



Features

- SFP Multi-Source Agreement compliant
- Industry standard small form pluggable (SFP) package
- Duplex LC connector
- Differential LVPECL 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	
Output Current	I_o	---	50	mA	
Operating Current	I_{OP}	---	400	mA	

Recommended Operating Conditions

Parameter	Symbol	Min.	Max.	Units	Note
Operating Case Temperature	T_C	0	70	°C	OP6A-M02-85-C
		-20	85	°C	OP6A-M02-85-I
Supply Voltage	V_{CC}	3.1	3.5	V	
Supply Current	$I_{TX} + I_{RX}$	---	200	mA	

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Transmitter Electro-optical Characteristics

V_{CC} = 3.1 V to 3.5 V, T_C = 0 °C to 70 °C (-20 °C to 85 °C)

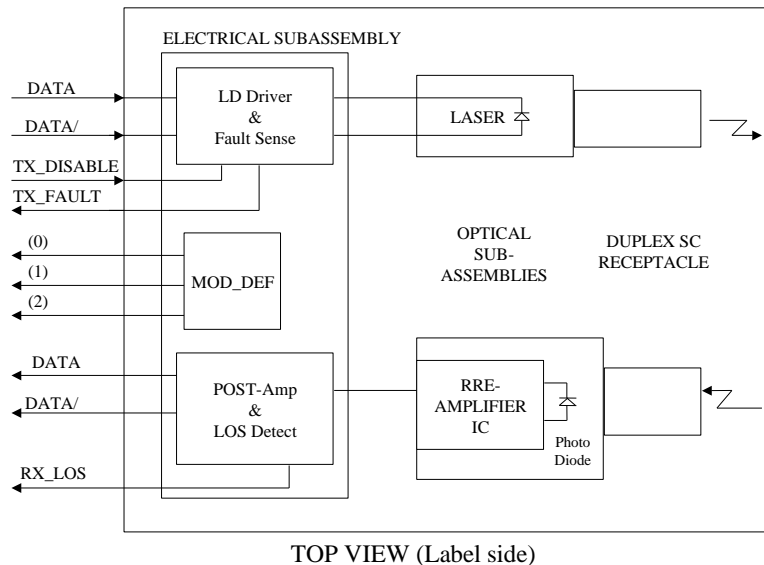
Parameter	Symbol	Min.	Typ.	Max.	Units	Note
Bit Rate	<i>B</i>	---	125	---	Mb/s	
Output Optical Power (50/125 μm fiber, NA=0.20) (62.5/125 μm fiber, NA=0.275)	<i>P_{out}</i>	-10	---	-4	dBm	
Extinction Ratio	<i>ER</i>	9	---	---	dB	
Coupled Power Ratio	<i>CPR</i>	9	---	---	dB	
Center Wavelength	<i>λ_C</i>	830	850	860	Nm	
Spectral Width (RMS)	<i>Δλ</i>	---	---	0.85	Nm	
Rise/Fall Time (10–90%)	<i>T_{r, f}</i>	---	---	2	Ns	
Total Jitter	<i>TJ</i>	---	---	1	Ns	
Max. P _{out} TX-DISABLE Asserted	<i>P_{OFF}</i>	---	---	-45	dBm	
Differential Input Voltage	<i>V_{DIFF}</i>	0.4	---	2.0	V	

Receiver Electro-optical Characteristics

$V_{CC} = 3.1 \text{ V to } 3.5 \text{ V}$, $T_C = 0^\circ \text{C to } 70^\circ \text{C}$ ($-20^\circ \text{C to } 85^\circ \text{C}$)

Parameter	Symbol	Min.	Typ.	Max.	Units	Note
Data Rate	B	---	125	---	Mb/s	
Optical Input Power-maximum	P_{IN}	0	---	---	dBm	BER < 10^{-10}
Optical Input Power-minimum (Sensitivity)	P_{IN}	---	---	-24	dBm	BER < 10^{-10}
Operating Center Wavelength	λ_C	770	---	860	nm	
Optical Return Loss	ORL	12	---	---	dB	
Loss of Signal-Asserted	P_A	---	---	-24	dBm	
Loss of Signal-Deasserted	P_D	-45	---	---	dBm	
Differential Output Voltage	V_{DIFF}	0.5	---	1.2	V	
Data Output Rise, Fall Time (10%-90%)	$T_{r,f}$	---	---	2	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 850 nm VCSEL 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").

