

Delta-Sigma ADC MAD2418

Daughter Board

Explanation Manual

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1. Introduction

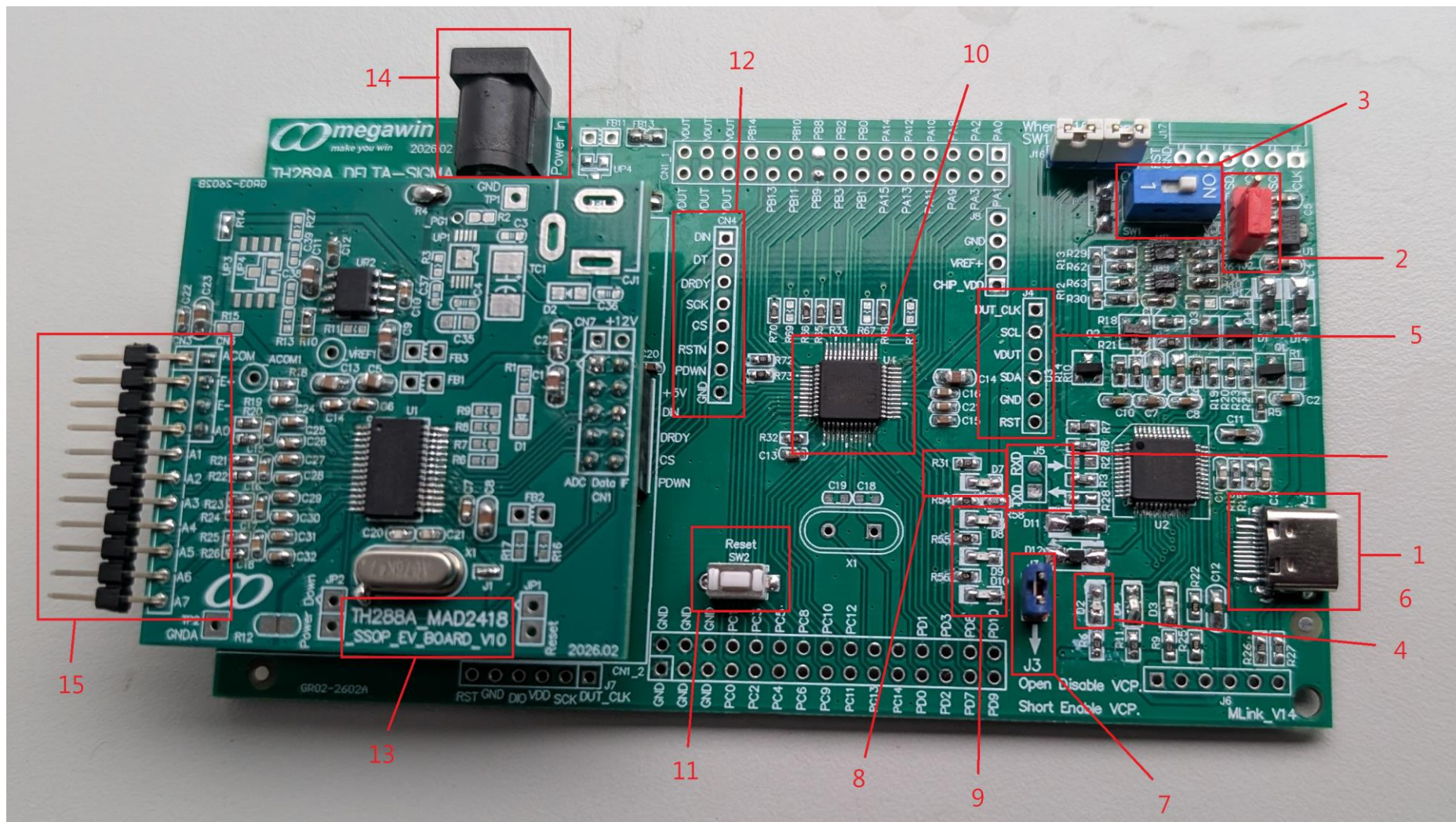
The chip is embedded a precision 24-bit analog-to-digital converter and designed to provide high-resolution measurement solutions for the most applications. The converter is implemented a low-noise input buffer, a low-noise programmable gain amplifier (PGA), a 4th-order delta-sigma ($\Delta\Sigma$) modulator and a digital filter. It's designed to easy use for industrial process control, measurement instrumentation, weigh scales and other applications. The chip is packaged in an SSOP-28.

