OP6C-C32-yy-CM (1270nm~1450nm)
Datasheet

Features

- SFP Multi-Source Agreement compliant
- Compliant with Fiber Channel 100-SM-LC-L Standard
- Compliant with Gigabit Ethernet standard
- SFF-8472 diagnostic monitoring interface for optical transceivers
- 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

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	
Output Current	I_o	---	*50*	mA	
Operating Current	I_{OP}	---	*400*	mA	

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	

Optech Technology Co., Ltd.
2F., No.41, Ln. 221, Gangqian Rd., Neihu Dist., Taipei City 114, Taiwan, R.O.C.
Tel: +886-2-2656-0588 Fax: +886-2-2656-0599
http://www.optech.com.tw e-mail: sales@optech.com.tw

Diagnostics Monitoring

Parameter	Range	Accuracy	Unit	Calibration
Temperature	-40 to 95	± 3	°C	External
Voltage	0 to VCC	± 0.1	V	
Bias Current	0 to 120	± 5	mA	
TX Power	-3 to +6	± 3 dB	dBm	
RX Power	-30 to -10	± 3 dB	dBm	

Transmitter Electro-optical Characteristics

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

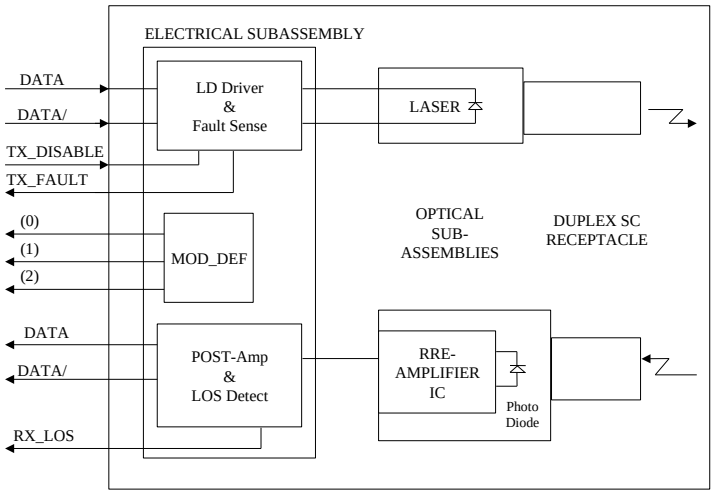
Parameter	*Symbol*	*Min.*	*Typ.*	*Max.*	*Units*	*Note*
Output Optical Power 9/125 μm fiber	P_{out}	0	---	+5	dBm	Average
Extinction Ratio	*ER*	7	---	---	dB	
Center Wavelength (OP6C-C32-27-CM)	λ_C	1264.5	---	1277.5	nm	
Center Wavelength (OP6C-C32-29-CM)	λ_C	1284.5	---	1297.5	nm	
Center Wavelength (OP6C-C32-31-CM)	λ_C	1304.5	---	1317.5	nm	
Center Wavelength (OP6C-C32-33-CM)	λ_C	1324.5	---	1337.5	nm	
Center Wavelength (OP6C-C32-35-CM)	λ_C	1344.5	---	1357.5	nm	
Center Wavelength (OP6C-C32-37-CM)	λ_C	1364.5	---	1377.5	nm	
Center Wavelength (OP6C-C32-39-CM)	λ_C	1384.5	---	1397.5	nm	
Center Wavelength (OP6C-C32-41-CM)	λ_C	1404.5	---	1417.5	nm	
Center Wavelength (OP6C-C32-43-CM)	λ_C	1424.5	---	1437.5	nm	
Center Wavelength (OP6C-C32-45-CM)	λ_C	1444.5	---	1457.5	nm	
Spectral Width (-20dB)	$\Delta\lambda$	---	---	1	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	
Max P_{out} TX-DISABLE Asserted	P_{OFF}	---	---	-45	dBm	
Output Eye			Compliant with IEEE802.3z			
Differential Input Voltage	V_{DIFF}	0.4	---	2.0	V	

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}	-9	---	---	dBm	BER < 10^{-12}
Optical Input Power-minimum (Sensitivity)	P_{IN}	---	-34	-32	dBm	BER < 10^{-12}
Operating Center Wavelength	λ_C	1260	---	1620	nm	
Optical Return Loss	ORL	12	---	---	dB	
Data Output Rise, Fall Time (20%~80%)	$T_{r,f}$	---	---	0.35	ns	
Loss of Signal-Asserted	P_A	---	---	-32	dBm	
Loss of Signal-Deasserted	P_D	-40	---	---	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	

Block Diagram of Transceiver



TOP VIEW (Label side)

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”).

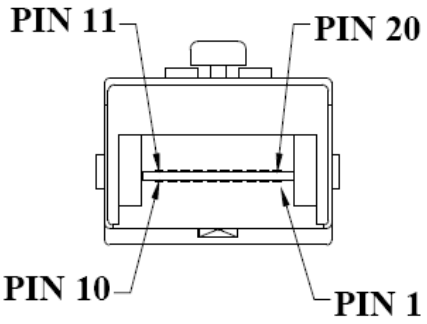
Receiver Section

The receiver utilizes 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 LVTTL level.

