

16 Gb/s 10 km SFP+ FC Dual LC Transceiver



SFP+ Series

- **Operating data rate up to 14.025 Gb/s**
- **Up to 10km transmission distance**
- **Single +3.3V±5% Power Supply**
- **Compliant with SFF-8472**
- **Low Power Consumption <1.2W**

Ascent's 16Gb/s SFP+ Fibre Channel Optical Transceiver is a high-performance, hot-pluggable optical module designed for 16G Fibre Channel and other high-speed serial communication applications requiring transmission distances of up to 10 km over single-mode fibre. Compliant with the SFP+ MSA, SFF-8431, SFF-8432, and SFF-8472 specifications, the transceiver provides reliable, low-latency optical connectivity for enterprise storage networks, SAN infrastructures, data centers, and telecommunications equipment.

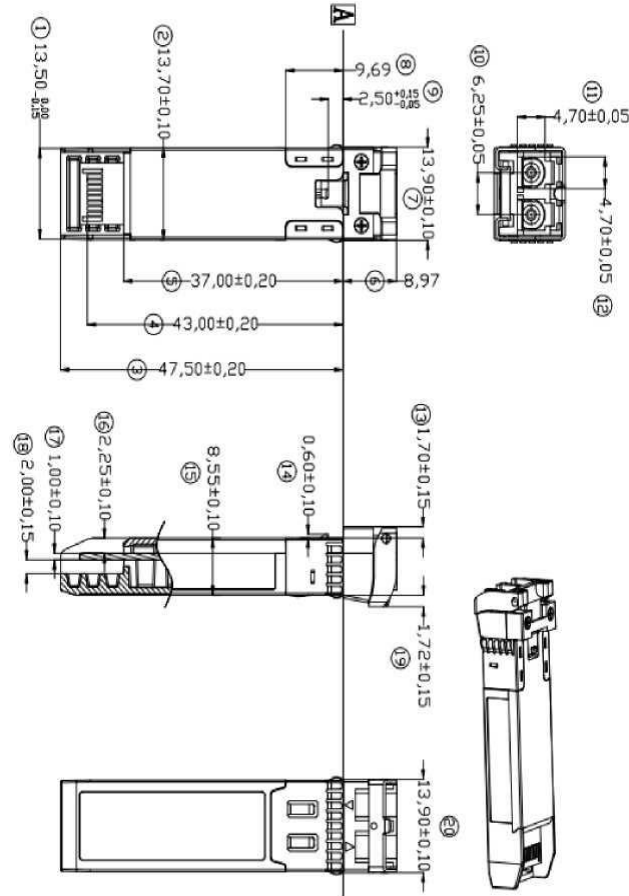
The transceiver incorporates a 1310nm DML laser transmitter and a high-sensitivity PIN/TIA receiver to deliver excellent optical performance with low bit error rates and outstanding signal integrity at data rates up to 14.025Gb/s. The module offers an energy-efficient solution for high-density networking environments. Integrated Digital Diagnostic Monitoring (DDM) enables real-time monitoring of critical operating parameters including temperature, supply voltage, transmit bias current, and optical transmit and receive power.

Designed for dependable operation in demanding enterprise and carrier environments, the Ascent 16G SFP+ transceiver supports hot-pluggable installation, LC duplex optical interfaces. Its compact SFP+ form factor, excellent interoperability, and robust optical performance make it an ideal solution for Fibre Channel storage area networks (SAN), enterprise switching, optical transport equipment, and other high-speed optical communication systems.