A flexible input multiplexer handles differential or single-end signals input with sensor detect. It can support maximum four differential inputs or eight single-ended inputs. The selectable input buffer can enable to increases the input impedance. The low-noise programmable gain amplifier (PGA) provides gains from 1 to 64 in binary steps. The digital filter can optimize a resolution of up to 24 bits and a data rate of up to 30K samples per second (SPS).

The chip is built-in embedded Power-On Reset (POR) circuit to generate internal hardware reset signal or input external active low reset signal from the RESET pin to reset the chip. For power management and reset control, the chip is built-in a power supervisor for power down control and wakeup control. Also the chip is supported to control chip power down or wakeup by external signal from the PDWN pin. The chip is embedded an on-chip oscillator circuit for 7.68MHz crystal. Four bidirectional digital I/O pins with a programmable clock output driver are provided for general use.

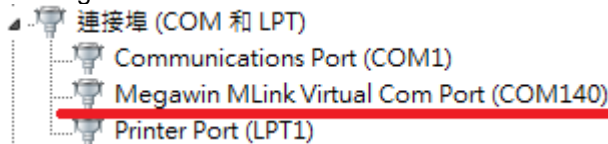
The converters offer fast channel cycling for measuring multiplexed inputs and can also perform one-shot conversions that settle in just a single cycle. The communication is handled by an SPI-compatible serial interface to get ADC code and control the ADC settings from external MCU device. Onboard calibration supports both self and system correction of offset and gain errors for all the PGA settings

1.1 TH288A MAD2418 and Main Board Whole Picture



1.2 TH288A MAD2418 Hardware Instruction

1. J1: Micro USB Connector.
2. J2: Power select.
 - a. VDD – Select 5V or 3.3V to MG32F02A032 serial.
 - b. VDD3 -- On Board LDO 3.3V Output(U1).
3. SW1: Control U4 power on/off.
4. D2: PC identify MLink successful when D2 turn ON, but only programming turn ON at Win10.
5. J4: Connector in ICE adaptor(MLink) for connecting with main board to program MG32F02A032.
J7: Connector in main board for connecting with ICE adaptor(MLink).
6. J5: Connector in ICE adaptor(MLink) for connecting with main board to transfer UART data.
7. J3: Virtual Com Port function selection, when J3 open and plug out → plug in PC, VCP function is disable. when J3 short and plug out → plug in PC, VCP function is enabled. After installing driver(how to install driver, refer the [2. Driver Install](#)), Device Manager will appear “Megawin MLink Virtual Com Port” as below figure.



“Megawin MLink Virtual Com Port” support as below as baud rate only:

600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 128000, 7200, 14400, 28800...etc bps.

“Megawin MLink Virtual Com Port” also support **Stop Bit 1** only.

8. D7: Demo board power indicator LED.
9. D8, D9, D10: IO LED.
10. U4: MG32F02A032 LQFP-48 package.
11. SW2: Pressing the button will trigger external reset signal to U4(MG32F02A032).
12. CN4: MAD2418 control signal connector, user can measure signal through the connector.
13. DB: TH288A_MAD2418 daughter board.
14. CJ1: DC Jack is need to input 9V ~ 12V.
15. CN3: TH288A_MAD2418 ADC input connector.

