

Features



- SFP Multi-Source Agreement compliant
- 4.25G/2.125G/1.0625G Fiber Channel application
- Compatible with IEEE802.3z Gigabit Ethernet standard
- Compliant with SFF8472 diagnostic monitoring interface Duplex LC connector
- Single power supply 3.3V
- TTL signal detect indicator
- Hot Pluggable
- Class 1 laser product complies with EN 60825-1
- RoHS Compliant

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	
Supply Voltage	V_{cc}	3.1	3.5	V	
Supply Current	$I_{TX} + I_{RX}$	---	300	mA	
Bit rate	B	1.0625/1.25/2.125/4.25		Gbps	

Transmitter Electro-optical Characteristics

V_{cc} = 3.1 V to 3.5 V, T_c = 0 °C to 70 °C

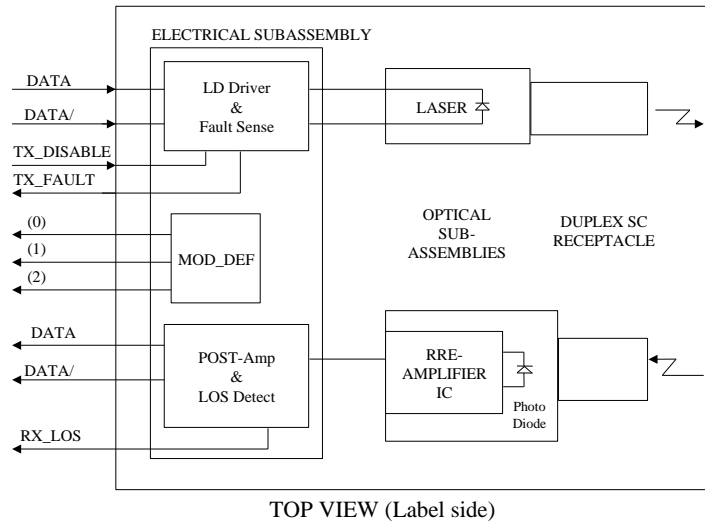
Parameter	Symbol	Min.	Typ.	Max.	Units	Note
Output Optical Power	P_{out}	+1	---	+5	dBm	Average
		1580	---	---	uW	OMA
Center Wavelength (OP6F-C18-27-CM)	λ_C	1264.5	---	1277.5	nm	
Center Wavelength (OP6F-C18-29-CM)	λ_C	1284.5	---	1297.5	nm	
Center Wavelength (OP6F-C18-31-CM)	λ_C	1304.5	---	1317.5	nm	
Center Wavelength (OP6F-C18-33-CM)	λ_C	1324.5	---	1337.5	nm	
Center Wavelength (OP6F-C18-35-CM)	λ_C	1344.5	---	1357.5	nm	
Center Wavelength (OP6F-C18-37-CM)	λ_C	1364.5	---	1377.5	nm	
Center Wavelength (OP6F-C18-39-CM)	λ_C	1384.5	---	1397.5	nm	
Center Wavelength (OP6F-C18-41-CM)	λ_C	1404.5	---	1417.5	nm	
Center Wavelength (OP6F-C18-43-CM)	λ_C	1424.5	---	1437.5	nm	
Center Wavelength (OP6F-C18-45-CM)	λ_C	1444.5	---	1457.5	nm	
Spectral Width (-20dB)	$\Delta\lambda$	---	---	0.5	nm	
Max P_{out} TX-DISABLE Asserted	P_{OFF}	---	---	-45	dBm	
Output Eye	Compliant with IEEE802.3z and fiber channel 4x					
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

V_{CC} = 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
RX Sensitivity	P_{IN}	---	---	-18	dBm	ER=9dB, BER < 10 ⁻¹²
	P_{IN}	---	---	-16.9	dBm	ER=6dB, BER < 10 ⁻¹²
	P_{IN}	---	---	-16.5	dBm	ER=5.5dB, BER < 10 ⁻¹²
	P_{IN}	---	---	25	uW	OMA, BER < 10 ⁻¹²
	Operating Center Wavelength	λ_C	1460	---	1620	nm
Optical Return Loss	ORL	12	---	---	dB	
Loss of Signal-Asserted	P_A	-20	---	---	dBm	
Loss of Signal-Deasserted	P_D	---	---	-30	dBm	
Differential Output Voltage	V_{DIFF}	0.6	---	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 Aassert Time(off to on)	t_{A,RX_LOS}	---	---	100	V	
Receiver Loss of Signal Assert Time (on to off)	t_{D,RX_LOS}	---	---	100	V	

Block Diagram of Transceiver



Transmitter Section

The transmitter section consists of a 1310 nm DFB 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_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”).

