Features

- Compatible with 4.25G Fiber Channel 400-SM-LC-L standard
- Compatible with 2.1.25G Fiber Channel 200-SM-LC-L standard
- Compatible with 1.0625G Fiber Channel 100-SM-LC-L standard
- Compliant with IEEE802.3z Gigabit Ethernet Standard
- Compliant with SFF8472 diagnostic monitoring interface Duplex LC connector
- Industry standard small form pluggable (SFP) package
- Duplex LC connector
- Differential LVPECL inputs and CML outputs
- Single power supply 3.3V
- TTL signal detect indicator
- Hot Pluggable
- Class 1 laser product complies with EN 60825-1

Ordering Information

Model Number	Part Number	Input/Output	Signal Detect	Voltage	Temperature
SFP-CWDM-17-yy	OP6F-C17-yy-C2	AC/AC	TTL	3.3V	0°C to 70 °C

Note: yy=47, Center Wavelength=1470nm ,yy=49, Center Wavelength=1490nm
yy=49, Center Wavelength=1490nm ,yy=51, Center Wavelength=1510nm
yy=51, Center Wavelength=1510nm ,yy=53, Center Wavelength=1530nm
yy=53, Center Wavelength=1530nm ,yy=55, Center Wavelength=1550nm
yy=55, Center Wavelength=1550nm ,yy=57, Center Wavelength=1570nm
yy=59, Center Wavelength=1590nm ,yy=61, Center Wavelength=1610nm

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Absolute Maximum Ratings

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Storage Temperature	T_S	–40	85	°C	
Supply Voltage	*Vcc*	–0.5	4.0	V	
Input Voltage	V_{IN}	–0.5	*Vcc*	V	

Recommended Operating Conditions

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Case Operating Temperature	T_C	0	70	°C	
Supply Voltage	*Vcc*	3.1	3.5	V	
Supply Current	$I_{TX} + I_{RX}$	---	300	mA	

Transmitter Electro-optical Characteristics

***Vcc* = 3.1 V to 3.5 V, T_C = 0 °C to 70 °C**

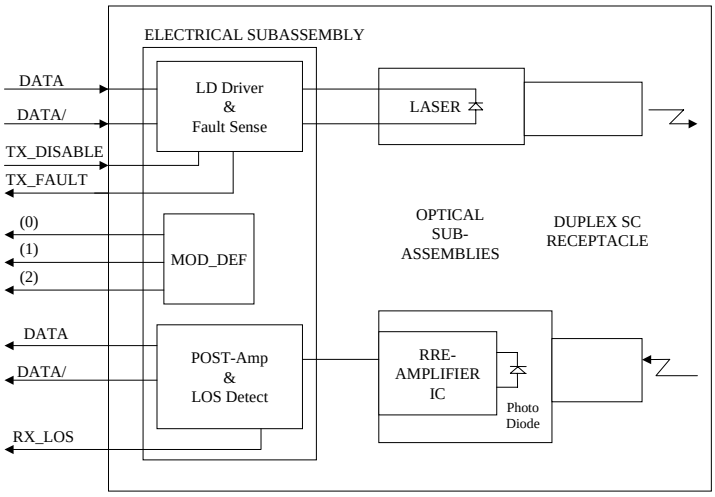
PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Output Optical Power 9/125μm fiber	P_{out}	+1	---	+5	dBm	
Center Wavelength (OP6F-C17-47-C2)	λ_C	1464.5	---	1477.5	nm	
Center Wavelength (OP6F-C17-49-C2)	λ_C	1484.5	---	1497.5	nm	
Center Wavelength (OP6F-C17-51-C2)	λ_C	1504.5	---	1517.5	nm	
Center Wavelength (OP6F-C17-53-C2)	λ_C	1524.5	---	1537.5	nm	
Center Wavelength (OP6F-C17-55-C2)	λ_C	1544.5	---	1557.5	nm	
Center Wavelength (OP6F-C17-57-C2)	λ_C	1564.5	---	1577.5	nm	
Center Wavelength (OP6F-C17-59-C2)	λ_C	1584.5	---	1597.5	nm	
Center Wavelength (OP6F-C17-61-C2)	λ_C	1604.5	---	1617.5	nm	
Spectral Width (-20dB)	$\Delta\lambda$	---	---	0.5	nm	
Relative Intensity Noise	*RIN*	---	---	-118	dB/Hz	
Output Eye		Compliant with IEEE802.3z and fiber channel 4x				
Max. P_{out} TX-DISABLE Asserted	P_{OFF}	---	---	-35	dBm	
Differential Input Voltage	V_{DIFF}	0.35	---	2.0	V	
Transmit Fault Output-Low	TX_FAULT_L	0.0	---	0.5	V	
Transmit Fault Output-High	TX_FAULT_H	2.4	---	V_{CC}	V	
TX_DISABLE Assert Time	*t_off*	---	---	10	μs	
TX_DISABLE Negate Time	*t_on*	---	---	1	ms	
Time to initialize, include reset of TX_FAULT	*t_init*	---	---	300	ms	
TX_FAULT from fault to assertion	*t_fault*	---	---	100	μs	
TX_DISABLE time to start reset	*t_reset*	10	---	---	μs	

