Tunable SFP Transceiver

TSFP15 Series

Key Features

- Port agnostic (compliant to ITU-T G.metro)
- 16 to 32 channels at 100 GHz spacing
  or 32 to 64 channels at 50GHz spacing
- Hot-Pluggable SFP footprint duplex LC connector interface
- 2.5 – 10 Gbps modulation
- Single 3.3V power supply
- Compliant with Class 1 FDA and IEC60825-1 laser safety, SFP MSA, SFF-8472
- Operating case temperature 0°C to 70°C

Applications

- WDM-PON
- Mobile fronthaul and backhaul
- G.metro
- DWDM sparing

The tunable small form-factor pluggable (SFP) transceiver is based on Lightip's patented proprietary technology, the half-wave coupled V-cavity laser (VCL). With the advantages of compactness, fabrication simplicity and easy wavelength control of VCL, this tunable transceiver offers a cost-effective solution for tunable applications in access, mobile fronthaul and backhaul, data center and metropolitan DWDM networks. In addition, it has now incorporated the port agnostic feature with message channel and pilot tone capability via low frequency envelope modulation, compliant to ITU-T G.metro standard. It enables the tunable SFP module to automatically adapt its DWDM channel frequency, thus reducing the operation cost.

The TSFP15 Series single mode tunable SFP transceiver is hot-pluggable 20-pin duplex SFP module compliant with SFF-8472 MSA. It is based on a Lightip's TLDX15 series tunable XMD TOSA, co-packaged with a PIN or APD ROSA, and has an SFP MSA compatible interface. The optical interface is duplex LC connector. It supports 2.5Gbps to 10 Gbps data rates with a typical fiber coupled output power of 3dBm, and can provide 16-32 channels at 100GHz spacing or 32-64 channels at 50GHz spacing in C- or L- band with a customer specified starting wavelength. The transceiver module can be operated under ambient operating temperature between 0 and 70℃. The size of the module is 69×13.7×13.3mm^3.

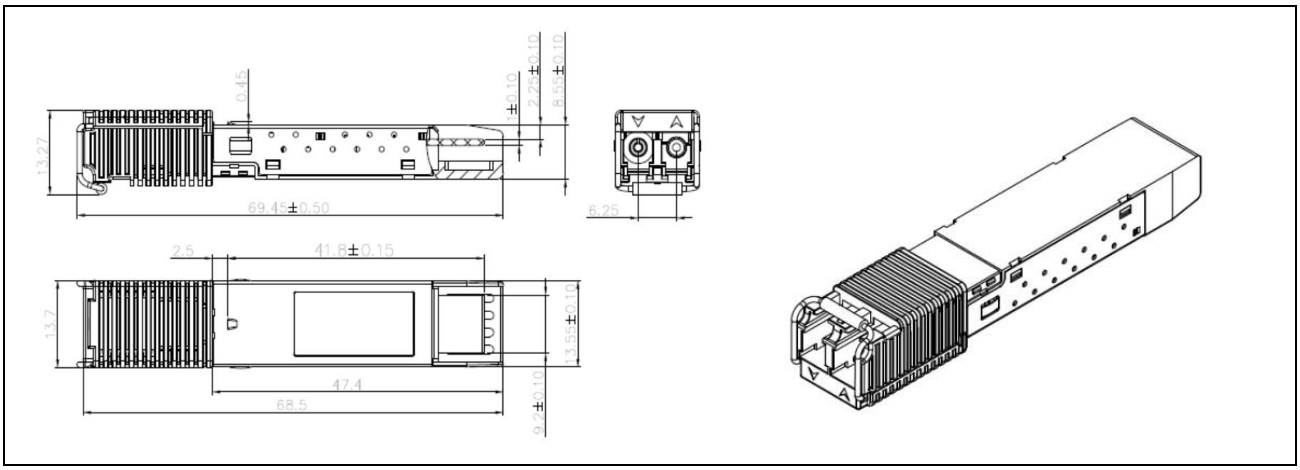
Specifications

Parameters	Min.	Typ.	Max.	Unit
Average Output Power	0	3	8	dBm
P_{out} @ Tx Disable Asserted			-45	dBm
Ambient Operating Temperature	0	-	70	℃
Power Supply Voltage	3.15	3.3	3.45	V
Power Supply Current	-	600	1000	mA
Power Dissipation	-	-	3.3	W
Supply Voltage	3.15	3.3	3.45	V
Modulation Data Rate	2.5 - 10			Gbps
Extinction Ratio	3	-	8	dB
Rise/Fall Time			150	ps
Output Optical Eye	Compatible with IEEE 802.3			
Wavelength	C- or L-band			
Number of Channels	16 – 32 @100GHz, 32-64 @50GHz			
Side Mode Suppression Ratio	30	35	-	dB
Wavelength tuning time	(Cold Start)	-	30	Sec
Wavelength tuning time	(Operational)	0.5	2	Sec
Rx Wavelength	1250	-	1630	nm
Rx Sensitivity - P_{min}	-	-	-24	dBm
Rx Overload - P_{max}	-8	-	-	dBm
Rx LOS De-Assert	-	-	-25	dBm
Rx LOS Assert	-35	-	-	dBm
Rx LOS Hysteresis	0.5	-	-	dBm

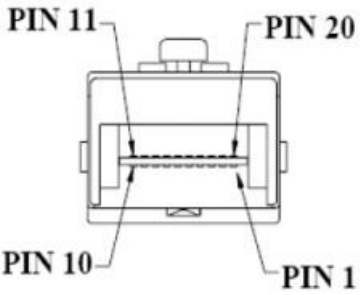
* Product specifications are subject to change without notice.

