Max
Storage Temperature Range	Ts	°C	-40	+85
Relative Humidity	RH	%	5	95
Power supply Voltage	Vcc	V	-0.5	4

Recommended Operating Conditions

Parameter	Symbol	Uint	Min	Typ	Max
Case Operating Temperature Range	Tc	°C	0		70
Power Supply Voltage	Vcc	V	3.135	3.3	3.465
Data Rate	-	Gb/s	-	1.25	-

Specifications (tested under recommended operating conditions, unless otherwise noted)

1.GSFP-SX-D

Parameter		Symbol	Unit	Min	Typ	Max	Notes
Electrical Characteristics							
Supply Current	Tx Section	I_{cc}	mA	-	-	300	1
	Rx Section						
Single Ended Data Input Swing		-	mV	-	-	1100	
Single Ended Data Output Swing		-	mV	300	-	600	
Optical transmitter Characteristics							
Launch Optical Power (EOL)		Po	dBm	-9.5		-3	
Center Wavelength Range		λc	nm	770	850	860	
Extinction Ratio		EX	dB	9			
Spectral Width (RMS)		Δλ	nm			0.85	
Eye Diagram		Complies with IEEE802.3z eye masks when filtered					
Optical Rise/Fall Time		T_{rise}/T_{fall}	ps			260	2
Pout of OFF transmitter		Poff	dBm	-	-	-45	
LD turn-on Time		T_{on}	ms			1	
LD turn-off Time		T_{off}	us			10	
Optical receiver Characteristics							
Center Wavelength Range		λc	nm	770		860	
Receiver Sensitivity		S	dBm			-20	3
Overload Input Optical Power		P_{in}	dBm	-3			3
LOS	Optical De-assert	LOS_D	dBm			-26	
	Optical Assert	LOS_A	dBm	-30			

Notes 1: The supply current includes SFP module's supply current and test board working current.

Notes 2: Optical transition time is the time interval required for the rising or falling edge of an optical pulse to transition between the 20% and 80% amplitudes relative to the logical 1 and 0 levels

Notes 3: Measured with a PRBS 223-1 test pattern, @1.25Gb/s, EX=10dB, BER<10-12.

2.GSFP-LX-10-D

Parameter		Symbol	Unit	Min	Typ	Max	Notes
Electrical Characteristics							
Supply Current	Tx Section	I_{cc}	mA	-	-	300	1
	Rx Section						
Single Ended Data Input Swing		-	mV	-	-	1100	
Single Ended Data Output Swing		-	mV	300	-	600	
Optical transmitter Characteristics							
Launch Optical Power		P_o	dBm	-9		-3	
Center Wavelength Range		λc	nm	1260	1310	1360	

Extinction Ratio		EX	dB	9			
Spectral Width (RMS)		∆λ	nm			4	
Eye Diagram		Complies with IEEE802.3z eye masks when filtered					
Optical Rise/Fall Time		T_{rise}/T_{fall}	ps			260	2
Pout of OFF transmitter		P_{off}	dBm	-	-	-45	
LD turn-on Time		T_{on}	ms			1	
LD turn-off Time		T_{off}	us			10	
Optical receiver Characteristics							
Center Wavelength Range		λc	nm	1260		1360	
Receiver Sensitivity		S	dBm			-25	3
Overload Input Optical Power		P_{in}	dBm	-3			3
LOS	Optical De-assert	LOS_D	dBm			-26	
	Optical Assert	LOS_A	dBm	-35			

Notes 1: The supply current includes SFP module's supply current and test board working current.

Notes 2: Optical transition time is the time interval required for the rising or falling edge of an optical pulse to transition between the 20% and 80% amplitudes relative to the logical 1 and 0 levels

Notes 3: Measured with a PRBS 223-1 test pattern, @1.25Gb/s, EX=10dB, BER<10-12.

3.GSFP-LX-20-D

Parameter		Symbol	Uint	Min	Typ	Max	Notes
Electrical Characteristics							
Supply Current	Tx Section	Icc	mA	-	-	300	1
	Rx Section						
Single Ended Data Input Swing		-	mV	-	-	1100	
Single Ended Data Output Swing		-	mV	300	-	600	
TX_fault /LOS output (TTL)		VOH	V	2.0		Vcc	
		VOL		0		0.8	
TX_disable input (TTL)		VOH	V	2.0		Vcc	
		VOL		0		0.8	
Optical transmitter Characteristics							
Launch Optical Power		Po	dBm	-9		-3	
Center Wavelength Range		λc	nm	1270	1310	1355	
Extinction Ratio		EX	dB	9			
Spectral Width (RMS)		∆λ	nm			4	
Total transmitter Jitter		TJ	UI			0.284	2
Relative Intensity Noise		RIN	DB/Hz			-120	3
Eye Diagram		Complies with IEEE802.3z eye masks when filtered					
Optical Rise/Fall Time		Trise/Tfa l	ps			260	4

Pout of OFF transmitter		Poff	dBm	-	-	-45	
Optical receiver Characteristics							
Center Wavelength Range		λc	nm	1250		1620	
Receiver Sensitivity		S	dBm			-25	5
Overload Input Optical Power		Pin	dBm	-3			
LOS	Optical De-assert		dBm			-26	
	Optical Assert			-35			
LOS Hysteresis			dB	0.5	3	5	6

Notes 1: The supply current includes SFP module's supply current and test board working current.