1.3 TH288A MAD2418 Daughter Board Circuit

1.3.1 MAD2418 Circuit

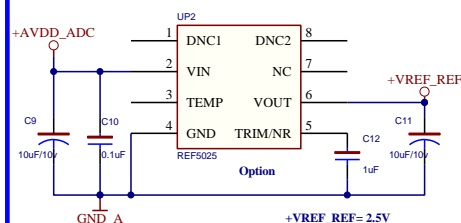
TH288A

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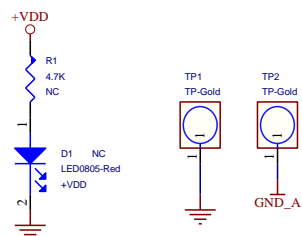
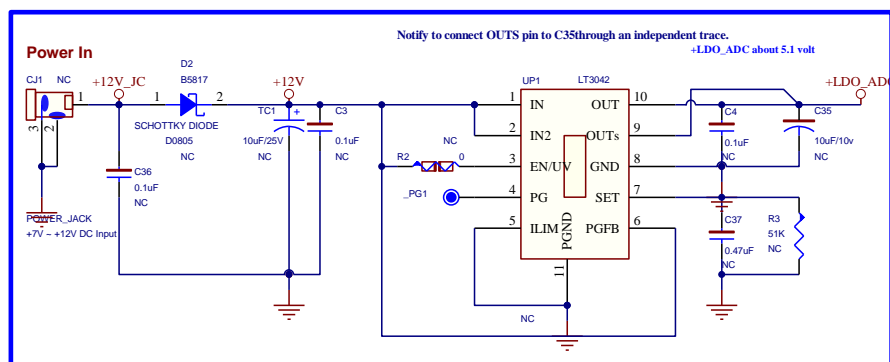
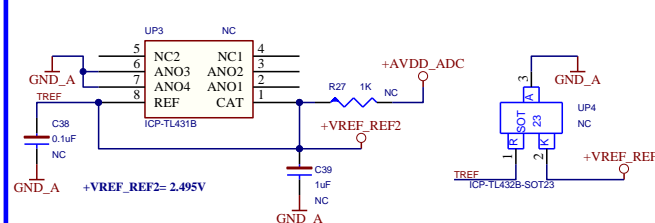