Receiver Electro-optical Characteristics

Vcc = 3.1 V to 3.5 V, T_C = 0 °C to 70 °C

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Optical Input Power-maximum	P_{IN}	0	---	---	dBm	BER < 10^{-12}
Receiver Sensitivity(@4.25GBps)	P_{IN}	---	---	–16.5	dBm	BER < 10^{-12}
Receiver Sensitivity(@2.125GBps)	P_{IN}	---	---	–16.5	dBm	BER < 10^{-12}
Receiver Sensitivity(@1.25GBps)	P_{IN}	---	---	–16.5	dBm	BER < 10^{-12}
Receiver Sensitivity(@1.0625GBps)	P_{IN}	---	---	–16.5	dBm	BER < 10^{-12}
Operating Center Wavelength	λ_C	1460	---	1620	nm	
Optical Return Loss	ORL	12	---	---	dB	
Signal Detect-Asserted	P_A	-20	---	---	dBm	
Signal Detect-Deasserted	P_D	---	---	-30	dBm	
Differential Output Voltage	V_{DIFF}	0.5	---	1.2	V	
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	
Receiver Loss of Signal Assert Time (off to on)	t_{A,RX_LOS}	---	---	100	μ s	
Receiver Loss of Signal Assert Time (on to off)	t_{D,RX_LOS}	---	---	100	μ s	

Block Diagram of Transceiver



TOP VIEW (Label side)

Transmitter Section

The transmitter section consists of a 1550 nm DFB in an eye safe Optical Sub-Assembly (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_FAULT

When sensing an improper power level in the laser driver, the SFP set this signal high and turns off the Laser. TX_FAULT can be reset with the TX_DISABLE line. The signal is in TTL Level.