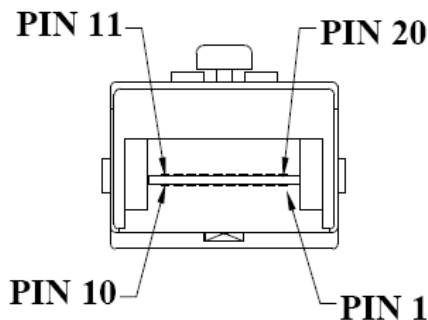
Receiver Section

The receiver utilizes a MSM detector integrated with a trans-impedance preamplifier 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.

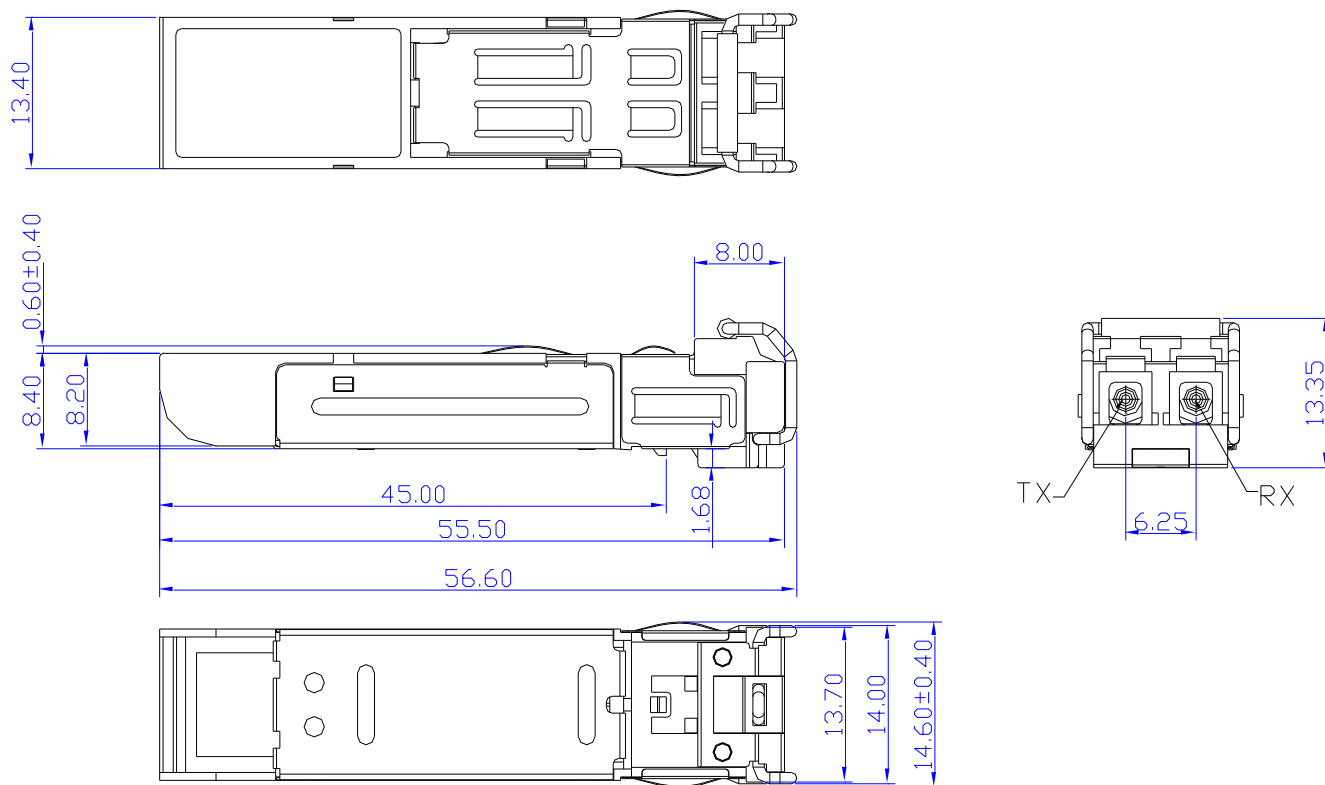
Pin Assignment



Pin Descriptions

Pin	Signal Name	Description
1	T _{GND}	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 _{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

