1.25G Bi-Directional SFP Transceiver MBPD-2453S2D-C

Features:

- 1310nm/1550nm single fiber bi-directional transmission
- Multi-Sourced SFP package with LC receptacle connector
- Operating bit rate 1.25Gbps
- Single +3.3V Power Supply
- Differential LVPECL inputs and outputs
- LVTTL signal detect indicator
- Hot-pluggable capability

Application:

- FTTx

Description:

The MBPD-2453S2D-C series transceiver is high performance, cost effective module that supports data-rate of 1.25Gbps and transmission distance up to 10km.

As a transceiver, the transmitter section and the receiver section works individually in the module, the module features single mode single fiber bi-directional transmission obtained by an integrated WDM optical divice. All these modules are supplied in the MSA (multi-source agreement) compliant SFP style package with a single LC receptacle connector.

The main application area of this module is optical data transmission system such as the P2P (Point-to-Point) FTTx optical access network.

Specification:

Operating Information				
Part Number	**Input/Output**	**Signal Detect**	**Voltage**	**Temperature**
MBP-2453S2D	AC/AC	TTL	+3.3V	0℃ to70℃

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Note
Storage Temperature	T_S	-40	+85	℃	
Operating Temperature	T_O	0	+70	℃	
Soldering Temperature			260/10	℃/s	

MBPD-2453S2D-C(1550nm DFB Tx/1310nm Rx, 10km)

Transmitter Optical, Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Input Differential Impedance	R_{in}		100		Ω	
Differential Data Input Swing	V_{in}PP	100		1200	mV	
Transmit Disable Input High Voltage		2.0			V	
Transmit Disable Input Low Voltage				0.8	V	
Transmit Fault Output High Voltage		2.0			V	
Transmit Fault Output Low Voltage				0.8	V	
Transmit Disable Assert Time			0.14	5	µs	
Optical Transmit Power	P_O	-9		-3	dBm	Average Power
Extinction Ratio	ER	8.5			dB	
Central Wavelength	λc	1530	1550	1570	nm	1.5um DFB
Output Spectrum Width (RMS)	Δλ			1	nm	-20dB
Side mode Suppression Ratio	SMSR	30			dB	
Optical Isolation		30			dB	

Receiver Optical, Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Single Ended Data Output Swing	V_{out}PP	200		800	mV	
Receiver Loss of Signal Output Voltage -High		2			V	
Receiver Loss of Signal Output Voltage -Low				0.8	V	
Sensitivity	Sen			-20	dBm	BER<1E-12
Maximum Input Power	P_{inMAX}	-3			dBm	
Signal Detect Range		-35		-21	dBm	
Signal Detect-Hysteresis		0.5			dB	

Pin Definition:

Top of board		Bottom of board	
20	VEET	1	VEET
19	TD-	2	TX Fault
18	TD+	3	TX Disable
17	VEET	4	MOD_DEF(2)
16	VCCT	5	MOD_DEF(1)
15	VCCR	6	MOD_DEF(0)
14	VEER	7	Rate Select
13	RD+	8	LOS
12	RD-	9	VEER
11	VEER	10	VEER
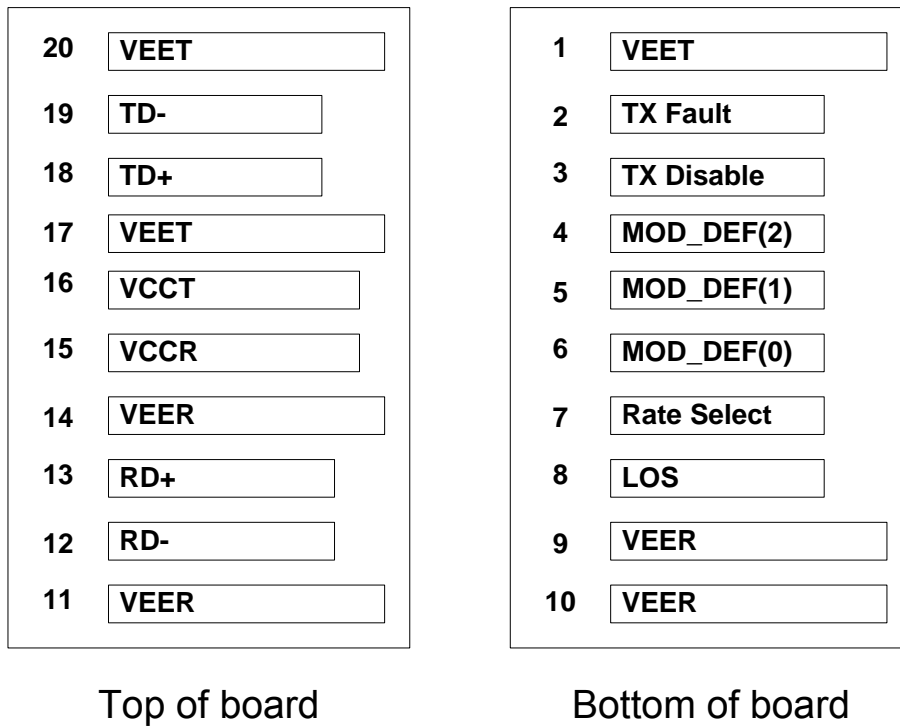
Figure1

