
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°C~+70°C
- 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
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Absolute Maximum Ratings

Parameter	Symbol	Unit.	Min	Max
Storage Temperature Range	T _s	°C	-40	+85
Relative Humidity	RH	%	5	95
Power supply Voltage	V _{cc}	V	-0.5	4

Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Case Operating Temperature Range	T _c	°C	0		70
Power Supply Voltage	V _{cc}	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)	P _o	dBm	-9.5		-3		
Center Wavelength Range	λ _c	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	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	λ _c	nm	770		860		
Receiver Sensitivity	S	dBm			-20	3	
Overload Input Optical Power	P _{in}	dBm	-3			3	
LOS	Optical De-assert	LOS _D			-26		
	Optical Assert	LOS _A	-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	λ _c	nm	1260	1310	1360		
Extinction Ratio	EX	dB	9				
Spectral Width(RMS)	Δλ	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	λ _c	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	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	
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	λ_c	nm	1270	1310	1355	
Extinction Ratio	EX	dB	9			
Spectral Width(RMS)	$\Delta\lambda$	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/Tfal	ps			260	4
Pout of OFF transmitter	Poff	dBm	-	-	-45	
Optical receiver Characteristics						
Center Wavelength Range	λ_c	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	Unit	Min	Typ	Max	Notes
Electrical Characteristics						
Supply Current	Tx Section	Icc	mA	-	3	300
	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	λ_c	nm	1270	1310	1350	DFB
Extinction Ratio	EX	dB	9			
Spectral Width	$\Delta\lambda$	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 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

5.GSFP-ZX-80-D

Parameter	Symbol	Unit	Min	Typ	Max	Notes
Electrical Characteristics						
Supply Current	Tx Section	Icc	mA	-	3	300
	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		V _{cc}	
	VOL		0		0.8	
TX_disable input (TTL)	VOH	V	2.0		V _{cc}	
	VOL		0		0.8	
Optical transmitter Characteristics						
Launch Optical Power	P _o	dBm	-2	0	+3	80km 1550nm DFB-LD
Center Wavelength Range	λ_c	nm	1500	1550	1580	DFB-LD
Extinction Ratio	EX	dB	9			
Spectral Width	$\Delta\lambda$	nm			1	DFB-LD
Side Mode Suppression Ratio	SMSR	dB	30			DFB-LD
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			-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 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

6.GSFP-ZX-120-D

Parameter	Symbol	Unit	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		λ_c	nm	1500	1550	1580	
Extinction Ratio		EX	dB	9			
Spectral Width (-20dB)		$\Delta\lambda$	nm			1	
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					
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		λ_c		1250		1620	
Receiver Sensitivity		S	dBm			-30	5
Overload Input Optical Power		P _{in}	dBm	-9			
LOS	Optical Dessert		dBm			-31	
	Optical Assert		dBm	-45			
LOS Hysteresis			dB	0.5	3	5	6

Note1. 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
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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

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