TX_DISABLE

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

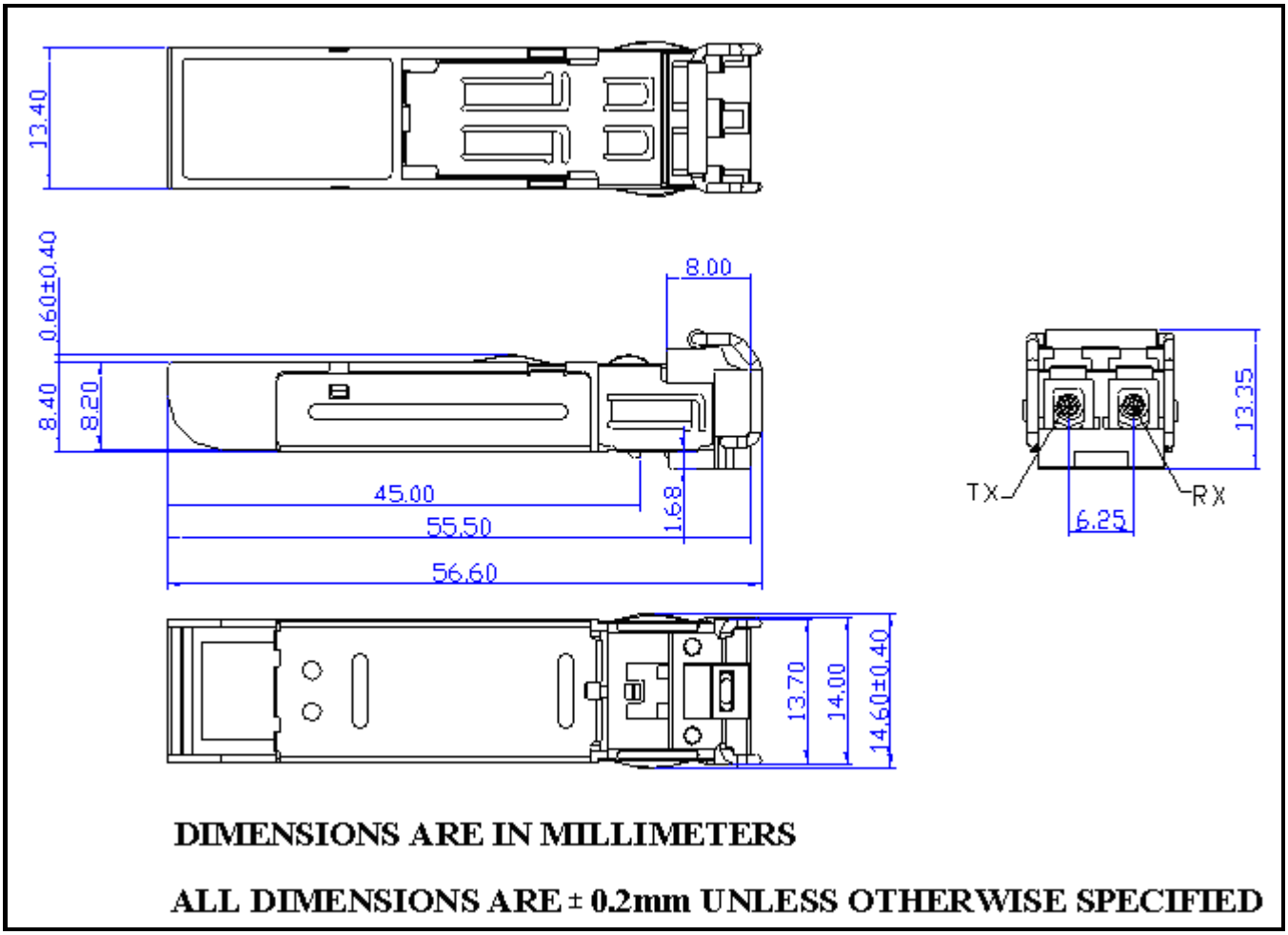
Receiver Section

The receiver utilizes a MSM detector integrated with a trans-impedance preamplifier IC in an OSA. This OSA is connected to a circuit providing post-amplification quantization, and optical signal detection.