Pin Assignment:
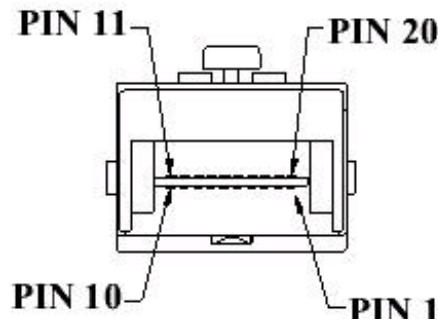
Figure2

Pin	Name	Description
1	VEET	Transmitter Ground
2	TXFAULT	Transmitter Fault.
3	TXDIS	Transmitter Disable.
4	MOD_DEF(2)	SDA Serial Data Signal
5	MOD_DEF(1)	SCL Serial Clock Signal
6	MOD_DEF(0)	Grounded within the module.
7	Rate Select	No connection required

| 8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.
9	VEER	Receiver Ground
10	VEER	Receiver Ground
11	VEER	Receiver Ground
12	RD-	Receiver Inverted DATA out.
13	RD+	Receiver Non-inverted DATA out.
14	VEER	Receiver Ground
15	VCCR	Receiver Power Supply
16	VCCT	Transmitter Power Supply
17	VEET	Transmitter Ground
18	TD+	Transmitter Non-Inverted DATA in.
19	TD-	Transmitter Inverted DATA in.
20	VEET	Transmitter Ground