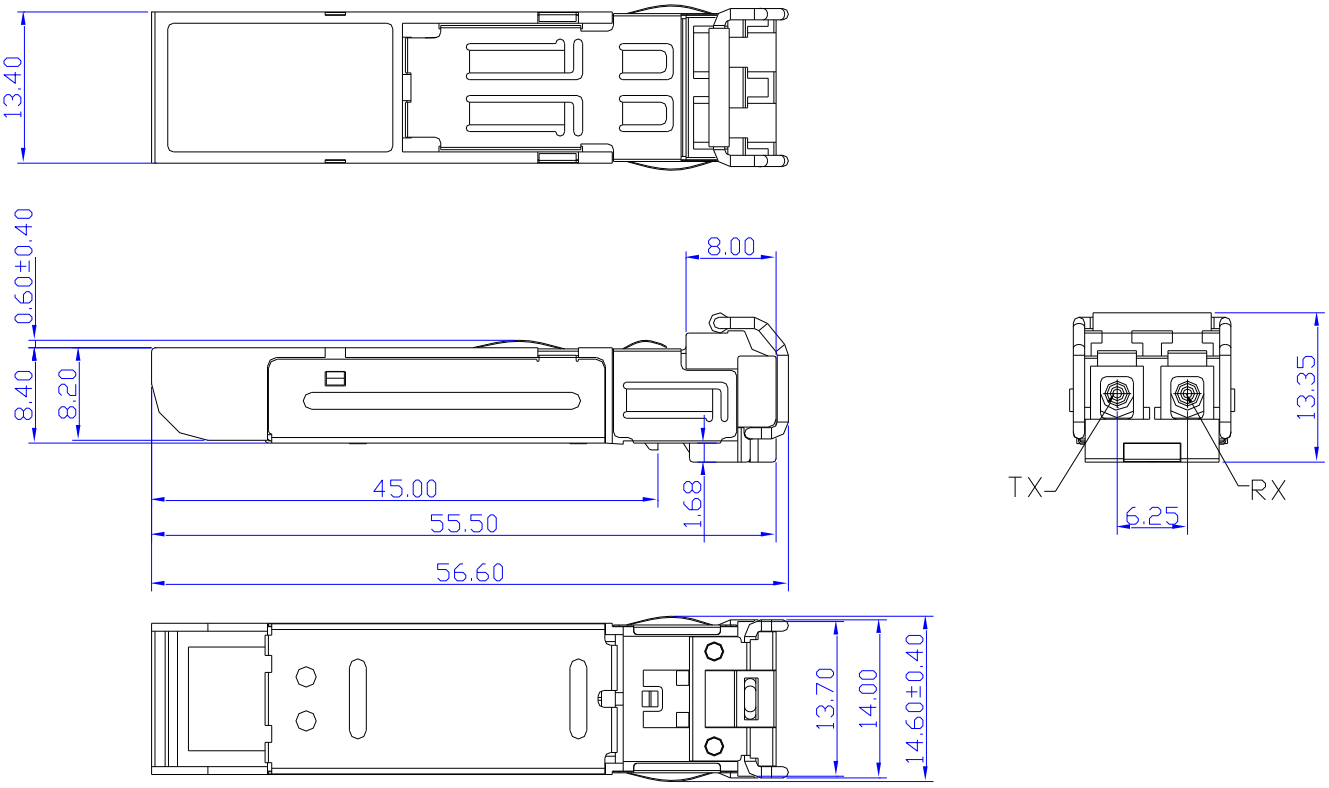
Pin Assignment



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

OP 6 C - S 10 - 13 - C M

Product Code:
5=GBIC;
6=SFP-LC;
7=XFP;
8=XENPAK;
9=X2;
A=SFP+;
C=QSFP;
F=CFP;
P=SFP-SC;
Q=SFP-MTRJ

Data Rate:
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=11.09Gb/s;
R=20Gb/s;
S=40Gb/s;
M=100Base-X SGMII;
N=100/1000Base-X SGMII;

Type:
S=Single-mode;
M=Multi-mode;
W=BWDM;
C=CWDM;
D=DWDM;
T=Copper-T (RJ-45)
E=GEPON ONU;
F=GEPON OLT;
G=GPON ONU;
H=GPON OLT

Reach:
Normal:
X1=Under 150m;
X3=300m;
X5=550m;
02=2km,
10=10km;
70=70km;
A0=100km;
C0=120km

CWDM:
20=20dB;
24=24dB;
28=28dB

Wavelength:
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

Operating Temperature:
C=Commercial Purpose
(0~70℃);
I= Industrial Purpose
(Extended Range)

Additional Feature:
M=Digital Optical Monitoring
(DOM)
(RX_LOS for Copper TX);
F=with Fiber Stub;
I=with Isolator;
S=Customized Style

Model Number	Part Number	Input/Output	Signal Detect	Voltage	Temperature
SFP-CWDM-32-yy-DM	OP6C-C32-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.