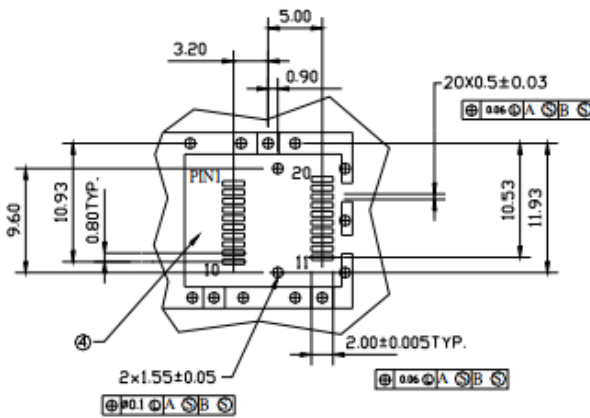
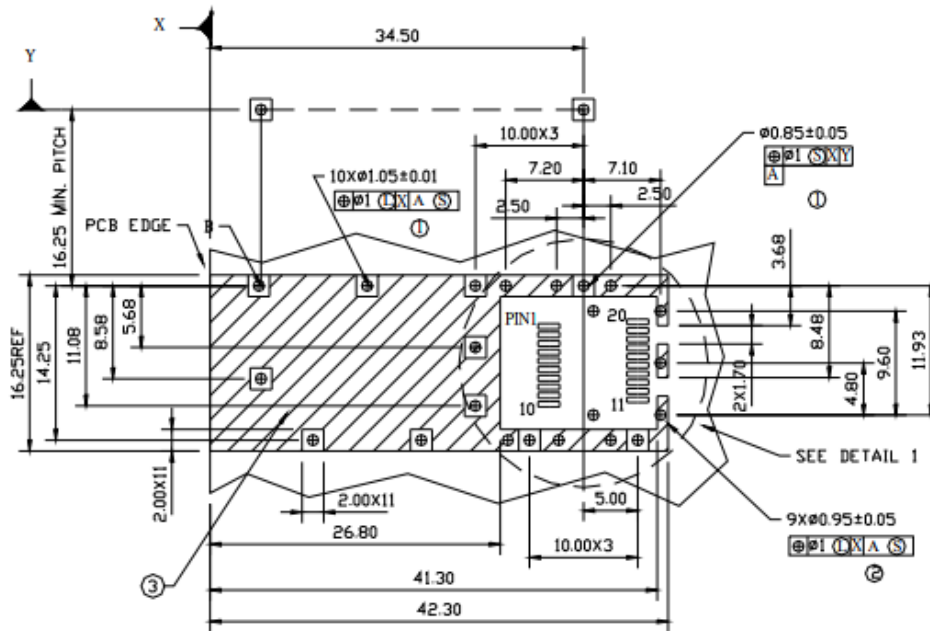
Receiver Section

The receiver utilizes 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.