Block Diagram Of Transceiver:
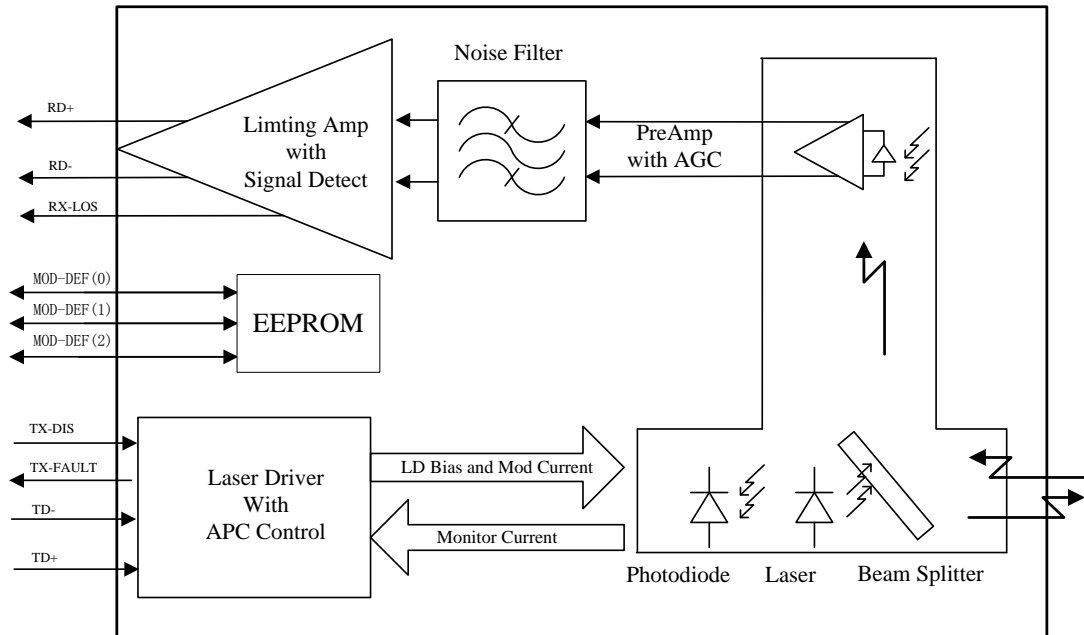
Figure2

Transmitter Section

TX-FAULT

The TTL level TX Fault is an open collector/drain output, which should be pulled up with a 4.7K – 10KΩ resistor on the host board. to VccT. When high, output indicates a laser fault of some kind. Low indicates normal operation. In the low state, the output will be pulled to < 0.8V.

When sensing an improper power level in the laser driver, the SFP sets this signal high and turns off the laser. TX-FAULT can be reset with the TX-DISABLE line.

TX-DISABLE

TX disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7 – 10 KΩ resistor. The states are:

Low (0 – 0.8V):   Transmitter on;

(>0.8, < 2.0V):   Undefined;

High (>2.0):   Transmitter Disabled;

Open: Transmitter Disabled.

Make TX-DISABLE high (TTL logic "1") to turn off the laser output. The laser will turn on when TX-DISABLE is low (TTL logic "0").