MAD2418 Test PCB



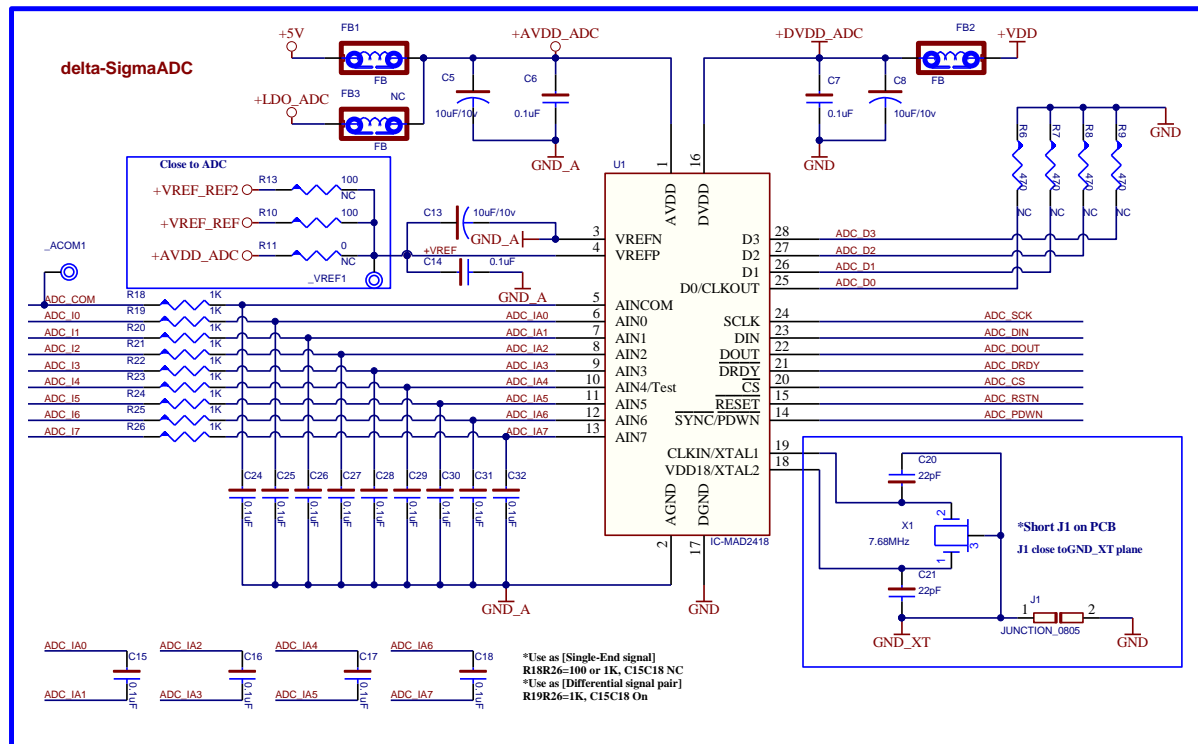
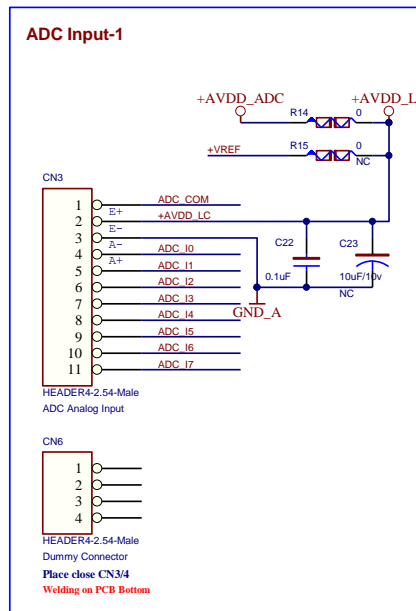
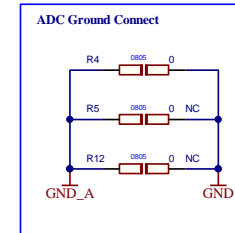
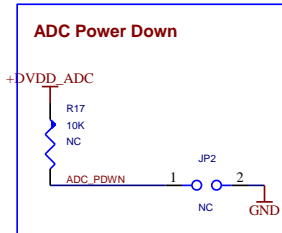
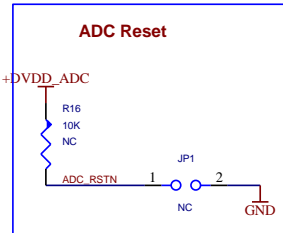
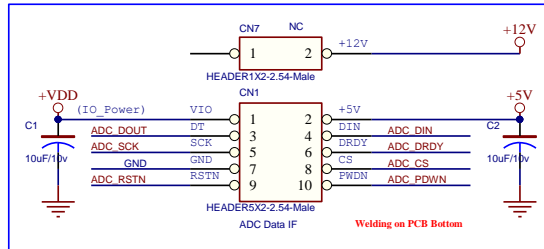
Precision Voltage Reference-1