SFP Host Board Mechanical Layout



DETAIL 1

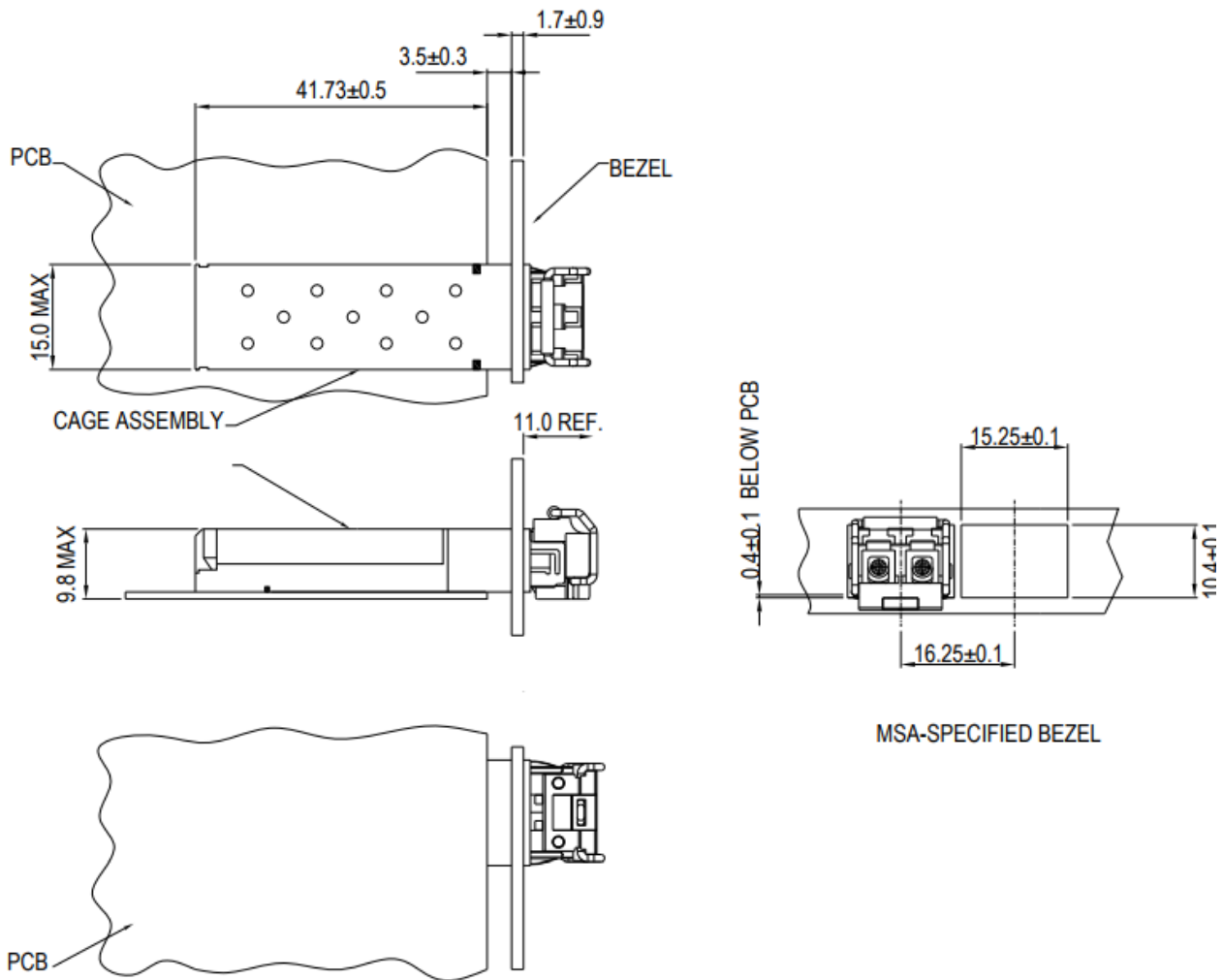
LEGEND

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

DIMENSIONS ARE IN MILLIMETERS

Unit: mm

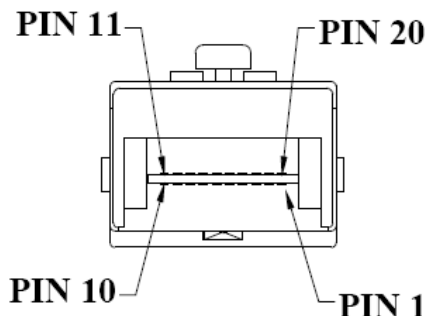
Assembly Drawing



DIMENSIONS ARE IN MILLIMETERS

