



### Features

- SFP Multi-Source Agreement compliance
- Compliant with Fiber Channel 100-SM-LL-L standard
- Compliant with IEEE802.3z Gigabit Ethernet standard
- Industry standard small form pluggable (SFP) package
- Duplex LC connector
- Differential PECL 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

### Application

- Distributed multi-processing
- Switch to switch interface
- High speed I/O for file server
- Bus extension application
- Channel extender, data storage

### Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units	Note
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	

### Recommended Operating Conditions

Parameter	Symbol	Min.	Max.	Units	Note
Case Operating Temperature	$T_C$	0	70	°C	OP6C-SB0-15-C
		-40	85	°C	OP6C-SB0-15-I
Supply Voltage	$V_{CC}$	3.1	3.5	V	
Supply Current	$I_{TX} + I_{RX}$	---	320	mA	

### Transmitter Electro-optical Characteristics

$V_{CC} = 3.1\text{ V to }3.5\text{ V}$ ,  $T_C = 0\text{ }^\circ\text{C to }70\text{ }^\circ\text{C}$  (  $-40\text{ }^\circ\text{C to }85\text{ }^\circ\text{C}$  )

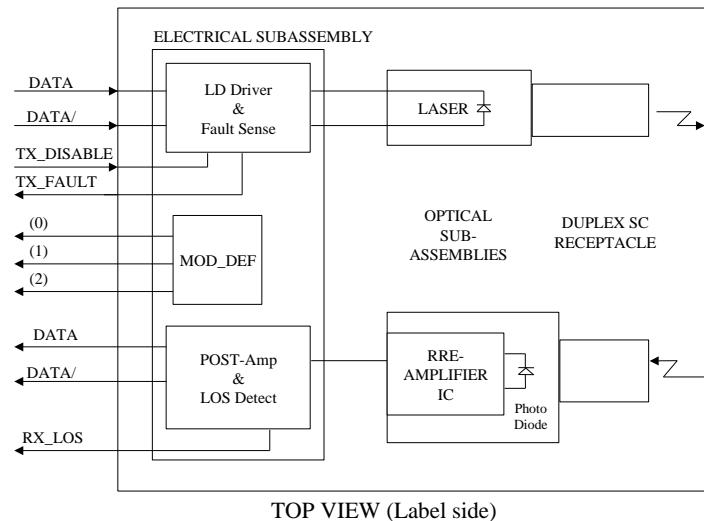
Parameter	Symbol	Min.	Typ.	Max.	Units	Note
Output Optical Power 9/125 $\mu\text{m}$ fiber	$P_{out}$	0	---	+5	dBm	Average
Extinction Ratio	ER	7	---	---	dB	
Center Wavelength	$\lambda_C$	1530	1550	1570	nm	
Spectral Width (-20dB)	$\Delta\lambda$	---	---	1.0	nm	
Side Mode Suppression Ratio	SMSR	30	---	---	dB	
Rise/Fall Time, (20–80%)	$T_{r, f}$	---	---	260	ps	
Relative Intensity Noise	RIN	---	---	-120	dB/Hz	
Total Jitter	TJ	---	---	227	ps	
Output Eye	Compliant with IEEE802.3z					
Max. $P_{out}$ TX-DISABLE Asserted	$P_{OFF}$	---	---	-45	dBm	
Differential Input Voltage	$V_{DIFF}$	0.4	---	2.0	V	

### Receiver Electro-optical Characteristics

$V_{CC} = 3.1 \text{ V to } 3.5 \text{ V}$ ,  $T_C = 0 \text{ }^\circ\text{C to } 70 \text{ }^\circ\text{C}$  (-40 °C to 85 °C)

Parameter	Symbol	Min.	Typ.	Max.	Units	Note
Optical Input Power-maximum	$P_{IN}$	-8	---	---	dBm	BER < 10 <sup>-12</sup>
Optical Input Power-minimum (Sensitivity)	$P_{IN}$	---	-34	-30	dBm	BER < 10 <sup>-12</sup>
Operating Center Wavelength	$\lambda_C$	1260	---	1610	nm	
Optical Return Loss	ORL	12	---	---	dB	
Signal Detect-Asserted	$P_A$	---	---	-30	dBm	
Signal Detect-Deasserted	$P_D$	-45	---	---	dBm	
Differential Output Voltage	$V_{DIFF}$	0.5	---	1.2	V	
Data Output Rise, Fall Time (20–80%)	$T_{r,f}$	---	---	0.35	ns	
Receiver Loss of Signal Output Voltage-Low	$RX\_LOS_L$	0	---	0.5	V	
Receiver Loss of Signal Output Voltage-High	$RX\_LOS_H$	2.4	---	$V_{CC}$	V	

## Block Diagram of Transceiver



### Transmitter Section

The transmitter section consists of a 1550 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").