Notes 2: TP2 refers to the compliance point specified in IEEE802.3z, section 38.2.1.

Notes 3: RIN is the laser noise, integrated over a specified bandwidth, measured relative to average optical power with 12dB return loss. For multimode application, the RIN is better than -117dB/Hz.

Notes 4: Optical transition time is the time interval required for the rising or falling edge of an optical pulse to transition between the 20% and 80% amplitudes relative to the logical 1 and 0 levels

Notes 5: Measured with a PRBS 223-1 test pattern, @1.25Gb/s, EX=10dB, BER<10-12.

Notes 6: The LOS Hysteresis to minimize "chatter" on the output line. In principle, Hysteresis alone does not guarantee chatter-free operation

4.GSFP-LX-40-D

Parameter		Symbol	Uint	Min	Typ	Max	Notes
Electrical Characteristics							
Supply Current	Tx Section	Icc	mA	-	3	300	1
	Rx Section						
Single Ended Data Input Swing		-	mV	150	-	1100	
Single Ended Data Output Swing		-	mV	300	-	600	
TX_fault /LOS output (TTL)		VOH	V	2.0		Vcc	
		VOL		0		0.8	
TX_disable input (TTL)		VOH	V	2.0		Vcc	
		VOL		0		0.8	
Optical transmitter Characteristics							
Launch Optical Power		Po	dBm	-5		0	40km 1310DFB
Center Wavelength Range		λc	nm	1270	1310	1350	DFB
Extinction Ratio		EX	dB	9			
Spectral Width		Δλ	nm			1	DFB
Side Mode Suppression Ratio		SMSR	dB	30			DFB
Contributed Total Jitter added at TP2		TJ	UI			0.284	2
Relative Intensity Noise		RIN	dB/Hz			-120	3

Eye Diagram		Complies with IEEE802.3z eye masks when filtered					
Dispersion Penalty			dB			1	
Optical Rise/Fall Time		Trise/Tfal	ps			260	4
Optical receiver Characteristics							
Receiver Sensitivity		S	dBm			-23	1310nm 40km
Overload Input Optical Power		Pin	dBm	-3			40km
LOS	Optical Dessert		dBm		S		
	Optical Assert			-35			40km PIN
LOS Hysteresis			dB	0.5	3	5	6

Note1. The supply current includes SFP module's supply current and test board working current.

Note2 TP refers to the compliance point specified in IEEE802.3z, section 38.2.1.

Note3 RIN is the laser noise, integrated over a specified bandwidth, measured relative to average optical power with 12dB return loss. For multimode application, the RIN is better than -117dB/Hz.

Note4 Optical transition time is the time interval required for the rising or falling edge of an optical pulse to transition between the 20% and 80% amplitudes relative to the logical 1 and 0 levels

Note5 Measured with a PRBS 2^{23}-1 test pattern, @1.25Gb/s, EX=10dB, BER<10^{-12}.

Note6 The LOS Hysteresis to minimize "chatter" on the output line. In principle, Hysteresis alone does not guarantee chatter-free operation

5.GSFP-ZX-80-D

Parameter		Symbol	Uint	Min	Typ	Max	Notes
Electrical Characteristics							
Supply Current	Tx Section	Icc	mA	-	3	300	1
	Rx Section						
Single Ended Data Input Swing		-	mV	150	-	1100	
Single Ended Data Output Swing		-	mV	300	-	600	
TX_fault /LOS output (TTL)		VOH	V	2.0		Vcc	
		VOL		0		0.8	
TX_disable input (TTL)		VOH	V	2.0		Vcc	
		VOL		0		0.8	
Optical transmitter Characteristics							
Launch Optical Power		Po	dBm	-2	0	+3	80km 1550nm DFB-LD
Center Wavelength Range		λc	nm	1500	1550	1580	DFB-LD
Extinction Ratio		EX	dB	9			
Spectral Width		Δλ	nm			1	DFB-LD
Side Mode Suppression Ratio		SMSR	dB	30			DFB-LD
Contributed Total Jitter		TJ	UI			0.284	2

added at TP2							
Relative Intensity Noise		RIN	dB/Hz			-120	3
Eye Diagram		Complies with IEEE802.3z eye masks when filtered					
Dispersion Penalty			dB			1	
Optical Rise/Fall Time		Trise/Tfal	ps			260	4
Optical receiver Characteristics							
Receiver Sensitivity		S	dBm			-25	1550nm 80km
Overload Input Optical Power		Pin	dBm	-3			80km
LOS	Optical Dessert		dBm		S		5
	Optical Assert			-35			80km PIN
LOS Hysteresis			dB	0.5	3	5	6

Note1: The supply current includes SFP module's supply current and test board working current.