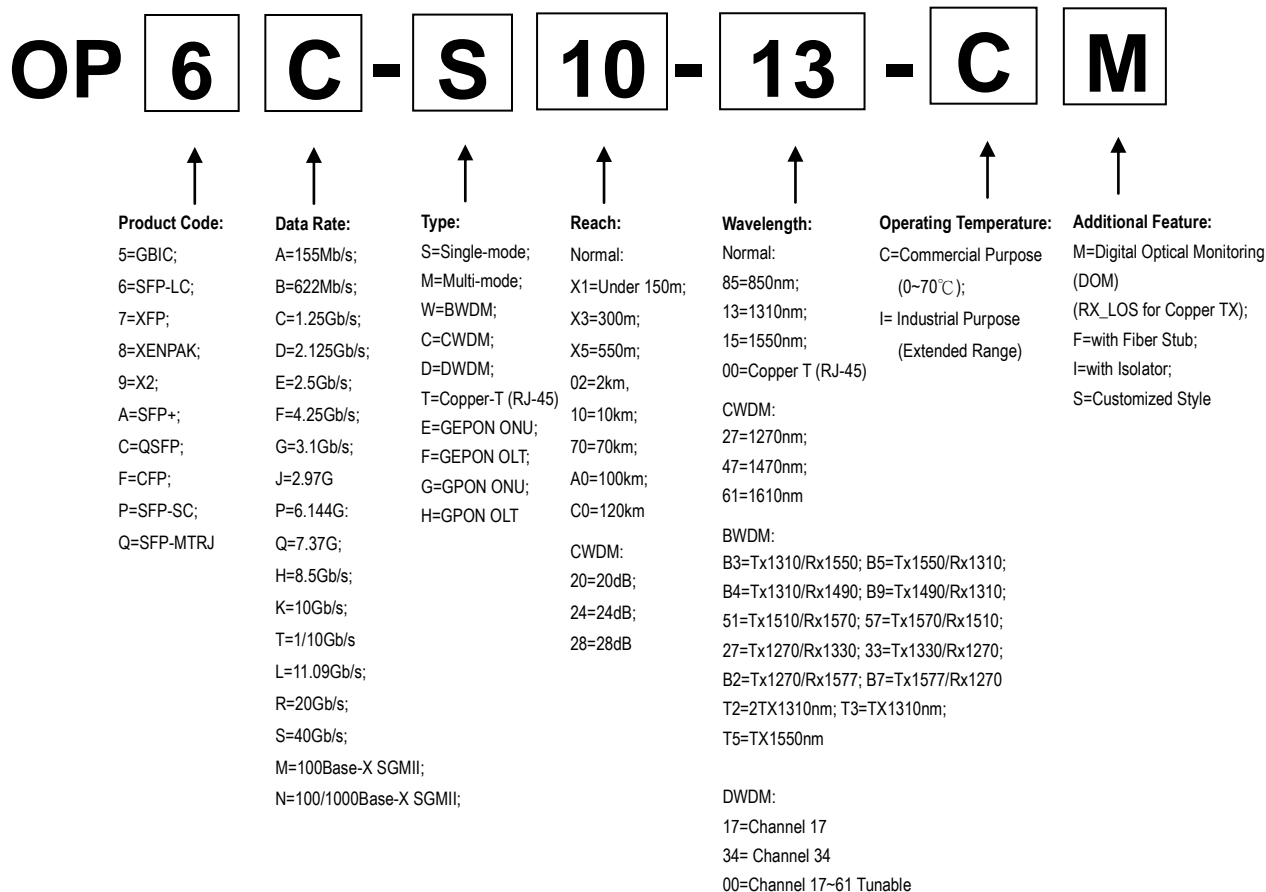
Dimensions



DIMENSIONS ARE IN MILLIMETERS

ALL DIMENSIONS ARE ± 0.2mm UNLESS OTHERWISE SPECIFIED

Ordering Information



Model Number	Part Number	Input/Output	Signal Detect	Voltage	Temperature
SFP-4G-CWDM-18-yy-DM	OP6F-C18-yy-CM	AC/AC	TTL	3.3V	0°C to 70°C

Note: yy=27, Center Wavelength=1270nm ,yy=29, Center Wavelength=1290nm
yy=31, Center Wavelength=1310nm ,yy=33, Center Wavelength=1330nm
yy=35, Center Wavelength=1350nm ,yy=37, Center Wavelength=1370nm
yy=39, Center Wavelength=1390nm ,yy=41, Center Wavelength=1410nm
yy=43, Center Wavelength=1430nm ,yy=45, Center Wavelength=1450nm

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