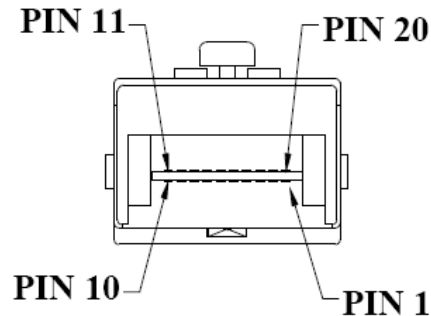
### Receiver Section

The receiver utilizes an InGaAs PIN photodiode mounted together with a trans-impedance preamplifier IC 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.

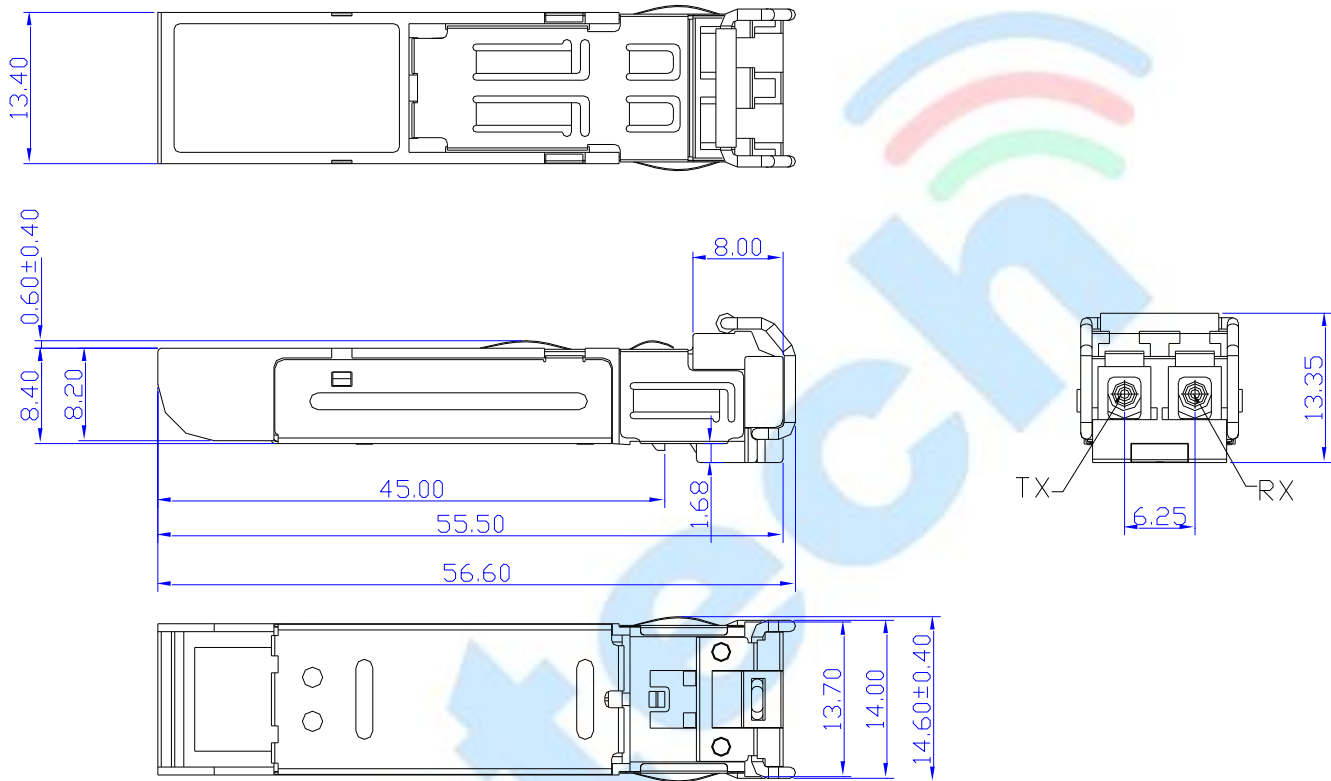
## Pin Assignment



## Pin Descriptions

Pin	Signal Name	Description
1	T <sub>GND</sub>	Transmitter Ground
2	TX_FAULT	Transmit Fault
3	TX_DISABLE	Transmit Disable
4	MOD_DEF(2)	SDA Serial Data Signal
5	MOD_DEF(1)	SCL Serial Clock Signal
6	MOD_DEF(0)	TTL Low
7	RATE SELECT	Open Circuit
8	RX_LOS	Receiver Loss of Signal, TTL High, Open collector
9	R <sub>GND</sub>	Receiver Ground
10	R <sub>GND</sub>	Receiver Ground
11	R <sub>GND</sub>	Receiver Ground
12	RX-	Receive Data Bar, Differential PECL, ac coupled
13	RX+	Receive Data, Differential PECL, ac coupled
14	R <sub>GND</sub>	Receiver Ground
15	V <sub>CCR</sub>	Receiver Power Supply
16	V <sub>CCT</sub>	Transmitter Power Supply
17	T <sub>GND</sub>	Transmitter Ground
18	TX+	Transmit Data, Differential PCEL, ac coupled
19	TX-	Transmit Data Bar, Differential PCEL, ac coupled
20	T <sub>GND</sub>	Transmitter Ground

**Dimensions**



**DIMENSIONS ARE IN MILLIMETERS**

**ALL DIMENSIONS ARE ± 0.2mm UNLESS OTHERWISE SPECIFIED**

## Ordering Information

OP	6	C	-	S	B0	-	15	-	C	M