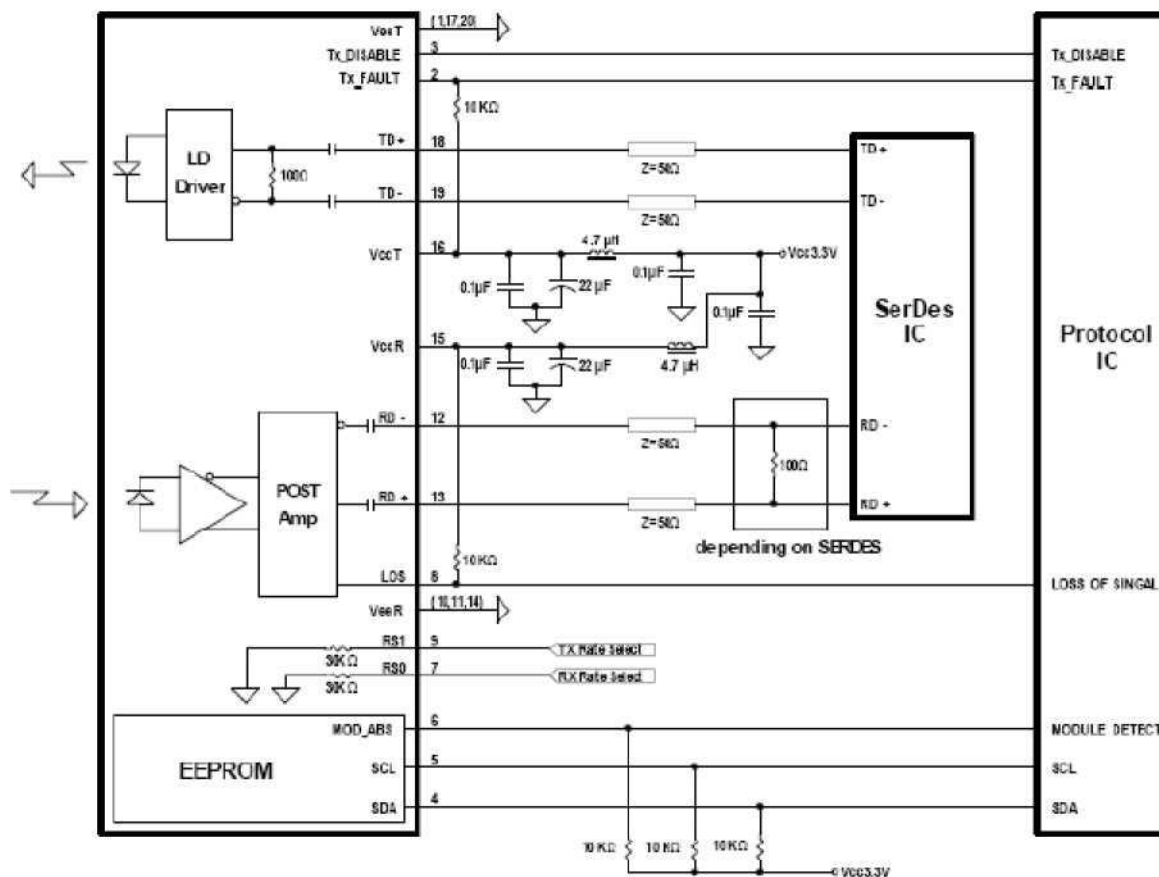
Key Features

- Operating data rate up to 14.025Gbps
- Up to 10km transmission distance
- High sensitivity Pin photodiode and TIA
- Rate Adaptation
- LC duplex connector
- Hot pluggable 20pin connector
- Low power consumption <1.2W
- Single +3.3V±5% power supply
- Compliant with SFF-8472
- Fully RoHS Compliant
- Operating temperature range:
Commercial: 0°C to +70°C
Industrial: -40°C to +85°C

Outline Dimensions



Recommended Interface Circuit



Specifications

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Storage Temperature	T _s	-40		+85	°C
Relative Humidity	RH	0		85	%

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Case Temperature	T _{op}	0		+70	°C	SFPP-16-LP-31-10
		-40		+85	°C	SFPP-16-LP-31-10A
Power Supply Voltage	V _{cc}	3.15	3.30	3.45	V	
Bit Rate	BR		-	14.025	Gbps	
Bit Error Ratio	BER			1 x 10 ⁻¹²	Gbps	
Max Supported Link Length	L			10	km	9/125 μm SMF

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Center Wavelength	λ	1290		1330	nm	
Side-mode Suppression Ratio	SMSR	30			dB	
Average Optical Power	P _{avg}	-7		2.0	dBm	
Optical Modulation Amplitude	TxOMA	-4			dBm	
Transmitter and Dispersion Penalty	TDP			2.7	dB	
Average Launch Power of OFF Transmitter	P _{off}			-30	dBm	
Extinction Ratio	ER	3.5			dB	
Optical Return Loss Tolerance				-12	dB	
Transmitter Reflectance				-12	dB	
Receiver						
Center Wavelength	λ	1260		1360	nm	
Damage Threshold		3			dBm	
Receive Power Overload				2	dBm	
Receiver Reflectance				-12	dB	
Receiver Sensitivity (OMA)	S _{omA}			-14	dBm	1
LOS Assert	LOS _A	-30			dBm	
LOS De-Assert	LOS _D			-17	dBm	
LOS Hysteresis		0.5			dB	

Note1: Measured at 14.025125Gb/s, ER>3.5dBm, PRBS 2³¹-1 and BER better than or equal to 1E-12.

