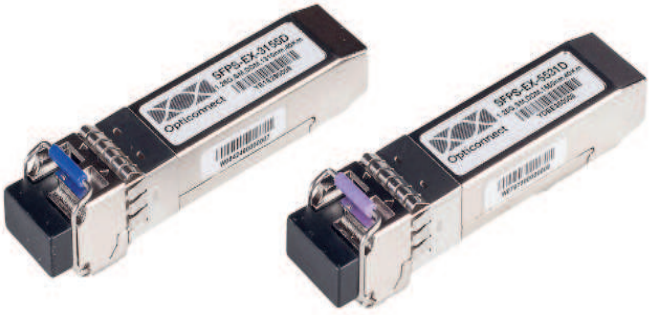
SFPS-EX-3155 and -5531

SFP Single-Mode, Single-Fiber Transceiver
for 100Mbps to 1.25Gbps FE/GBE /FC



Features

- Speed up to Up to 1.25Gbps
- Side A:
- 1310nm TX /1550nm RX
- Side B:
- 1550nm TX /1310nm RX
- 40km with 9/125 µm SMF

Applications

- Fiber Channel Links
- Gigabit Ethernet
- Fast Ethernet
- WDM Gigabit Ethernet Links
- Other Optical Links

Product Description

The SFPS-EX-3155 and SFPS-EX-5531 series is small form factor pluggable module for Gigabit Ethernet 1000BASE-BX and Fiber Channel single fiber applications by using 1310nm / 1550nm transmitter and 1550nm / 1310nm receiver. It is with the SFP 20-pin connector to allow hot plug capability.

The transmitter section uses a distributed feedback laser and is a class 1 laser compliant according to International Safety Standard IEC 60825. The receiver section uses an integrated A type / B type detector preamplifier (IDP) mounted in an optical header and a limiting post-amplifier IC.

The SFPS-EX-3155 and SFPS-EX-5531 series are designed to be compliant with SFF-8472 Multi-source Agreement (MSA).

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Opticonnect SYSTEMS B.V., an Optical Networking vendor with its headquarters in the Netherlands, provides Optical Transport solutions and Optical Transceivers at the best price performance ratio possible. Our goal is to simplify the planning, deployment and maintenance of complex Optical Networks. This is achieved by our user friendly planning apps and information, sophisticated products and transparent support. Relying on our superior product quality, all items are supplied with life time warranty.

Ordering Information

Part No.	Data Rate	Wavelength	Interface	Temp.	DDMI
SFPS-EX-3155D	Up to 1.25Gbps	1310nm	LC	Standard	YES
SFPS-EX-5531D	Up to 1.25Gbps	1550nm	LC	Standard	YES

Regulatory Compliance

Feature	Standard	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883G Method 3015.7	Class 1C (>1000 V)
Electrostatic Discharge to the enclosure	EN 55024:1998+A1+A2 IEC-61000-4-2 GR-1089-CORE	Compliant with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN55022:2006 CISPR 22B :2006 VCCI Class B	Compliant with standards Noise frequency range: 30MHz to 6GHz. Good system EMI design practice required to achieve Class B margins. System margins are dependent on customer host board and chassis design.
Immunity	EN 55024:1998+A1+A2 IEC 61000-4-3	Compliant with standards. 1KHz sine-wave, 80% AM, from 80MHz to 1GHz. No effect on transmitter/receiver per-formance is detectable between these limits.
Laser Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1:2007 EN (IEC) 60825-2:2004+A1	CDRH compliant and Class I laser product. TüV Certificate No. 50135086
Component Recognition	UL and CUL EN60950-1:2006	UL file E317337 TüV Certificate No. 50135086 (CB scheme)
RoHS6	2002/95/EC 4.1&4.2 2005/747/EC 5&7&13	Compliant with standards*note1

Note1: For update of the equipments and strict control of raw materials, EOPTOLINK has the ability to supply the customized products since Jan 1st, 2007, which meet the requirements of RoHS6 (Restrictions on use of certain Hazardous Substances) of European Union. In light of item 5 in RoHS exemption list of RoHS Directive 2002/95/EC, Item 5: Lead in glass of cathode ray tubes, electronic components and fluorescent tubes. In light of item 13 in RoHS exemption list of RoHS Directive 2005/747/EC, Item 13: Lead and cadmium in optical and filter glass. The three exemptions are being concerned for Eoptolink's transceivers, because Eoptolink's transceivers use glass, which may contain Pb, for components such as lenses, windows, isolators, and other electronic components.

