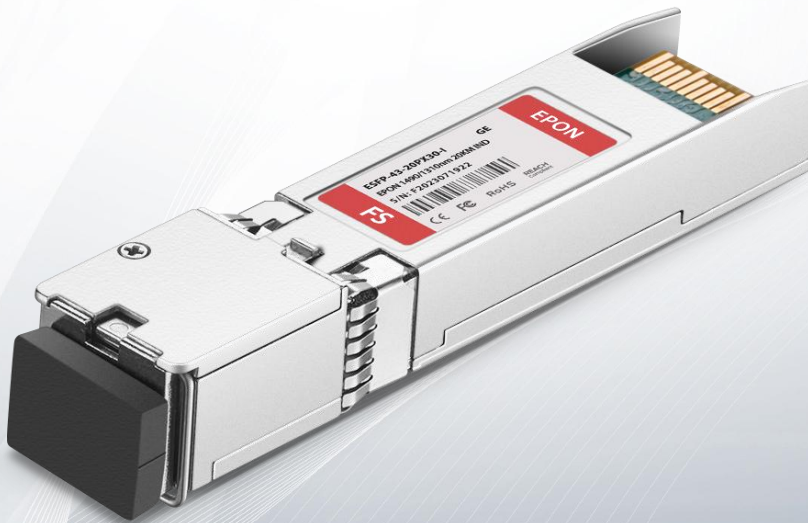


EPON OLT 1000BASE-PX30 SFP 1490nmTx/1310nmRx 20km DOM SC SMF Optical Transceiver Module (Industrial, 20PIN)

ESFP-43-20PX30-I



Features

- Support IEEE802.3 2018 EPON OLT 1000Base-PX30
- Integrated with Micro-optics WDM Filter
- 1490nm Continuous-mode Transmitter with DFB Laser
- 1310nm Burst-mode Receiver with APD-TIA
- Digital Diagnostic SFF-8472 Compliant
- +3.3V Power Supplies
- Maximum 1.5W Power Consumption
- SFP (Small Form-factor Pluggable) Package with SC Receptacle Optical Interface
- RoHS With Exemption 7C(I)
- Operating Case Temperature: Commercial Temp: 0~70°C Industry Temp: -40~85°C

Description

The EPON OLT SFP transceiver provides up to 1.25G-TX/1.25G-RX up to 20km over single-mode fiber (SMF) using a wavelength of 1490nmTx/1310nmRx via an SC/UPC connector. It can operate at temperatures between -40° C and 85° C. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. It is fully compliant with IEEE802.3 2018 PX30 20km application and is ideal for EPON system and FTTx applications.

Product Specifications

I. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Notes
Storage Temperature Range	Ts	-40	85	°C	
Relative Humidity	RH	5	85	%	C-temp
Supply Voltage	V _{CC3}	-	-	V	I-temp
Operation Case Temperature	T _C	0	70	°C	
Operation Case Temperature	T _C	-40	85	°C	
Rx Damage Threshold			-5	dBm	

II. Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage	V _{CC3}	3.14	3.3	3.46	V	
Operation Case Temperature	T _C	0		70	°C	C-temp
Operation Case Temperature	T _C	-40		85	°C	I-temp

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Current	Icc3	-		477	mA	3.14V
Power Consumption	Pw			1.5	W	
Data Rate	Tx/Rx	1.244(+/-100ppm)			Gbit/s	

III. Optical Characteristics

Parameter	Symbol	Unit	Min.	Typ.	Max.	Note
Transmitter						
Centre Wavelength	λ_c	nm	1480		1500	
Side Mode Suppression Mode	SMSR	dB	30			
Average Launch Power	POUT	dBm	3		7	1
Average Launch Power-OFF Transmitter	POFF	dBm			-39	
Extinction Ratio	ER	dB	9			2
Optical return loss tolerance	ORL	dB			15	
Transmitter reflectance		dB			-10	
Optical Eye Mask	Compliant With IEEE Std 802.3					2,3
Receiver						

Parameter	Symbol	Unit	Min.	Typ.	Max.	Note
Sensitivity	PSEN	dBm			-29.78	4
Saturation	PSAT	dBm	-9.38			4
Damage threshold		dBm			-5	
Loss of Signal Assert	PLOSA	dBm	-45	-	-	
Loss of Signal Deassert	PLOSD	dBm			-30	
T_receiver_settling		ns			400	
Receiver reflectance		dB			-12	