Electrical Characteristics

Parameter	Symbol	Min	Typ.	Max	Unit	Note
Power Consumption				1.2	W	
Supply Current	I _{cc}			350	mA	

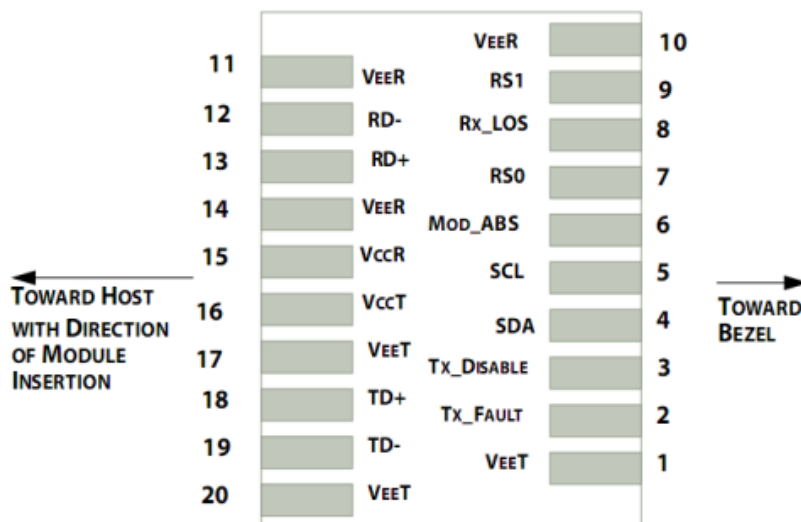
Electric Ports Definition

Parameter	Symbol	Min	Typ.	Max	Unit	Note
Transmitter						
Input Differential Impedance	R_{IN}		100		Q	
Single-ended Data Input Swing	V_{IN}	90		450	mVp-p	
Transmit Disable Voltage	V_{DIS}	2		V_{CCHOST}	V	
Transmit Enable Voltage	V_{EN}	V_{EE}		$V_{EE}+0.8$	V	
Transmit Fault Assert Voltage	V_{FA}	2		V_{CCHOST}	V	
Transmit Fault De-Assert Voltage	V_{FDA}	V_{EE}		$V_{EE}+0.4$	V	
Receiver						
Single-Ended Data Output Swing	V_{OD}	200		450	mVp-p	
LOS Fault	V_{LOSFT}	2		V_{CCHOST}	V	
LOS Normal	V_{LOSNR}	V_{EE}		$V_{EE}+0.4$	V	

Digital Diagnostic Functions

Parameter	Accuracy	Unit
Internally Measured Transceiver Temperature	+/-3	°C
Internally Measured Transceiver Supply Voltage	+/-3	%
Measured Tx Bias Current	+/-10	%
Measured Tx Output Power	+/-3	dB
Measured Rx Received Average Optical Power	+/-3	dB

Pin Assignment



Pin	Symbol	Name	Description
1,17,20	VeeT	Transmitter Signal Ground	Connected to signal ground on the host board
2	TX Fault	Transmitter Fault Out(OC)	Module transmitter fault output
3	TX Disable	Transmitter Disable In(LVTTL)	Module transmitter disable control
4	SDA	Module Definition Identifiers	Serial ID with SFF 8472 Diagnostics
5	SCL	Module Definition pins should be pulled up to Host Vcc with 10kΩ resistors	Module Definition pins should be pulled up to Host Vcc with 10kΩ resistors
6	MOD-ABS	Rate select 0(Rx):Low=CDR Bypass High=CDR Select	Rate select 0(Rx):Low=CDR Bypass High=CDR Select
7	RS0	Rate select 1(Tx):Low=CDR Bypass High=CDR Select	Rate select 1(Tx):Low=CDR Bypass High=CDR Select
8	RS1	Rate select 1(Tx):Low=CDR Bypass High=CDR Select	Rate select 1(Tx):Low=CDR Bypass High=CDR Select
9	LOS	Receiver loss of signal	Receiver loss of signal
10,11,14	VeeR	Receiver Signal Ground	Connected to signal ground on the host board
12	RD-	Receiver Negative DATA Out(CML)	Receiver inverted data output, internally AC coupled and terminated
13	RD+	Receiver Positive DATA Out(CML)	Receiver non-inverted data output, internally AC coupled and terminated
15	VccR	Receiver Power Supply	Receiver Power 3.3V Supply
16	VccT	Transmitter Power Supply	Transmitter Power 3.3V Supply
18	TD+	Transmitter Positive DATA In(CML)	Transmitter non-inverted data input, internally AC coupled and terminated
19	TD-	Transmitter Negative DATA In(CML)	Transmitter inverted data Input, internally AC coupled and terminated

Ordering Information

Product Name

SFPP-16LP-31-10
SFPP-16LP-31-10A

Product Description

SFP+ plug-in, 16 GBASE-LR, 10 km, 1310nm, on two single-mode fibers, LC, DOM
SFP+ plug-in, 16 GBASE-LR, 10 km, 1310nm, on two single-mode fibers, LC, DOM,
Industrial Temp -40 to +85°C

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