Note2: TP refers to the compliance point specified in IEEE802.3z, section 38.2.1.

Note3: RIN is the laser noise, integrated over a specified bandwidth, measured relative to average optical power with 12dB return loss. For multimode application, the RIN is better than -117dB/Hz.

Note4: Optical transition time is the time interval required for the rising or falling edge of an optical pulse to transition between the 20% and 80% amplitudes relative to the logical 1 and 0 levels

Note5: Measured with a PRBS 2^{23}-1 test pattern, @1.25Gb/s, EX=10dB, BER<10^{-12}.

Note6: The LOS Hysteresis to minimize "chatter" on the output line. In principle, Hysteresis alone does not guarantee chatter-free operation

6.GSFP-ZX-120-D

Parameter		Symbol	Uint	Min	Typ	Max	Notes
Electrical Characteristics							
Supply Current	Tx Section	Icc	mA	-	-	300	1
	Rx Section						
Single Ended Data Input Swing			mV	150		1100	
Single Ended Data Output Swing			mV	300		600	
TX_fault /LOS output (TTL)		VOH	V	2.0		Vcc	
		VOL		0		0.8	
TX_disable input (TTL)		VOH	V	2.0		Vcc	
		VOL		0		0.8	
Optical transmitter Characteristics							
Launch Optical Power		Po	dBm	0		+5	120km
Center Wavelength Range		λc	nm	1500	1550	1580	
Extinction Ratio		EX	dB	9			
Spectral Width (-20dB)		Δλ	nm			1	

Total transmitter Jitter	TJ	UI			0.284	2
Relative Intensity Noise	RIN	dB/H_z			-120	3
Eye Diagram	Complies with IEEE802.3z eye masks when filtered					
Dispersion Penalty		dB			2	
Optical Rise/Fall Time	Trise/Tfall	PS			260	4
P_{out} of OFF transmitter	Poff	dBm	-	-	-45	
Optical receiver Characteristics						
Center Wavelength Range	λc		1250		1620	
Receiver Sensitivity	S	dBm			-30	5
Overload Input Optical Power	P in	dBm	-9			
LOS Optical Dessert		dBm			-31	
LOS Optical Assert		dBm	-45			
LOS Hysteresis		dB	0.5	3	5	6

Note I. The supply current includes SFP module's supply current and test board working current.

Note2. TP2 refers to the compliance point specified in IEEE802 3z, section 38.2.1 .

Note3. RIN is the laser noise, integrated over a specified bandwidth, measured relative to average optical power with 12dB return loss. For multimode application, the RIN is better than -1 17dB/Hz.

Note4: Optical transition time is the time interval required for the rising or falling edge of an optical pulse to transition between the 20% and 80% amplitudes relative to the logical 1 and 0 levels

Note5. Measured with a PRBS 223-1 test pattern, @1 .25Gb/s, EX=10dB, BER<10-12

Note6. The LOS Hysteresis to minimize "chatter" on the output line. In principle, Hysteresis alone does not guarantee chatter-free operation.

Ordering Information

Model	Description
GSFP-SX-D	GE SFP, 550m, 1.25Gbps, Tx 850nm, Rx 850nm, SFP form-factor, Duplex LC/UPC receptacle connector, 0~70°C Commercial temperature, DDM
GSFP-LX-10-D	GE SFP, 10km, 1.25Gbps, Tx 1310nm, Rx 1310nm, SFP form-factor, Duplex LC/UPC receptacle connector, 0~70°C Commercial temperature, DDM
GSFP-LX-20-D	GE SFP, 20km, 1.25Gbps, Tx 1310nm, Rx 1310nm, SFP form-factor, Duplex LC/UPC receptacle connector, 0~70°C Commercial temperature, DDM
GSFP-LX-40-D	GE SFP, 40km, 1.25Gbps, Tx 1310nm, Rx 1310nm, SFP form-factor, Duplex LC/UPC receptacle connector, 0~70°C Commercial temperature, DDM
GSFP-ZX-80-D	GE SFP, 80km, 1.25Gbps, Tx 1550nm, Rx 1550nm, SFP form-factor, Duplex LC/UPC receptacle connector, 0~70°C Commercial temperature, DDM
GSFP-ZX-120-D	GE SFP, 120km, 1.25Gbps, Tx 1550nm, Rx 1550nm, SFP form-factor, Duplex LC/UPC receptacle connector, 0~70°C Commercial temperature, DDM