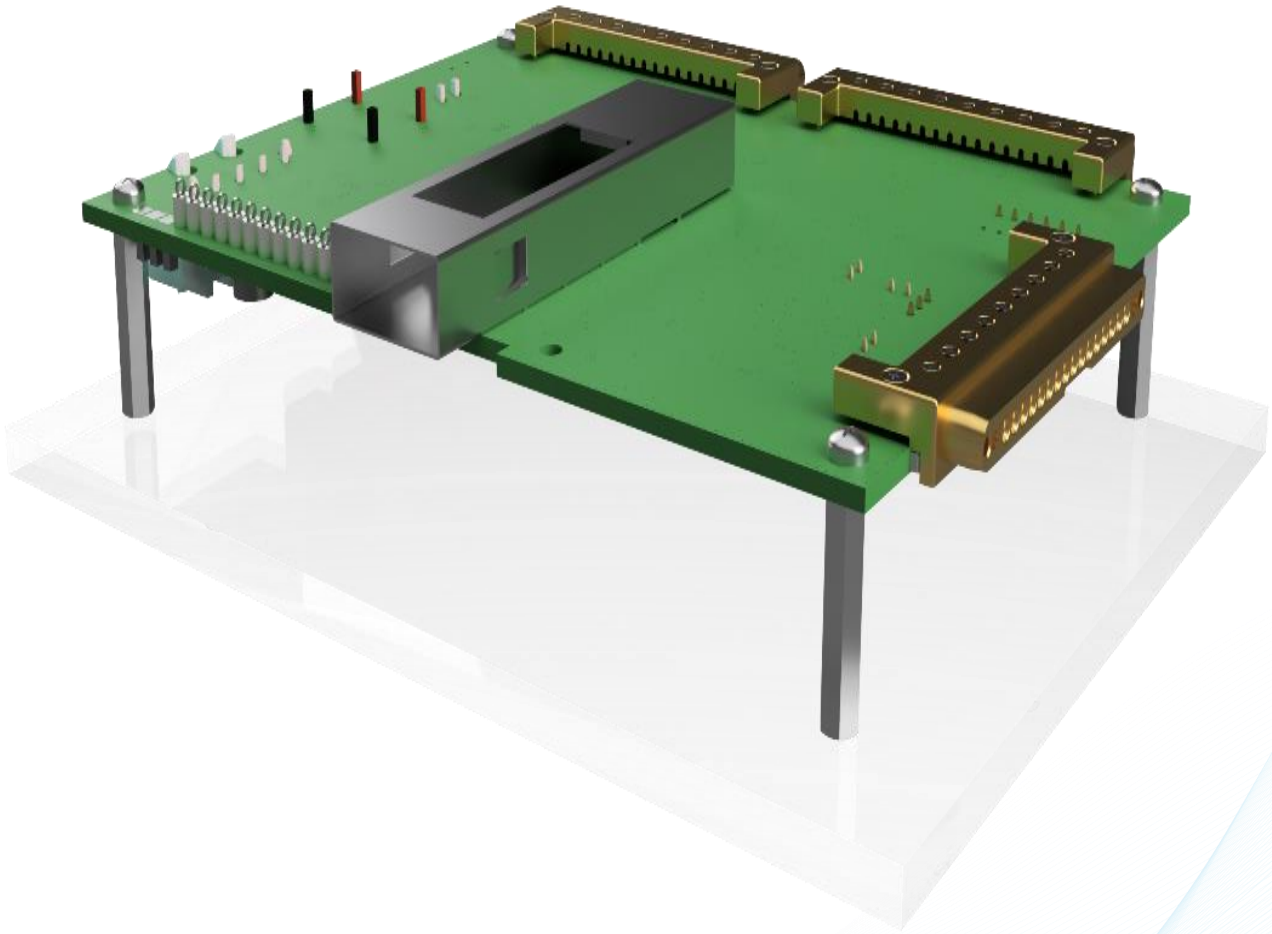
multiLane

ML4062-MCB-112-SMPS-E

Technical Reference

MSA Compliant QSFP-DD MCB



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1. Introduction

The ML4062-MCB-112-SMPS-E is designed to provide an efficient and easy method of programming and testing 800G QSFP-DD transceivers and active optical cables. It includes a complete user-friendly GUI supporting all features defined by QSFP-DD800 MSA and simplifying configuration processes to enable intuitive memory map programming and testing. It is designed to simulate an ideal environment for QSFP-DD800 transceivers module testing, characterization and manufacturing.