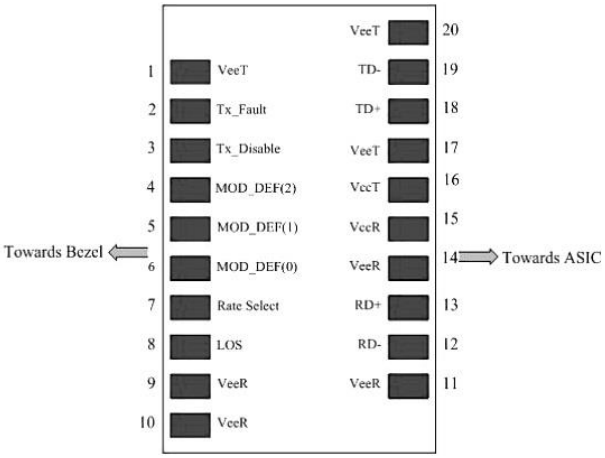
Dimensions

(in millimeters)



Pin Configurations





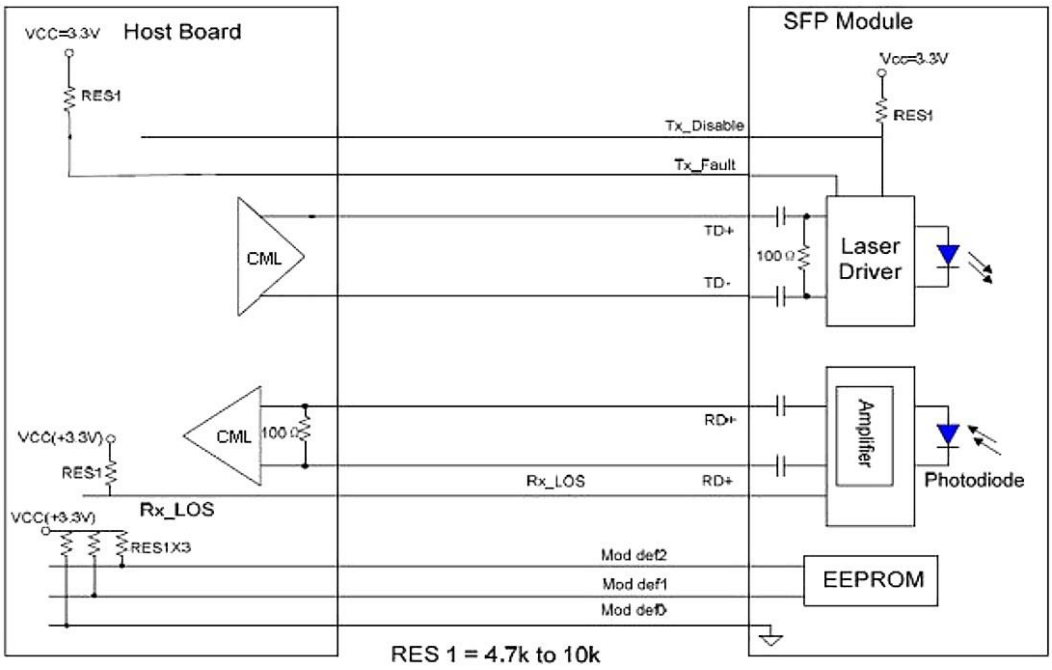
Pin	Name	Description
1	VeeT	Transmitter ground
2	Tx Fault	Transmitter fault indication, open collector/drain output
3	Tx Disable	Transmitter disable
4	MOD-DEF2	Module Definition 2, Data line for Serial ID
5	MOD-DEF1	Module Definition 1, Clock line for Serial ID
6	MOD-DEF0	Module Definition 0, Grounded within the module
7	Rate Select	NC, Function not available
8	LOS	Loss of signal, open collector/drain output
9	VeeR	Receiver Ground
10	VeeR	Receiver Ground
11	VeeR	Receiver Ground
12	RD-	Inverted receiver data out
13	RD+	Receiver data out
14	VeeR	Receiver Ground
15	VccR	Receiver Power, 3.3V ±5%
16	VccT	Transmitter Power, 3.3V ±5%
17	VeeT	Transmitter Ground
18	TD+	Transmitter Data In
19	TD-	Inverted Transmitter Data In
20	VeeT	Transmitter Ground

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Storage Temperature	T_s	-40	+85	℃
Supply Voltage	V_{cc}	-0.5	4.0	V
Operating Relative Humidity**	RH	5	85	%

* Exceed any of these values may cause non-reversable damage to the device
** Non - Condensing.

Recommended Circuit Schematic



EEPROM Address Map

For detailed EEPROM information, Please refer to SFF 8472 Rev 9.3.