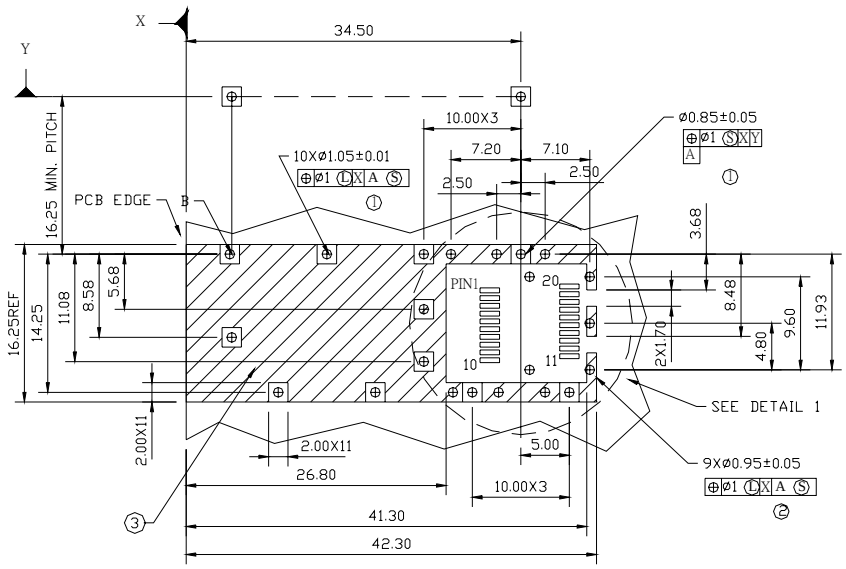
Receive Loss (RX_LOS)

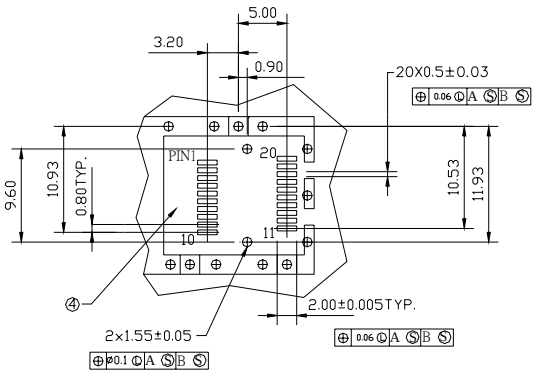
The RX_LOS is high (logic “1”) when there is no incoming light from the companion transceiver. This signal is normally used by the system for the diagnostic purpose. The signal is operated in TTL level.

Dimensions


13.40
0.60±0.40
8.40
8.20
8.00
45.00
55.50
56.60
1.68
13.35
TX
RX
6.25
13.70
14.00
14.60±0.40
DIMENSIONS ARE IN MILLIMETERS
ALL DIMENSIONS ARE ± 0.2mm UNLESS OTHERWISE SPECIFIED