Absolute Maximum Ratings*note2

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	Ts	-40	+85	°C
Supply Voltage	Vcc	-0.5	3.6	V
Operating Relative Humidity		-	95	%

Note 2:Exceeding any one of these values may destroy the device immediately.

Recommended Operating Conditions

Parameter		Symbol		Min.	Typical	Max.	Unit
Operating Case Temperature		T_A	SFPS-EX-3155D AND SFPS-EX-5531D	0		+70	°C
Power Supply Voltage		Vcc		3.15	3.3	3.45	V
Power Supply Current		Icc				300	mA
Date Rate	FE				100		Mbps
	FC				1.063		Gbps
	GBE				1.25		Gbps

Performance Specifications - Electrical

Parameter		Symbol	Min.	Typ.	Max	Unit	Notes
Transmitter							
LVPECL Inputs(Differential)		Vin	400		2000	mVpp	AC coupled inputs*(note5)
Input Impedance (Differential)		Zin	85	100	115	ohm	Rin > 100 kohm @ DC
TX_Dis	Disable		2		Vcc+0.3	V	
	Enable		0		0.8		
TX_FAULT	Fault		2		Vcc+0.3	V	
	Normal		0		0.5		
Receiver							
LVPECL Outputs (Differential)		Vout	400		2000	mVpp	AC coupled outputs*(note5)
Output Impedance (Differential)		Zout	85	100	115	ohm	
RX_LOS	LOS		2		Vcc+0.3	V	
	Normal		0		0.8	V	
MOD_DEF (0:2)		VoH	2.5			V	With Serial ID
		VoL	0		0.5	V	

Performance Specifications - Optical - SFPS-EX3155D, 40km

Parameter	Symbol	Min.	Typical	Max.	Unit
9µm Core Diameter SMF	L		40		km
Data Rate		100	1250		Mbps
Transmitter					
Center Wavelength	λ_C	1290	1310	1330	nm
Spectral Width (-20dB)	Δλ			1	nm
Side Mode Suppression Ratio	SMSR	30			dB
Average Output Power*(note3)	Pout	-3		2	dBm
Extinction Ratio	ER	8.2			dB
Rise/Fall Time(20%～80%)	tr/tf			0.26	ns
Total Jitter	TJ			260	ps
Output Optical Eye*(note4)	Compliant with IEEE 802.3z*(note7)				
TX_Disable Assert Time	t_off			10	us
P_{out}@TX Disable Asserted	Pout			-45	dBm
Receiver					

Center Wavelength	λ_C	1480	1550	1500	nm
Receiver Sensitivity*(note6)	Pmin			-23	dBm
Receiver Overload	Pmax	-3			dBm
LOS De-Assert	LOSD			-24	dBm
LOS Assert	LOSA	-45			dBm
LOS Hysteresis*(note8)		0.5			dB

SFPS-EX5531D, 40km

Parameter	Symbol	Min.	Typical	Max.	Unit
9μm Core Diameter SMF	L		40		km
Data Rate		100	1250		Mbps
Transmitter					
Center Wavelength	λ_C	1520	1550	1580	nm
Spectral Width (-20dB)	Δλ			1	nm
Average Output Power*(note3)	Pout	-5		0	dBm
Extinction Ratio	ER	8.2			dB
Side Mode Suppression Ratio	SMSR	30			dB
Rise/Fall Time(20%~80%)	t_r/t_f			0.26	ns
Output Optical Eye*(note4)	Compliant with IEEE 802.3ah-2004*(note7)				
TX_Disable Assert Time	t_off			10	us
P_{out}@TX Disable Asserted	Pout			-45	dBm
Receiver					
Center Wavelength	λ_C	1290		1330	nm
Receiver Sensitivity*(note6)	Pmin			-23	dBm
Receiver Overload	Pmax	-3			dBm
Return Loss		12			dB
Optical Path Penalty				1	dB
LOS De-Assert	LOSD			-24	dBm
LOS Assert	LOSA	-45			dBm
LOS Hysteresis*(note8)		0.5			dB

Note3: Output is coupled into a 9/125μm single-mode fiber.
Note4: Filtered, measured with a PRBS 27-1.
Note5: LVPECL logic, internally AC coupled.
Note6: Measured at all data rates specified in Data Rate table with ER=9 dB, 27-1 PRBS data pattern, BER <1E-12.
Note7: Eye Pattern Mask
Note8: LOS Hysteresis