10GBASE-ER SFP+ 1310nm 40km DOM Transceiver

SFP-10GER-31

Application

- 10GBASE-LR/LW 10G
- Ethernet
- 10GFC
- 8GFC

Features

- Link lengths at 10G 40Km with DFB 1310nm
- LC duplex connector
- Low power consumption<1.3W
- 0℃ to 70℃ operating temperature range
- Single +3.3V±5% power supply
- Digital Monitoring
- SFF-8472 compliant

Description

The 10Gigabit 1310nm DFB Transceiver is designed to transmit and receive serial optical data links up from 6.1 Gb/s to 10.52 Gb/s data rate over 30km singlemode fiber. The Transceiver is compliant with SFF-8432, 10GFC, FC-PI-4, IEEE802.3ae and applicable portions of SFF-8431. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472.

Product Specifications

I. Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature Range	Ts	℃	0	70
Relative Humidity	RH	%	0	95
Supply Voltage	VCC	V	-0.3	4.0

II. Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Operating Case Temperature Range	Tc	℃	0		70
Power Supply Voltage	Vcc	V	3.14	3.3	3.46
Bit Rate	BR	Gb/s	6.1		10.52
Bit Error Ratio	BER				10^{-12}
Max Supported Link Length	L	km			30

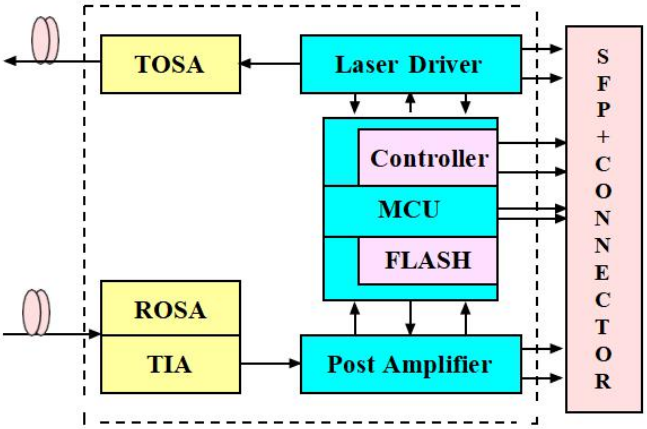
III. Electric Ports Definition

Parameter	Symbol	Unit	Min	Typ	Max	Note
Supply Voltage	V_{CC}	V	3.14	3.3	3.46	
Supply Current	Icc	mA			390	
		Transmitter				
Input Differential Impedance	RIN	Ω	80	100	120	1
Differential Data Input Swing	VIN	mVp-p	180		700	
Transmit Disable Voltage	VDIS	V	2		VCCHOST	
Transmit Enable Voltage	VEN	V	VEE		VEE+0.8	
Transmit Fault Assert Voltage	VFA	V	2.2		VCCHOST	
Transmit Fault De-Assert Voltage	VFDA	V	VEE		VEE+0.4	
		Receiver				
Differential Data Output Swing	VOD	mVp-p	450	600	850	
Output Rise Time	tRISE	ps	25			
Output Fall Time	tFALL	ps	25			
LOS Fault	VLOSFT	V	2		VCCHOST	
LOS Normal	VLOSNR	V	VEE		VEE+0.8	

Note:

1. Differential between TD+ / TD–

IV. Principle diagram



V. Optical Characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Note
Transmitter						
Nominal Wavelength	λ	nm	1260	1310	1355	
Side Mode Suppression Ratio	SMSR	dB	30			
Spectral width	⊿λ	nm			1	
Optical Output Power	Pav	dBm			1 3	20km 30km
Optical Modulation Amplitude[1]	P_{OMA}	dBm	-5 -1			20km 30km
Extinction Ratio	ER	dB	3.5			
Average launch power of OFF transmitter	P_{OFF}	dBm			-35	
Relative Intensity Noise	R_{IN}	dB/Hz			-128	