SFP host board mechanical layout





DETAIL 1

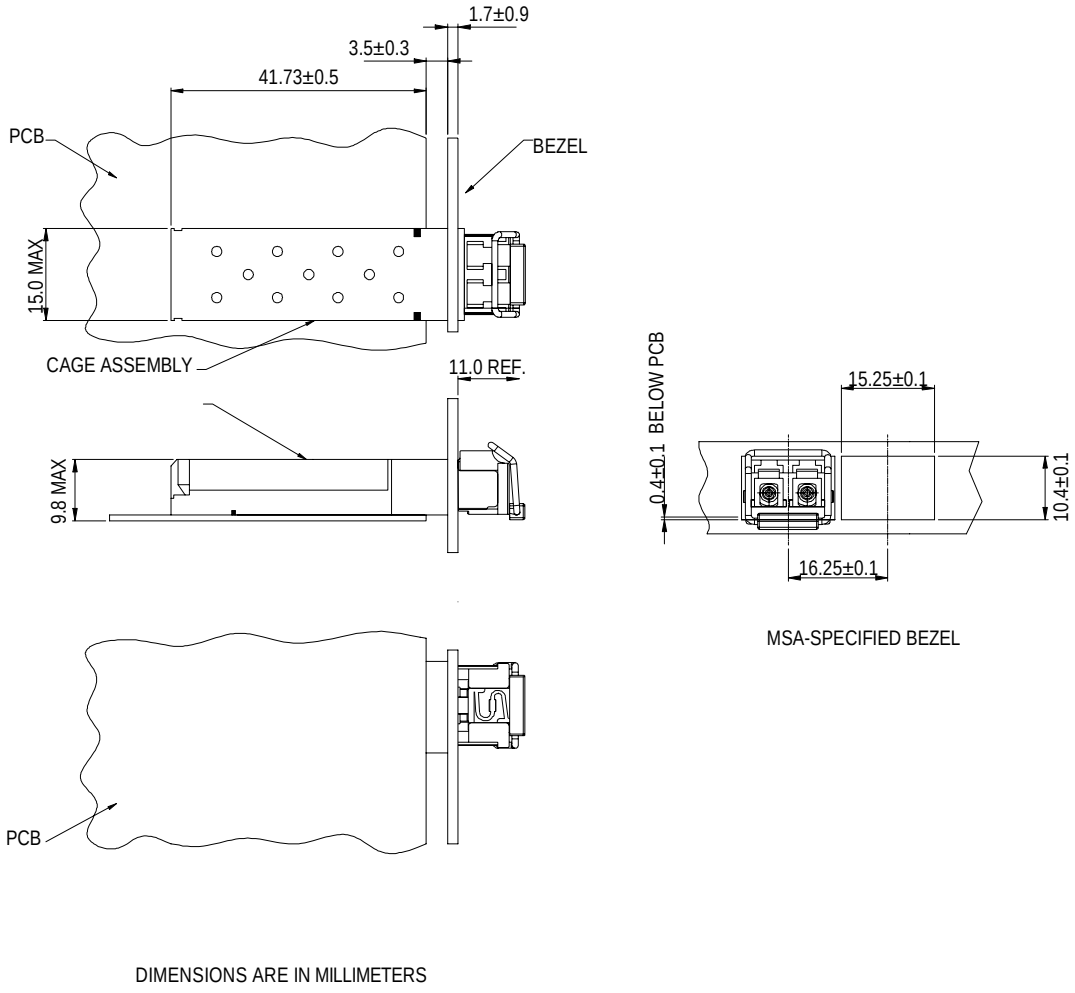
LEGEND

1.PADS AND VIAS ARE CHASSIS GROUND
2.THROUGH HOLES, PLATING OPTIONAL
3.HATCHED AREA DENOTES COMPONENT AND TRACE KEEPOUT(EXCEPT CHASSIS GROUND)
4.AREA DENOTES COMPONENT KEEPOUT (TRACES ALLOWED)

DIMENSIONS ARE IN MILLIMETERS

Unit: mm

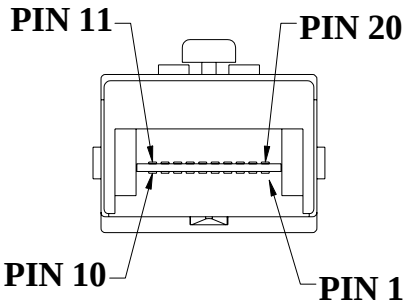
Assembly drawing



Unit: mm

Pin Assignment

Pin-Out



Pin	Signal Name	Description
1	T_{GND}	Transmit 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_{GND}	Receiver Ground
10	R_{GND}	Receiver Ground
11	R_{GND}	Receiver Ground
12	*RX–*	Receive Data Bar, Differential PECL, ac coupled
13	*RX+*	Receive Data, Differential PECL, ac coupled
14	R_{GND}	Receiver Ground
15	V_{CCR}	Receiver Power Supply
16	V_{CCT}	Transmitter Power Supply
17	T_{GND}	Transmitter Ground
18	*TX+*	Transmit Data, Differential PCEL, ac coupled
19	*TX–*	Transmit Data Bar, Differential PCEL, ac coupled
20	T_{GND}	Transmitter Ground

Eye Safety Mark

The OP6F series single-mode transceiver is a class 1 laser product. It complies with EN 60825-1 and FDA 21 CFR 1040.10 and 1040.11. In order to meet laser safety requirements the transceiver shall be operated within the Absolute Maximum Ratings. *Caution* All adjustments have been done at the factory before the shipment of the devices. No maintenance and user serviceable part is required. Tampering with and modifying the performance of the device will result in voided product warranty.	Required Mark Class 1 Laser Product Complies with 21 CFR 1040.10 and 1040.11

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