2. Key Features

- ✓ QSFP-DD800 MCB
- ✓ Low insertion loss
- ✓ Ability to drive I2C from external pin headers, or connect I2C packet analyzer
- ✓ High performance SMPS connectors up to 110GHz
- ✓ User friendly GUI for I2C R/W commands and loading custom MSA memory maps

3. ML4062-MCB-112-SMPS-E Hardware

The subsequent sections cover the essential parts in the hardware, for board operation and testing.

3.1 Power-Up

To power up the ML4062-MCB-112-SMPS-E host, steps are as follow:

- The host TOP is where the cage is mounted
- Two options are available to power up the board:
  - ➢ Using the four pins power connector (J3) that should be connected to 12V taking into account pins distribution, where the SMT jumper (U3) must be populated.
  - ➢ Using the banana plug (U2) that should be connected to 3.3V where the SMT jumper (U19) must be populated.
- Connect the host to your PC using a Type-B mini to Type-A USB cable.

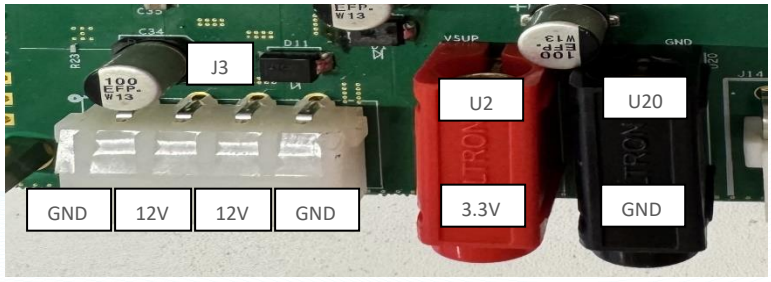


Figure 1: Power Connectors

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3.2 Operating Conditions

According to the powering method described in section 3.1, the input voltage supply must follow the table below.

Parameter	Symbol	Condition	Min	Typical	Max	Unit
+12	P12V	Supply from J3 (P12V pin)	-	12	-	V
+3.3	P3V3	Supply from banana plug U2	3.0	3.3	3.6	

Table 1: Voltage Operating Conditions

The table below shows the impedance characteristics of the high-speed channels.

Parameter	Symbol	Condition	Min	Typical	Max	Unit
I/O Load Resistance	RI	AC-Coupled, Differential	90	100	110	Ω

Table 2: Channels Impedance characteristics

3.3 LED Indicators

The ML4062-MCB-112-SMPS-E includes on-board LEDs, for quick debugging and monitoring purposes. LEDs are summarized below:

- LED D4 indicates whether a USB cable is plugged or not.
- LEDs D2 and D3, colored green and red, respectively, are used for diagnostic purposes:
  - ✓ If D2 is on: USB is locked and device is recognized by the USB driver
  - ✓ If D3 is on: USB is not connected or USB driver is not found
  - ✓ If both are off: board is not powered correctly or firmware is corrupted
  - ✓ If both are blinking: the board is in Bootloader mode
- LED D7 – D8 – D9 – D12: Should be ON to indicate a good operation of the noise generation circuit power regulators.