Unit: mm

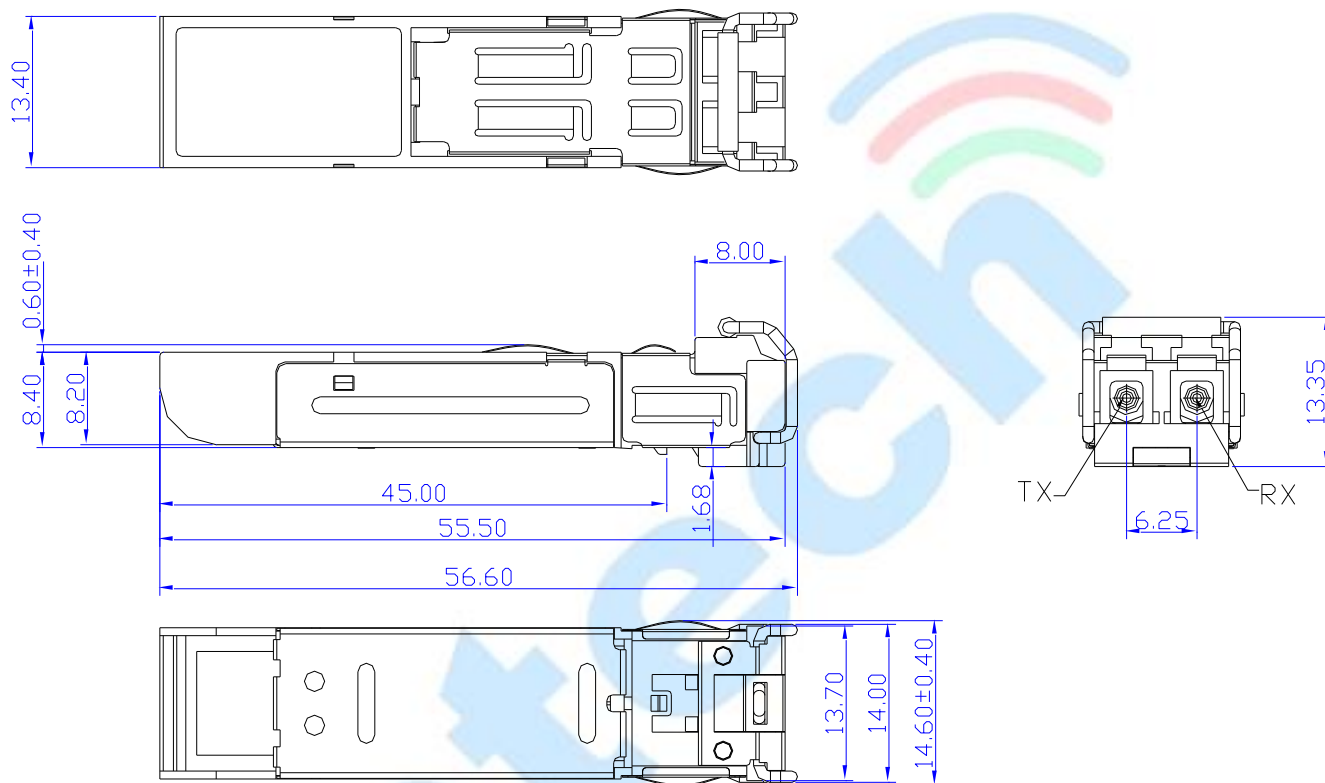
Pin Assignment



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

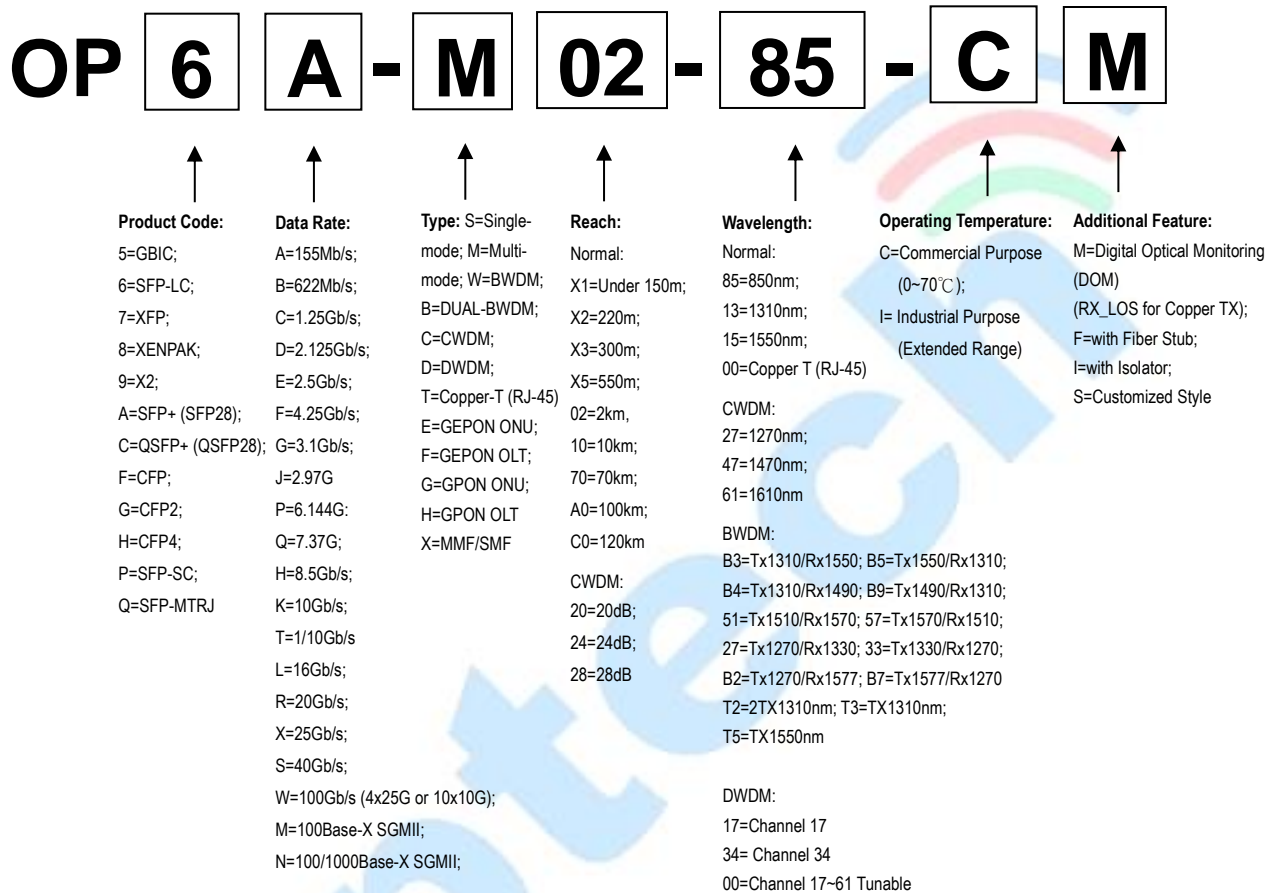
Dimensions



DIMENSIONS ARE IN MILLIMETERS

ALL DIMENSIONS ARE ± 0.2mm UNLESS OTHERWISE SPECIFIED

Ordering Information



Model Number	Part Number	Reach	Input/Out	Signal Detect	Voltage	Temperature
SFP-155-02	OP6A-M02-85-C	2 km	AC/AC	TTL	3.3V	0°C to 70 °C
SFP-155-02-I	OP6A-M02-85-I	2 km	AC/AC	TTL	3.3V	-20°C to 85 °C

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