

### FDB-1051 QSFP+ / QSFP28 Evaluation Board



#### OVERVIEW

Finisar's FDB-1051 QSFP+/QSFP28 Evaluation Board is designed for testing and evaluating all 40G LW, 40G-56G SW QSFP+ and 100G QSFP28 transceivers as well as 40G-100G Quadwire<sup>®</sup> Active Optical Cables that are Power Class 4 or lower. This is not a module compliance board, but it is compatible with MSA compliant QSFP+ and QSFP28 transceivers.

#### CONTENTS

The board consists of a single QSFP28 edge connector and QSFP28 cage assembly, sixteen 50-ohm SMP coaxial connectors (J8, J12-J16, and J18-J27) for the high-speed differential transmitter input and receiver output signals, and test points for monitoring the following pins:

Module Reset Low – TP1  
Module Low Power Mode – TP2 and TP7  
Module Select – TP3 and TP9  
Module Reset – TP8  
Module Interrupt – TP10  
Module Present – TP12  
Eval Board Vcc – TP21, 22 and 29

Eval Board Ground – TP6, 17, 18, 19 & 20  
Module Vcc RX – TP11  
Module Vcc TX – TP25  
Module Vcc1 – TP26  
Module Ground – TP13  
Module +3.3V In - J28 – TP28 and 31  
Eval Board +3.3 V In - J29 – TP32 and 36  
2.5V Ref – TP30  
TWI SCL – TP23  
TWI SDA – TP24

The Evaluation Board has LED's for the:  
TWI – SDA and SCL Low – D1 and D2  
Low Power Mode – D3  
Module Reset Low – D4  
Module Select Low – D5  
Module Power – D9  
Eval Board Power – D10  
Interrupt Low – D12  
Module Present Low – D15

Customized Finisar Software that is specific to this product is available. Please contact your local Finisar Representative for details. The GUI needs to be installed on a Windows<sup>®</sup> XP or 7 Operating System (32bit or 64bit machine) that has an available USB port. The USB (type B) port is on the underside of the Eval Board. This daughter card is called FDB-INT-USB3.

#### SPECIFICATIONS

The FDB-1051 Evaluation Board is meant to be powered by a laboratory grade supply voltage of 3.3VDC at a maximum of 1.2A from J28. J30 is ground. To separate the QSFP28 module power supply from the Evaluation Board power supply, remove the header pin jumper at J69 and apply the Evaluation Board power to J29. Note that the MSA compliant pi filter will still be used for the QSFP28 port in either configuration. Standard female banana jacks are available for these connections.

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There are two momentary switches on the Eval Board. Switch 1 is for a manual reset of the QSFP28 end and #2 is a manual reset of the TWI mux chip on the Eval Board.

The high speed lines are designed so there is <1ps skew between each differential pair and <9ps skew between any lanes.

The standard SMP connectors used for the high speed differential pairs are male and require a female cable. An example of this is the Astrolab® Minibend L2S-10PS  $\pm 5^\circ$ . This cable has two female ends, and is long enough to create an electrical loopback (RX→TX) path for testing. Another example is the Fairview Microwave SCF34086-12. This cable has a SMP female on one side and SMA male on the other. This is useful when connecting the Eval Board to a Bit Error Rate Tester that has female SMA connectors.

The following header pins should not be changed:

- J1 connects the Reset Low switch to the module. (connected)
- J2 connects the Low Power Mode switch to the module. (connected)
- J4 connects the Module Select switch to the module. (position 2-3)
- J5 connects the SDA bus to the microcontroller. (position 1-2)
- J6 connects the SCL bus to the microcontroller. (position 1-2)
- J7 connects the Module Present line of the module to the microcontroller. (position 2-3)

## **MANUAL MODE OPERATION**

If the FDB-INT-USB3 is not installed or is installed and the GUI interface is not used, the Eval Board can still be used in manual mode, where it can serve as a test platform for the QSFP28 module to be mounted. Set slider switches S1, S3, S4, S5 and S6 (located near the top left corner) to the logical zero position, which is to the left,

closest to the LED's. The logic state of the Low Power Mode is controlled by S3 (only applicable for QSFP+ or QSFP28 transceivers that have a High Power Mode due to operating power consumption > 1.5 W). The Module Select Low is controlled by S5.

## **AUTOMATED CONTROL MODE OPERATION**

For GUI controlled operation set slider switches S1, S3, and S5 (located near the top left corner) to the logical zero position, which is to the left, closest to the LED's. Set slider switches S4 and S6 to the logical one position, which is to the right, away from the LED's. Launch the GUI called Transceiver Workbench QSFP MSA. This GUI will give you access to the DDM (Digital Diagnostic Monitors) as well as let you see and control Low Power Mode, Alarms and Warnings.