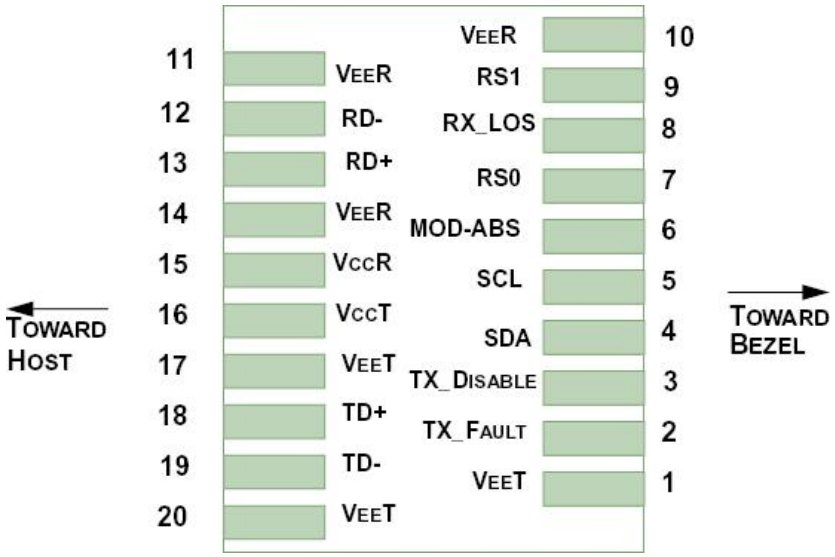
Optical Return Loss Tolerance	ORLT	dB	-15			
			Receiver			
Center Wavelength	λ	nm	1260		1610	
Average Receiver Power	P_{AVG}	dBm			+1	
Receiver Sensitivity[2] (OMA)	R_{SENSE1}	dBm			-15	PRBS7
Receiver Reflectance	R_{REFL}	dB			-15	
Assert LOS	LOS_A	dBm	-30			
De-Assert LOS	LOS_D	dBm			-17	
LOS Hysteresis		dB	0.5			

Note:

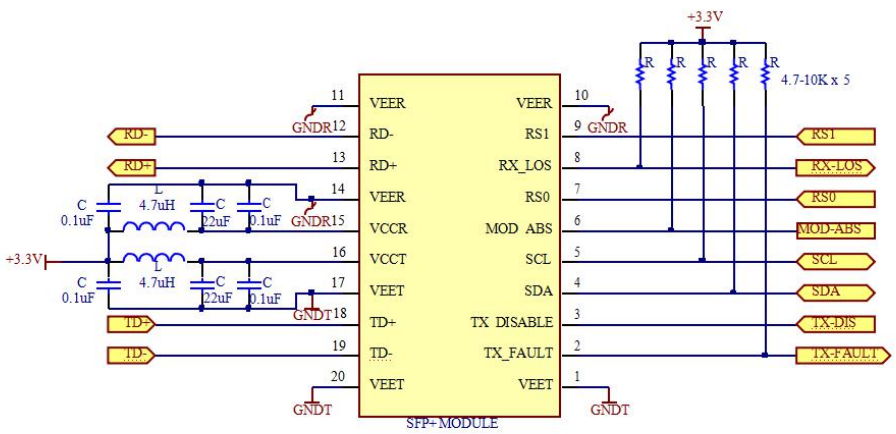
1. OMA = OMAmin – TDP, sum of all penalties incorporated, incl. aging and interoperability margin

2. achieved with worst case jitter stress at δ t, and maximum reflection at γt, Jitter total @δt, BER<10-12 = 0.28UI (informative)