TD-/+

TD-/+ is AC-coupled 100Ω differential transmitter inputs. These inputs will accept differential swings of 500 –1600 mV (250 –800 mV single-ended).

Receiver Section

RX-LOS

The TTL level RX-LOS signal is an open collector/drain output, which should be pulled up with a 4.7K – 10KΩ resistor to VccR. When high, this output indicates the received optical power is below the worst-case receiver sensitivity level. Low indicates normal operation. In the low state, the output will be pulled to < 0.8V.

RD-/+

RD-/+ are AC coupled 100Ω differential outputs which should be terminated with 100 Ω(differentially) at the user SERDES. The AC coupling is done inside the module and is thus not required on the host board. The voltage swing on these lines will be between 400 and 1600 mV differential (200 – 800 mV single ended) when properly terminated.
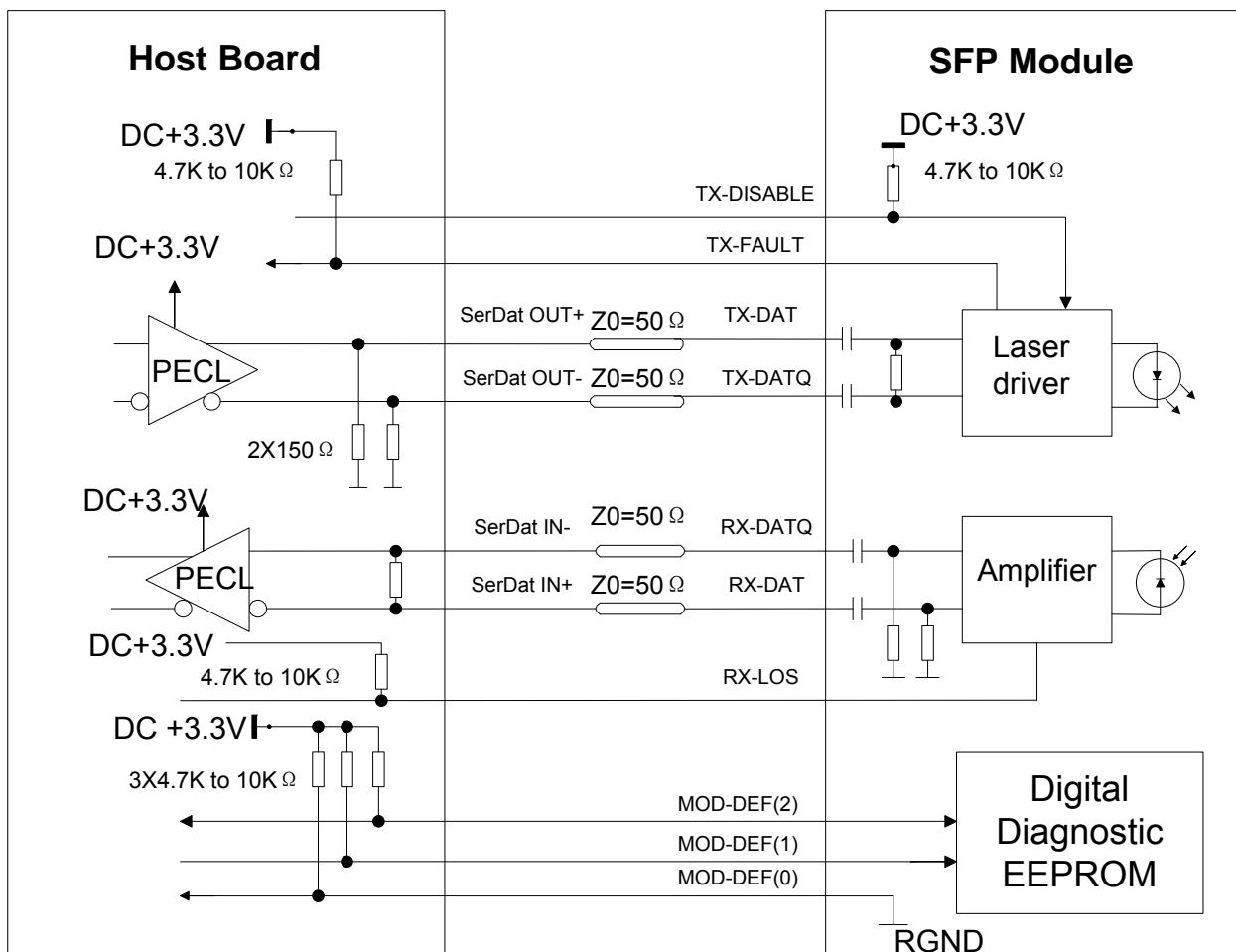
Recommended Interface Circuit:

