

**Features**

- Up to 11.1Gbps Data Links
- Up to 40km transmission on SMF
- DWDM EML Laser and PIN receiver
- Metal enclosure, for lower EMI
- 2-wire interface with integrated Digital Diagnostic monitoring
- Hot-pluggable SFP+ footprint
- Specifications compliant with SFF 8472
- Compliant with SFP+ MSA with LC connector
- Single 3.3V power supply
- Case operating temperature range:0°C to 70°C
- Power dissipation < 1.5W



**Applications**

- 10GBASE-ER/EW
- 40 km 10G Fiber Channel
- 10G Ethernet with FEC

**Absolute Maximum Ratings**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	Ts	-40	-	85	°C	
Storage Ambient Humidity	HA	5	-	95	%	
Operating Relative Humidity	RH	-	-	85	%	
Power Supply Voltage	VCC	-0.3	-	4	V	
Signal Input Voltage		Vcc-0.3	-	Vcc+0.3	V	

**Recommended Operating Conditions**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note	
Case Operating Temperature	Tcase	0	-	70	°C	Without air flow	
Power Supply Voltage	VCC	3.14	3.3	3.47	V		
Power Supply Current	ICC	-		450	mA		
Data Rate	BR		10.3125		Gbps		
Transmission Distance	TD		-	40	km		
Coupled fiber		Single mode fiber					9/125um SMF

## Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	NOTE
<b>Transmitter</b>						
Average Optical Power	Pavg	-1		3	dBm	1
Optical Wavelength	$\lambda_c$	$\lambda_c - 0.1$		$\lambda_c + 0.1$	nm	
Center Wavelength Spacing			100		GHz	2
Optical Extinction Ratio	ER	3.5			dB	
Transmitter and Dispersion Penalty	TDP			3.0	dB	
Side mode Suppression ratio	SMSR	30			dB	
Average Launch Power(Laser Off)	Poff			-30	dBm	
Output Eye Mask	Compliant with IEEE 802.3ae					
<b>Receiver</b>						
Rx Sensitivity	RSENS			-15.8	dBm	3
Input Saturation Power (Overload)	Psat	0.5			dBm	
Wavelength Range	$\lambda_c$	1270		1610	nm	
LOS De -Assert	LOSD			-17	dBm	
LOS Assert	LOSA	-30			dBm	
LOS Hysteresis		0.5			dB	

### Notes:

1. Output power is power coupled into a 9/125 mm single-mode fiber.
2. Corresponds to approximately 0.8 nm.
3. Measured with a PRBS 2<sup>31</sup>-1 test pattern, @10.325Gb/s, BER<10<sup>-12</sup>.

## Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	NOTE
Supply Voltage	Vcc	3.14	3.3	3.46	V	
Supply Current	Icc			450	mA	
<b>Transmitter</b>						
Input differential impedance	ohm		100		$\Omega$	1
Differential data input swing	Vin,pp	120		850	mV	
Transmit Disable Voltage	VD	Vcc-1.3		Vcc	V	

Transmit Enable Voltage	VEN	Vee		Vee+ 0.8	V	2
TX_FAULT Voltage-High		Vcc-1.3		Vcc	V	
TX_FAULT Voltage-Low		Vee		Vee+ 0.8	V	
Transmit Disable Assert Time				10	us	
Receiver						
Differential data output swing	Vout,pp	350		850	mV	3
Data output rise time	tr	30			ps	4
Data output fall time	tf	30			ps	4
LOS Fault	VLOS fault	Vcc-1.3		VccHOST	V	5
LOS Normal	VLOS norm	Vee		Vee+0.8	V	5

**Notes:**

1. Connected directly to TX data input pins. AC coupled thereafter.
2. Or open circuit.
3. Into 100 ohms differential termination.
4. These are unfiltered 20-80% values
5. Loss Of Signal is LVTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.

## DWDM Wavelength Guide

ITU Channel Product Code	Frequency (THz)	Center Wavelength(nm)	ITU Channel Product Code	Frequency (THz)	Center Wavelength(nm)
17	191.7	1563.86	40	194.0	1545.32
18	191.8	1563.05	41	194.1	1544.53
19	191.9	1562.23	42	194.2	1543.73
20	192.0	1561.42	43	194.3	1542.94
21	192.1	1560.61	44	194.4	1542.14
22	192.2	1559.79	45	194.5	1541.35
23	192.3	1558.98	46	194.6	1540.56
24	192.4	1558.17	47	194.7	1539.77
25	192.5	1557.36	48	194.8	1538.98
26	192.6	1556.55	49	194.9	1538.19
27	192.7	1555.75	50	195.0	1537.40
28	192.8	1554.94	51	195.1	1536.61
29	192.9	1554.13	52	195.2	1535.82
30	193.0	1553.33	53	195.3	1535.04
31	193.1	1552.52	54	195.4	1534.25
32	193.2	1551.72	55	195.5	1533.47
33	193.3	1550.92	56	195.6	1532.68
34	193.4	1550.12	57	195.7	1531.90

35	193.5	1549.32	58	195.8	1531.12
36	193.6	1548.51	59	195.9	1530.33
37	193.7	1547.72	60	196.0	1529.55
38	193.8	1546.92	61	196.1	1528.77
39	193.9	1546.12			

## Ordering Information

Part number	Description	TX Power (dBm)	RX Sens. (dBm)	Fiber Budget (dB)	Distance (km)	DDM
SV-SFPP-10GERD4D##	Starview SFP+ module with Digital Diagnostic Monitoring (DDM), 1G/10G LAN, 1/2/4/8/10G FC, OC-192/STM-64 DWDM #####nm SM (LC), 100GHz spacing, distance up to 40km, where ## denotes *[see DWDM Wavelength Guide]	-1 to 3	-15.8 to 0.5	14.8	40	YES