<b>Product Code:</b> 5=GBIC; 6=SFP-LC; 7=XFP; 8=XENPAK; 9=X2; A=SFP+ (SFP28); C=QSFP+ (QSFP28); F=CFP; G=CFP2; H=CFP4; P=SFP-SC; Q=SFP-MTRJ	<b>Data Rate:</b> A=155Mb/s; B=622Mb/s; C=1.25Gb/s; D=2.125Gb/s; E=2.5Gb/s; F=4.25Gb/s; G=3.1Gb/s; J=2.97G; P=6.144G; Q=7.37G; H=8.5Gb/s; K=10Gb/s; T=1/10Gb/s; L=16Gb/s; R=20Gb/s; X=25Gb/s; S=40Gb/s; W=100Gb/s (4x25G or 10x10G); M=100Base-X SGMII; N=100/1000Base-X SGMII;	<b>Type:</b> S=Single-mode; M=Multi-mode; W=BWDM; B=DUAL-BWDM; C=CWDM; D=DWDM; T=Copper-T (RJ-45) E=GEPON ONU; F=GEPON OLT; G=GPON ONU; H=GPON OLT X=MMF/SMF	<b>Reach:</b> Normal: X1=Under 150m; X2=220m; X3=300m; X5=550m; 02=2km, 10=10km; 70=70km; A0=100km; C0=120km  CWDM: 20=20dB; 24=24dB; 28=28dB	<b>Wavelength:</b> Normal: 85=850nm; 13=1310nm; 15=1550nm; 00=Copper T (RJ-45)  CWDM: 27=1270nm; 47=1470nm; 61=1610nm  BWDM: B3=Tx1310/Rx1550; B5=Tx1550/Rx1310; B4=Tx1310/Rx1490; B9=Tx1490/Rx1310; 51=Tx1510/Rx1570; 57=Tx1570/Rx1510; 27=Tx1270/Rx1330; 33=Tx1330/Rx1270; B2=Tx1270/Rx1577; B7=Tx1577/Rx1270 T2=2TX1310nm; T3=TX1310nm; T5=TX1550nm  DWDM: 17=Channel 17 34= Channel 34 00=Channel 17-61 Tunable	<b>Operating Temperature:</b> C=Commercial Purpose (0~70°C); I= Industrial Purpose (Extended Range)	<b>Additional Feature:</b> M=Digital Optical Monitoring (DOM) (RX_LOS for Copper TX); F=with Fiber Stub; I=with Isolator; S=Customized Style				

Model Number	Part Number	Reach	Input/Out	Signal Detect	Voltage	Temperature
SFP-UZX	OP6C-SB0-15-C	30dB	AC/AC	TTL	3.3V	0°C to 70 °C
SFP-UZX-I	OP6C-SB0-15-I	30dB	AC/AC	TTL	3.3V	-40°C to 85 °C

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