Notes:

- 1. The optical power is launched into 9/125um SMF.
- 2. Measured with PRBS 2^7-1 test pattern @1.244Gbps.
- 3. Transmitter eye mask definition {0.22UI, 0.375UI, 0.20UI, 0.20UI, 0.30UI}.
- 4. Measured with a PRBS 2^7-1 test pattern @1.244Gbps and ER=9 dB, BER=10^-12

IV. Electrical Characteristics

Parameter	Symbol	Unit	Min.	Typ.	Max.	Note
Transmitter						
Data Input Differential Swing	VIN	mVp-p	200		1600	
Input Differential Impedance	ZIN	Ω	90	100	110	
Transmitter Fault Indication Voltage – Low	VTFI,L	V	0		0.4	
Transmitter Fault Indication Voltage - High	VTFI,H	V	2.4		Vcc	
Transmitter Disable Voltage - Low	VTDIS,L	V	0		0.8	

Parameter	Symbol	Unit	Min.	Typ.	Max.	Note
Transmitter Disable Voltage - High	VTDIS, H	V	2.0		Vcc	
Receiver						
Data Output Differential Swing	VOUT	mVP-P	600		1600	
Loss of Signal Detected Voltage - Low	Vlos,L	V	0		0.4	
Loss of Signal Detected Voltage - High	Vlos,H	V	2.4		VCC3	
Loss of Signal Assert Time	TLOSA	ns			512	
Loss of Signal Deassert Time	TLOSD	ns			512	
Output Differential Impedance	Rout	Ω	80	100	120	
Time to Initialize	t_start_up	ms	-	-	300	

V. Pin Function Definitions

Pin No.	Name	Definition	Notes
1	VeeT	Transmitter Ground	
2	TXFault	Transmitter Fault Indication	1
3	TXDisable	Transmitter Disable	2
4	MOD-DEF2	Module Definition 2	3
5	MOD-DEF1	Module Definition 1	
6	MOD-DEF0	Module Definition 0	

Pin No.	Name	Definition	Notes
7	RSSI Trigger	LVTTTL Active high	
8	LOS	Loss of Signal	4
9	V _{ee} R	Receiver Ground	
10	V _{ee} R	Receiver Ground	
11	V _{ee} R	Receiver Ground	
12	RD-	Inv. Receiver Data Out	5
13	RD+	Receiver Data Out	
14	V _{ee} R	Received Ground	
15	V _{cc} R	Receiver Power	6
16	V _{cc} T	Transmitter Power	
17	V _{ee} T	Transmitter Ground	
18	TD+	Transmit Data In	7
19	TD-	Inv. Transmit Data In	
20	V _{ee} T	Transmitter Ground	

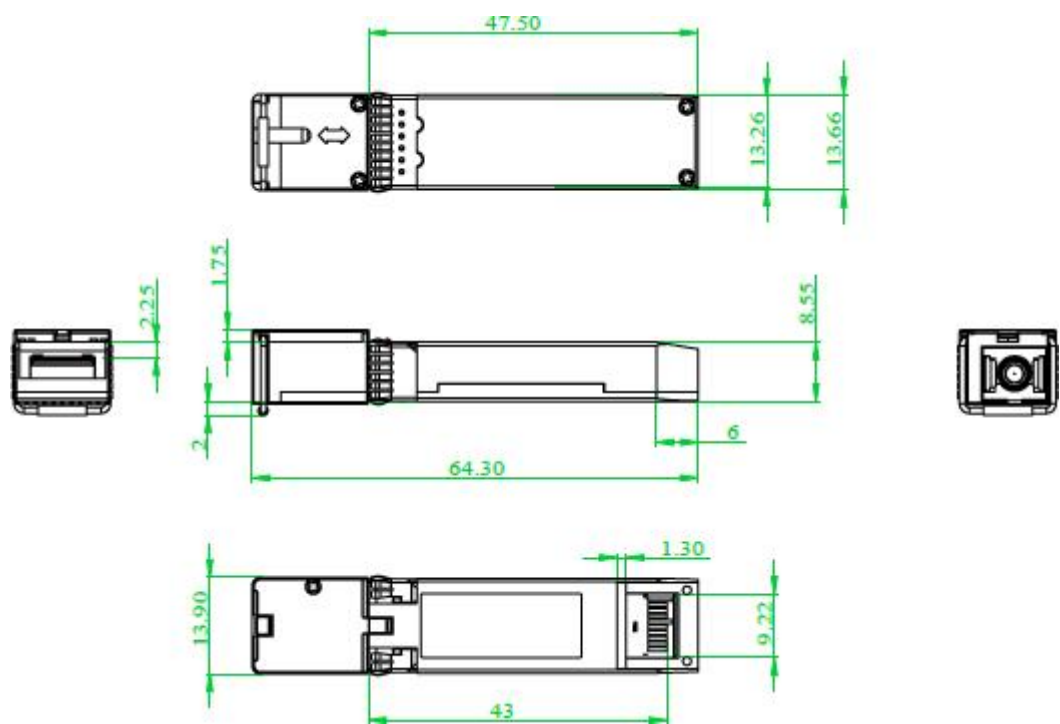
Notes:

1. TX Fault is an open collector/drain output, which should be pulled up with a 4.7K-10KΩ resistor on the host board. Pull upvoltage between 2.0V and V_{cc}T, R+0.3V. When high, output indicates a laser fault of some kind. Low indicates normal operation. In the low state, the output will be pulled to < 0.8V.

2. TX disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7-10 KΩ resistor. Its states are:

- Low (0-0.8V): Transmitter on (>0.8, < 2.0V): Undefined
- High (2.0-3.465V): Transmitter Disabled Open: Transmitter Disabled
3. MOD-DEF0,1,2. These are the module definition pins. They should be pulled up with a 4.7K-10KΩ resistor on the host board. The pull-up voltage shall be VccT or VccR.
- MOD-DEF0 is grounded by the module to indicate that the module is present
- MOD-DEF1 is the clock line of two-wire serial interface for serial ID MOD-DEF2 is the data line of two-wire serial interface for serial ID
4. LOS (Loss of Signal) is an open collector/drain output, which should be pulled up with a 4.7K-10KΩ resistor. Pull up voltage between 2.0V and VccT, R+0.3V. When high, this output indicates the received optical power is below the worst- case receiver sensitivity (as defined by the standard in use). Low indicates normal operation. In the low state, the output will be pulled to < 0.8V.
5. These are the differential receiver outputs. They are DC coupled 100 Ω differential lines which should be terminated with 100 Ω (differential) at the user SERDES.
6. VccR and VccT are the receiver and transmitter power supplies. They are defined as $3.3V \pm 5\%$ at the SFP connector pin. Maximum supply current is 300 mA. Recommended host board power supply filtering is shown in figure 4. Inductors with DC resistance of less than 1Ω should be used in order to maintain the required voltage at the SFP input pin with 3.3V supply voltage. When the recommended supply filtering network is used, hot plugging of the SFP transceiver module will result in an inrush current of no more than 30 mA greater than the steady state value.
7. These are the differential transmitter inputs. They are AC coupled differential lines with 100Ω differential termination inside the module. The AC coupling is done inside the module and is thus not required on the host board.

VI. Mechanical Dimensions



VII. Ordering Information

Part Number	Description
10ESFP-52-PR30-I	10GEPON OLT SFP+ 1577nm-Tx/1270nm-Rx and 1490nm-Tx/1310nm-Rx PR30 20km DOM SC SMF Optical Transceiver Module (Industrial, 20PIN)
10ESFP-25-PR30-I	10GEPON ONU SFP+ 1270nm-Tx/1577nm-Rx 10.3125G-TX/10.3125G-RX PR30 20km DOM SC SMF Optical Transceiver Module (Industrial, 20PIN)
ESFP-43-20PX30-I	EPON OLT 1000BASE-PX30 SFP 1490nmTx/1310nmRx 20km DOM SC SMF Optical Transceiver Module (Industrial, 20PIN)
ESFP-43-20	EPON OLT SFP 1490nm-TX/1310nm-RX 1.25G-TX/1.25G-RX 20km DDM SC SMF Transceiver Modules
ESFP-34-20N-I	EPON ONU SFP 1310nm-TX/1490nm-RX 1.25G-TX/1.25G-RX PX20+ 20km DDM SC SMF Optical Transceiver Module (Industrial)