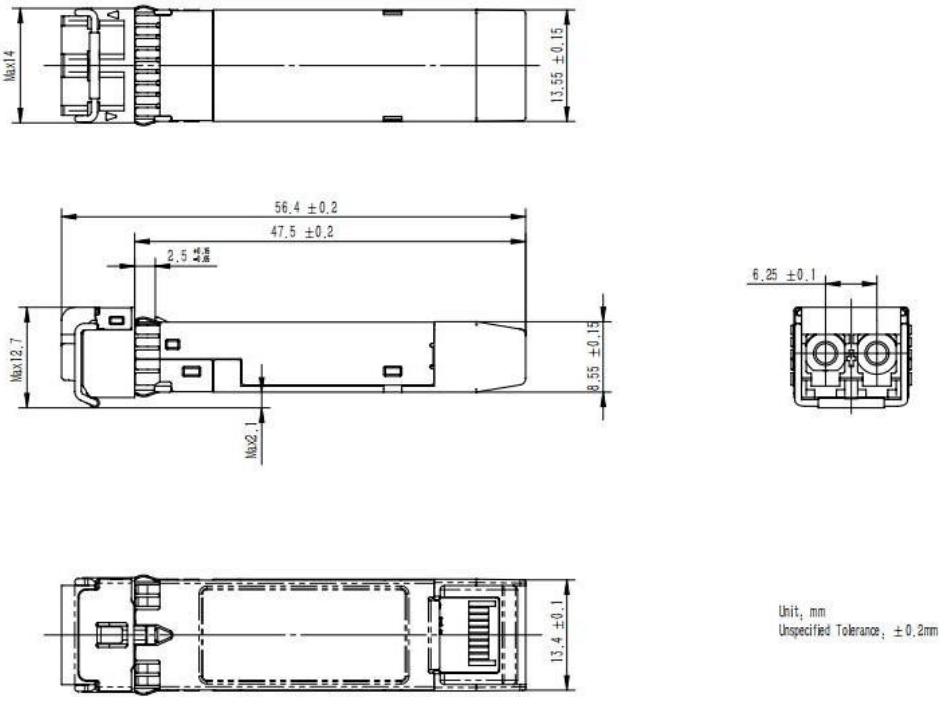
VI. Pin function definitions



VII. Typical Application Circuit



VIII. Package Outline



IX. Regulatory Compliance

Feature	Test Method	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883C Method 3015.7	Class 1 (> 1500 Volts)
Electrostatic Discharge (ESD) Immunity	Variation of IEC 61000-4-2	LV 4 (Air discharge :15KV; Contact discharge: 8 KV) Performance criterion:B
Electromagnetic Interference (EMI)	CISPR22 ITE Class B EN55022 Class B FCC Class B	Compliant with standards
Immunity	6100IEC61000-4-3 Class 2 EN55024	Typically show no measurable effect from a 3V/m field swept from 80 to 1000MHz applied to the transceiver without a chassis enclosure.

Test Center

FS.COM transceivers are tested to ensure connectivity and compatibility in our test center before shipped out. FS.COM test center is supported by a variety of mainstream original brand switches and groups of professional staff, helping our customers make the most efficient use of our products in their systems, network designs and deployments.

The original switches could be found nowhere but at FS.COM test center, eg: Juniper MX960 & EX 4300 series, Cisco Nexus 9396PX & Cisco ASR 9000 Series, HP 5900 Series & HP 5406R ZL2 V3(J9996A), Arista 7050S-64, Brocade ICX7750-26Q & ICX6610-48, Avaya VSP 7000 MDA 2, etc.

Cisco ASR 9000 Series(A9K-MPA-1X40GE)


ARISTA 7050S-64(DCS-7050S-64)

Juniper MX960


Brocade ICX 7750-26Q

Extreme Networks X670V VIM-40G4X

Mellanox M3601Q


Dell N4032F

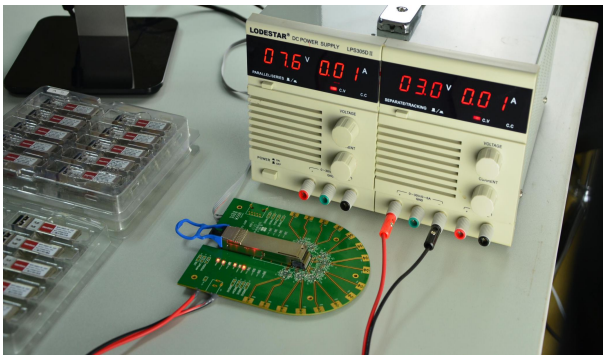
HP 5406R ZL2 V3(J9996A)

AVAYA 7024XLS(7002QQ-MDA)

Test Assured Program

FS.COM truly understands the value of compatibility and interoperability to each optics. Every module FS.COM provides must run through programming and an extensive series of platform diagnostic tests to prove its performance and compatibility. In our test center, we care of every detail from staff to facilities—professionally trained staff, advanced test facilities and comprehensive original-brand switches, to ensure our customers to receive the optics with superior quality.

Our smart data system allows effective product management and quality control according to the unique serial number, properly tracing the order, shipment and every part.



Our in-house coding facility programs all of our parts to standard OEM specs for compatibility on all major vendors and systems such as Cisco, Juniper, Brocade, HP, Dell, Arista and so on.

With a comprehensive line of original-brand switches, we can recreate an environment and test each optics in practical application to ensure quality and distance.

The last test assured step to ensure our products to be shipped with perfect package.

Order Information

Package	Data rate(Gb/s)	Laser	Optical Power (OMA)dBm	Detector	Sensitivity (OMA) dBm	Top	Reach (km)	Other	Application
SFP+	6.1 ~10.52	1310nm DFB	>-5 >-1	PIN	< -15	0~70 ℃	40km	DDM	10GBASE-LR/LW 8G/10GFC

https://www.fs.com