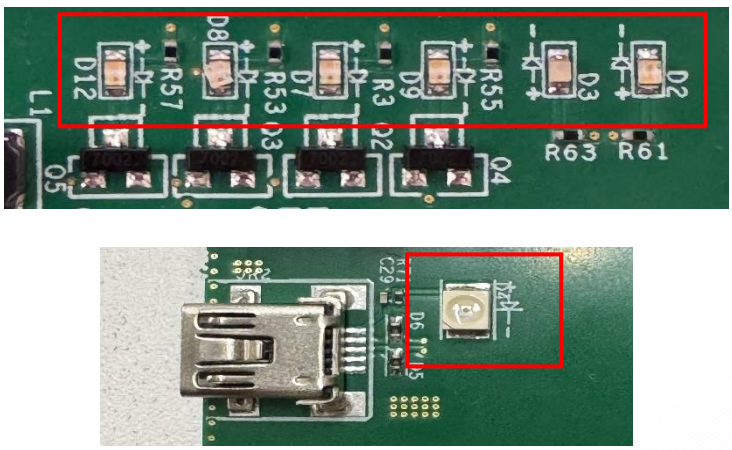


Figure 2: On-board LEDs

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3.4 Low Speed Signals

3.4.1 External I2C

The I2C bus can be accessed externally using U13 pins. In this case a jumper should be placed on pin header P1 (HW_I2C) shown in the image below.

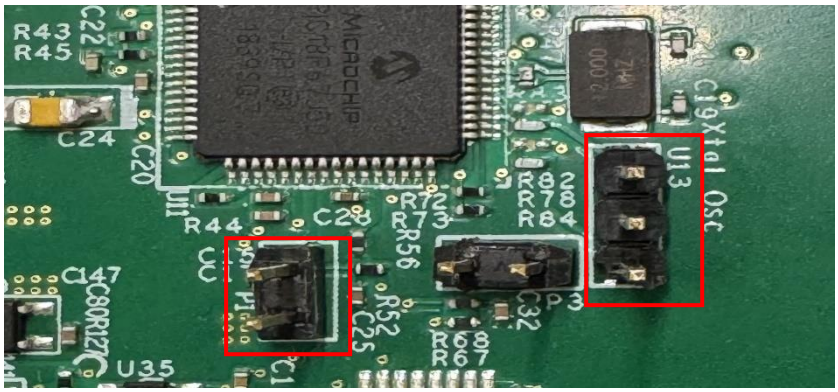


Figure 3: External I2C

4. ML4062-MCB-112-SMPS-E Software

The ML4062-MCB-112-SMPS-E is accessible and controlled through application software. This software is MSA compliant and provides a user-friendly interface to operate the board and access all its features. The communication between the ML4062-MCB-112-SMPS-E board and the software is established through USB connection.

4.1 USB Driver

In order to be able to communicate with the board, user need to install the USB driver of the ML4062-MCB-112-SMPS-E. This is available on the website under the following link (USB Driver icon):

https://www.multilaneinc.com/product.php?pn=ML4062-MCB-112-SMPS-E

Below is a brief guide on how to install the USB Driver:

- Power up the board
- Connect the board to the PC through USB cable
- Download the USB driver file
- Go to “Device Manager”
- Find the target device that need to install the driver
- Right-click on the device and select Update Driver Software
- Select Browse my computer for driver software
- Browse you PC and select the driver file
- Click Next and wait until the driver is installed

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4.2 GUI

For GUI installation and operation, refer to the link below. GUI user manual is available for detailed description (CMIS GUI Manual).

https://www.multilaneinc.com/product.php?pn=ML4062-MCB-112-SMPS-E

5. Hardware Revision

- **ML4062-MCB-SMPS-REVA1:** Initial Version

6. Firmware Revision

- **ML4062-MCB_SMPS_V1_0**: latest FW revision

7. Bootloader

Accessing in bootloader mode allows the user to reprogram the microcontroller, this is done as described below:

1. Connect a jumper on (P2) situated close to the microcontroller.
2. Connect a USB cable between the PC and Board.
3. Power up the board with a +3.3V supply.
4. LEDs (D2, D3) start blinking.
5. Remove jumper.
6. Open the software “Microchip USB HID Bootloader v2.3”.
7. Click on “Open Hex File”.
8. Choose the new FW to download.
9. Click on “Program/Verify”.
10. Once the software finishes programming press on “Reset Device”.
11. After reset the Firmware is successfully updated.

Revision History

Date	Revision	Description
4/16/2025	0.1	▪ Initial Version

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