Figure4

rev. 1.0

Dimensions:

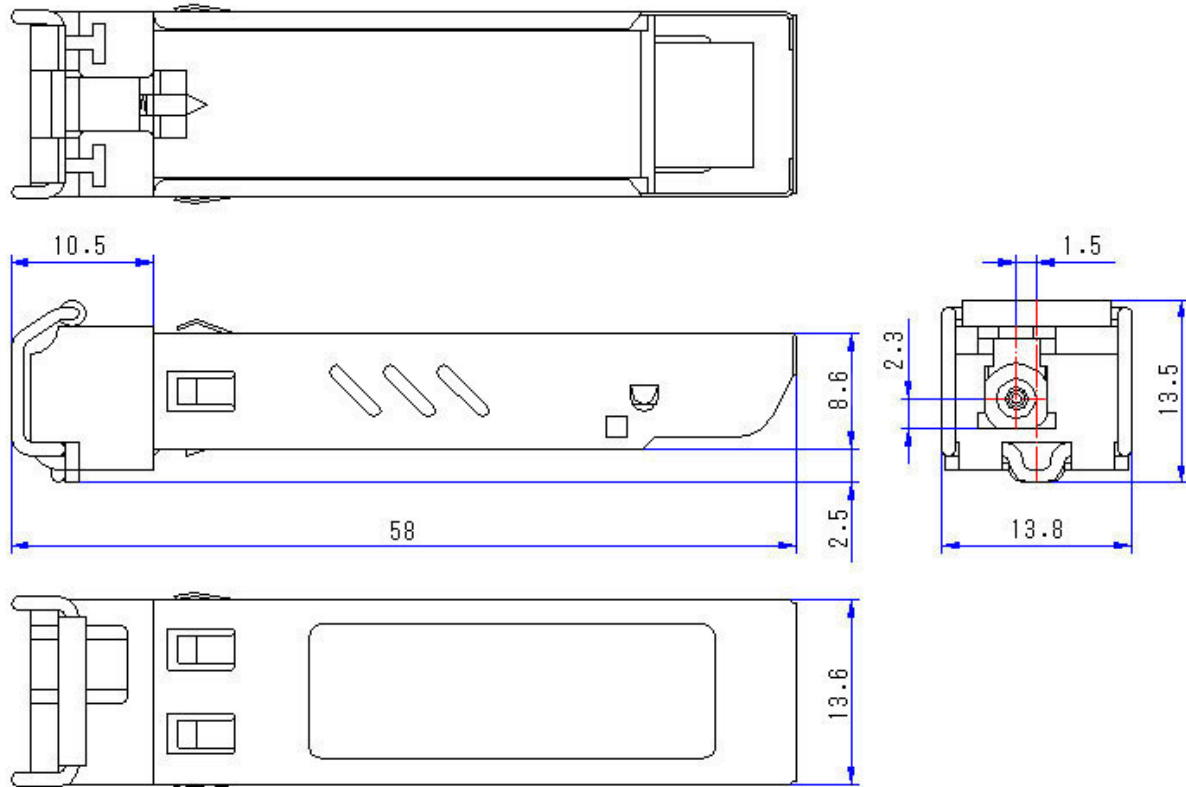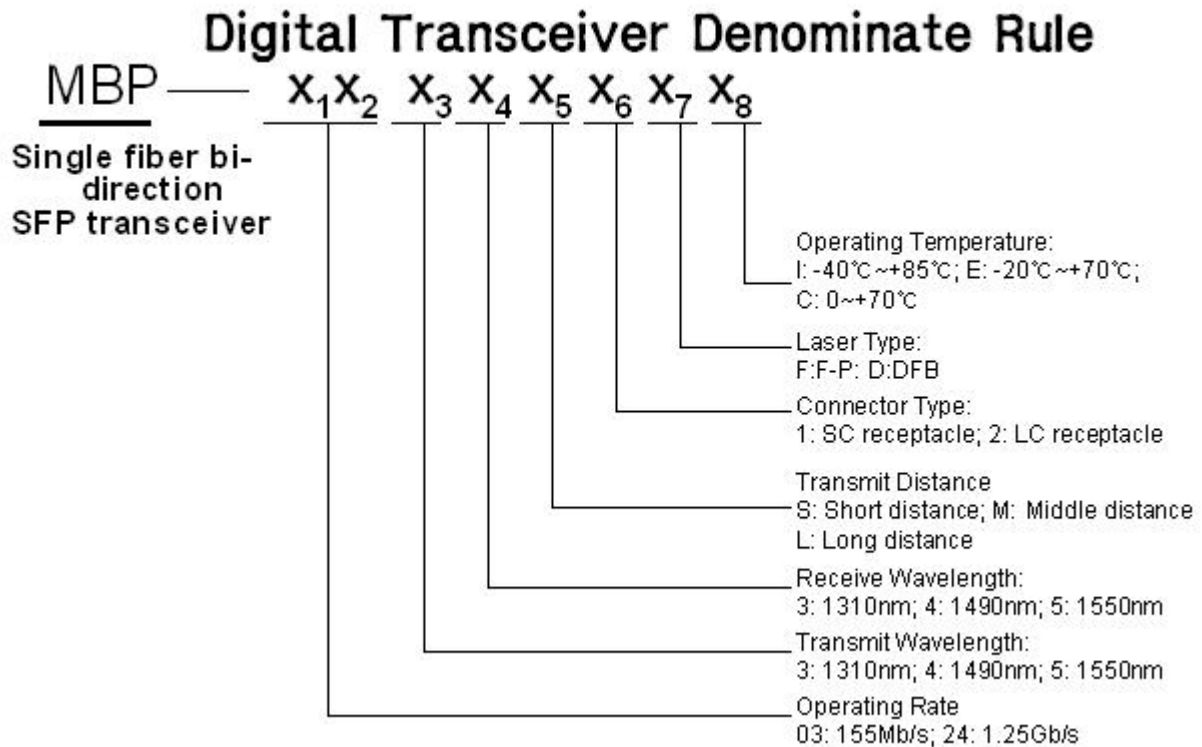Dimensions are in millimeters. All dimensions are ±0.1mm unless otherwise specified.   (unit:mm).

Figure5

Ordering Information:

Digital Transceiver Denominate Rule

MBP —— X₁X₂ X₃ X₄ X₅ X₆ X₇ X₈

Single fiber bi-direction SFP transceiver

Operating Temperature:
I: -40℃~+85℃; E: -20℃~+70℃; C: 0~+70℃

Laser Type:
F:F-P; D:DFB

Connector Type:
1: SC receptacle; 2: LC receptacle

Transmit Distance
S: Short distance; M: Middle distance
L: Long distance

Receive Wavelength:
3: 1310nm; 4: 1490nm; 5: 1550nm

Transmit Wavelength:
3: 1310nm; 4: 1490nm; 5: 1550nm

Operating Rate
03: 155Mb/s; 24: 1.25Gb/s

Statement:

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