



Features

- „ SFP Multi-Source Agreement compliant
- „ Compliant with SONET/SDH Standard
- „ Compliant with Fast Ethernet standard
- „ Industry standard small form pluggable (SFP) package
- „ Duplex LC connector
- „ Differential LVPECL inputs and outputs
- „ Single power supply 3.3V
- „ TTL signal detect indicator
- „ Hot Pluggable
- „ Class 1 laser product complies with EN 60825-1
- „ RoHS compliant

Ordering Information

<i>Model Number</i>	<i>Reach</i>	<i>Input/Out</i>	<i>Signal Detect</i>	<i>Voltage</i>	<i>Temperature</i>
ESSFP-155-30	30 km	AC/AC	TTL	3.3V	0°C to 70 °C
ESSFP-155-30-I	30 km	AC/AC	TTL	3.3V	-40°C to 85 °C

Note: All information contained in this document is subject to change without notice.

Absolute Maximum Ratings

<i>Parameter</i>	<i>Symbol</i>	<i>Min.</i>	<i>Max.</i>	<i>Units</i>	<i>Note</i>
Storage Temperature	T_S	-40	85	°C	
Supply Voltage	V_{CC}	-0.5	4.0	V	
Input Voltage	V_{IN}	-0.5	V_{CC}	V	
Output Current	I_o	---	50	mA	
Operating Current	I_{OP}	---	400	mA	

Recommended Operating Conditions

Parameter	Symbol	Min.	Max.	Units	Note
Operating Case Temperature	T_c	0	70	°C	ESSFP-155-30
		-40	85	°C	ESSFP-155-30-I
Supply Voltage	V_{CC}	3.1	3.5	V	
Supply Current	$I_{TX} + I_{RX}$	---	300	mA	

Transmitter Electro-optical Characteristics
 $V_{CC} = 3.1\text{ V to }3.5\text{ V}$, $T_c = 0\text{ °C to }70\text{ °C}$ (-40 °C to 85 °C)

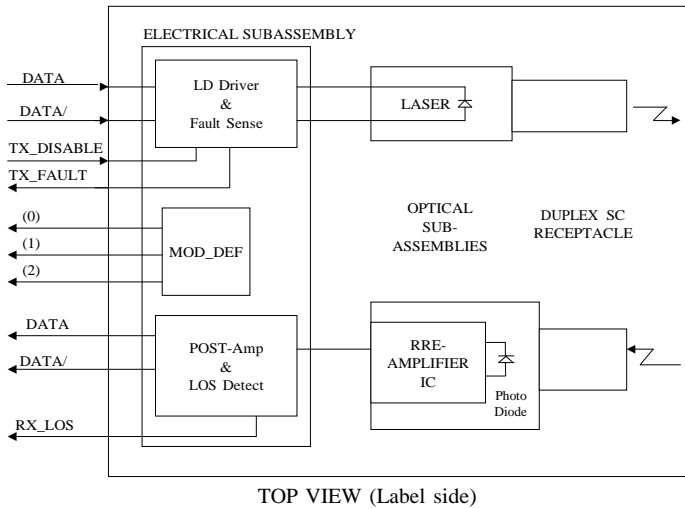
Parameter	Symbol	Min.	Typ.	Max.	Units	Note
Data Rate	B	50	155	200	Mb/s	
Output Optical Power 9/125 μm fiber	P_{out}	-15	---	-8	dBm	Average
Extinction Ratio	ER	8.2	---	---	dB	
Center Wavelength	λ_c	1261	1310	1360	nm	
Spectral Width (RMS)		---	---	4.0	nm	
Rise/Fall Time, (10–90%)	$T_{r,f}$	---	1	2	ns	
Max. P_{out} TX-DISABLE Asserted	P_{OFF}	---	---	-45	dBm	
Output Eye	Compliant with Telcordia GR-253-CORE Issue 3 and ITU-T recommendation G-957					
Differential Input Voltage	V_{DIFF}	0.4	---	2.0	V	

Receiver Electro-optical Characteristics
V_{CC} = 3.1 V to 3.5 V, T_C = 0 °C to 70 °C (-40 °C to 85 °C)

<i>Parameter</i>	<i>Symbol</i>	<i>Min.</i>	<i>Typ.</i>	<i>Max.</i>	<i>Units</i>	<i>Note</i>
Data Rate	<i>B</i>	50	155	200	Mb/s	
Optical Input Power-maximum	<i>P_{IN}</i>	0	---	---	dBm	Note 1
Optical Input Power-minimum (Sensitivity)	<i>P_{IN}</i>	---	---	-34	dBm	Note 1
Operating Center Wavelength	<i>λ_C</i>	1260	---	1600	nm	
Data Output Rise, Fall Time (10%–90%)	<i>T_{r, f}</i>	---	1	2	ns	
Loss of Signal-Asserted	<i>P_A</i>	---	---	-34	dBm	
Loss of Signal-Deasserted	<i>P_D</i>	-45	---	---	dBm	
Loss of Signal-Hysteresis	<i>P_A, P_D</i>	1.0	---	---	dB	
Differential Output Voltage	<i>V_{DIFF}</i>	0.5	---	1.2	V	
Receiver Loss of Signal Output Voltage-Low	<i>RX_LOS_L</i>	0	---	0.5	V	
Receiver Loss of Signal Output Voltage-High	<i>RX_LOS_H</i>	2.4	---	V _{CC}	V	

Note 1: The input data is at 155.52 Mbps, 2²³-1 PRBS data pattern. The receiver is guaranteed to provide output data with Bit Error Rate (BER) better than or equal to 1 × 10⁻¹⁰.

Block Diagram of Transceiver



Transmitter Section

The transmitter section consists of a 1310 nm InGaAsP laser in an eye safe optical subassembly (OSA) which mates to the fiber cable. The laser OSA is driven by a LD driver IC which converts differential input LVPECL logic signals into an analog laser driving current.

TX_DISABLE

The TX_DISABLE signal is high (TTL logic “1”) to turn off the laser output. The laser will turn on when TX_DISABLE is low (TTL logic “0”).

Receiver Section

The receiver utilizes InGaAs PIN photodiode mounted together with a trans-impedance preamplifier in an OSA. This OSA is connected to a circuit providing post-amplification quantization, and optical signal detection.

Receive Loss (RX_LOS)

The RX_LOS is high (logic “1”) when there is no incoming light from the companion transceiver. This signal is normally used by the system for the diagnostic purpose. The signal is operated in TTL level.

Dimensions