## **GUI INSTALLATION**

Please contact Finisar for the required driver and software GUI. See the datasheet (FDB-INT-USB3) for the installation of the drivers necessary for the USB connection. Once the Eval Board is "seen" by the machine, the GUI can be installed. Copy the folder "Transceiver\_Workbench\_QSFP\_Customer\_x.x.xx\_EUI2\_EUI3" to the computers' hard drive. Find the executable file "Transceiver\_Workbench\_QSFP\_MSA.exe" and run this application.

## **NOTES**

The rest of the connectors, pins, tap points, headers and IC's are for Finisar internal use only.

Figure 1. below shows the locations of important points mentioned in this datasheet.

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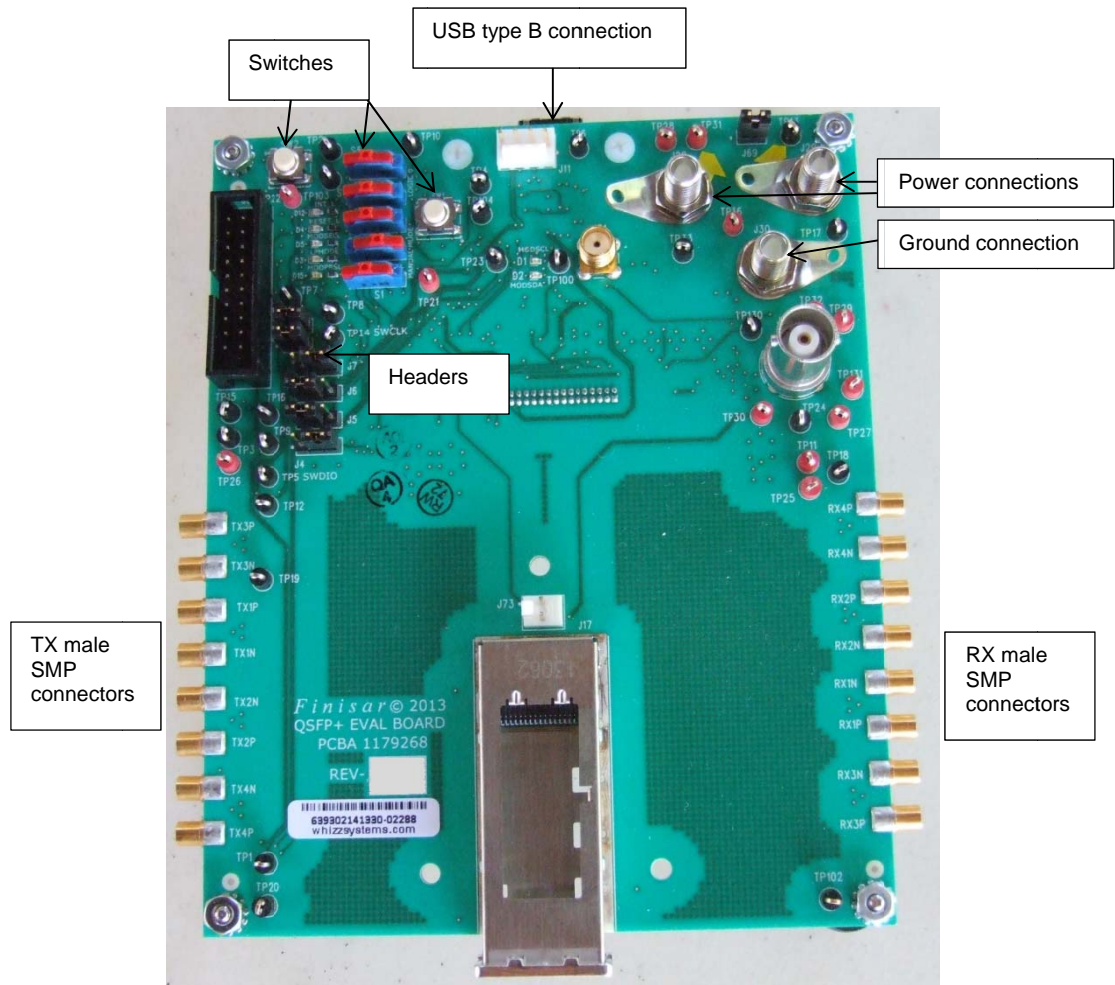


Figure 1. Top view of FDB-1051

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