Precision Voltage Reference-2

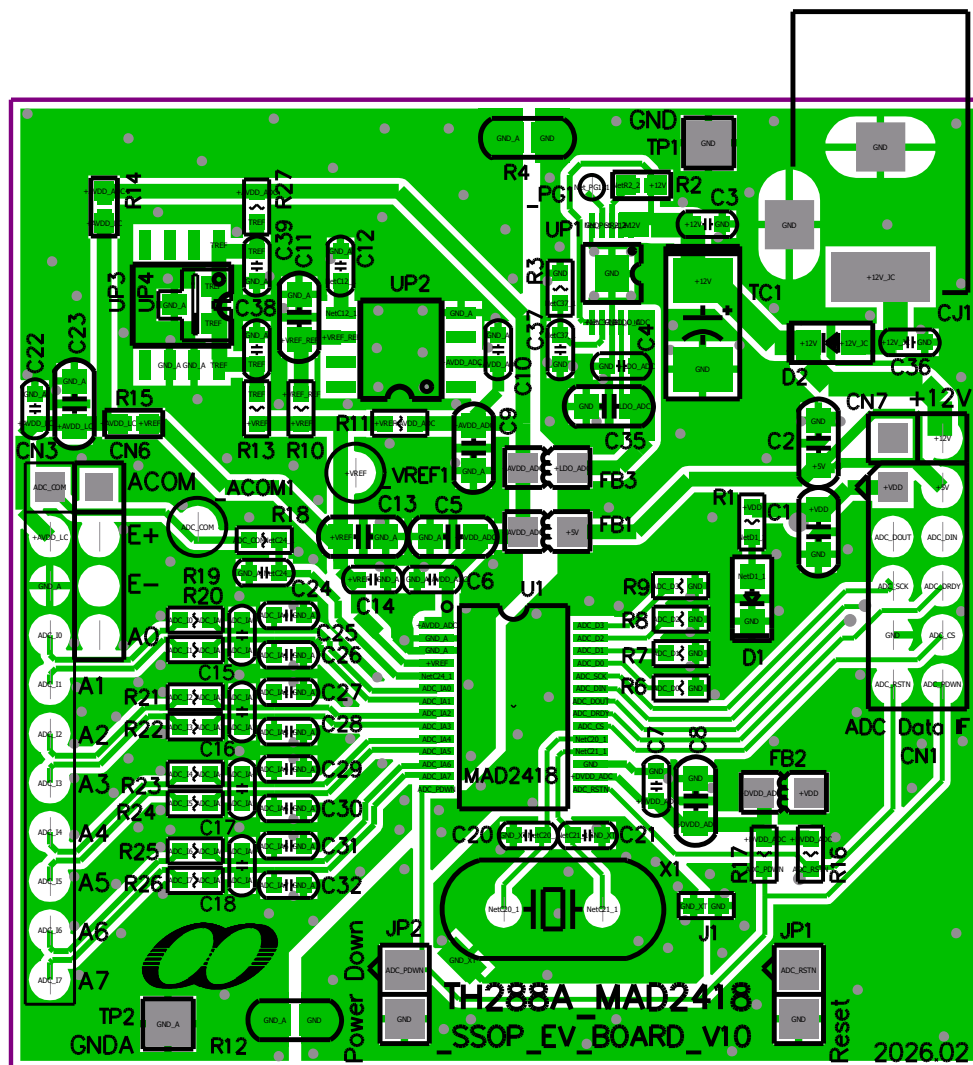


Delta-Sigma ADC MAD2418 Daughter Board

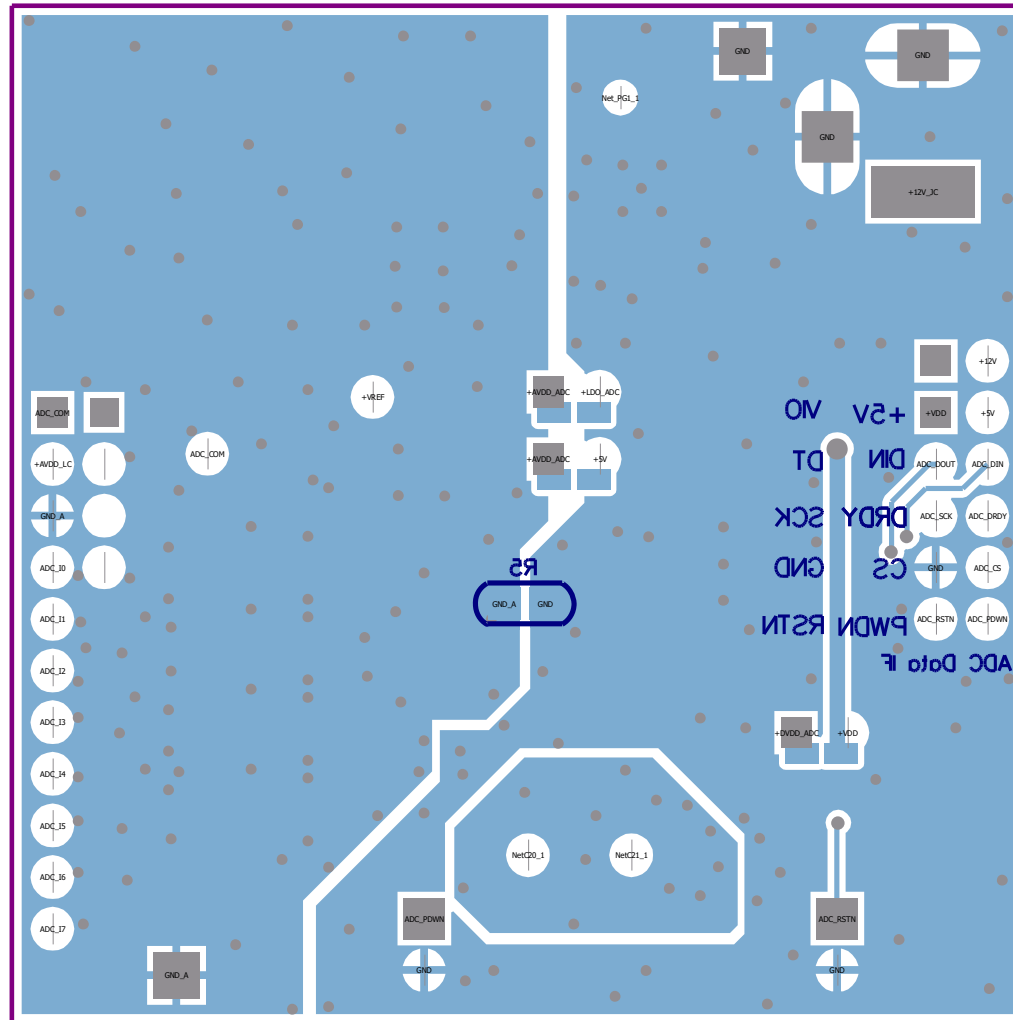


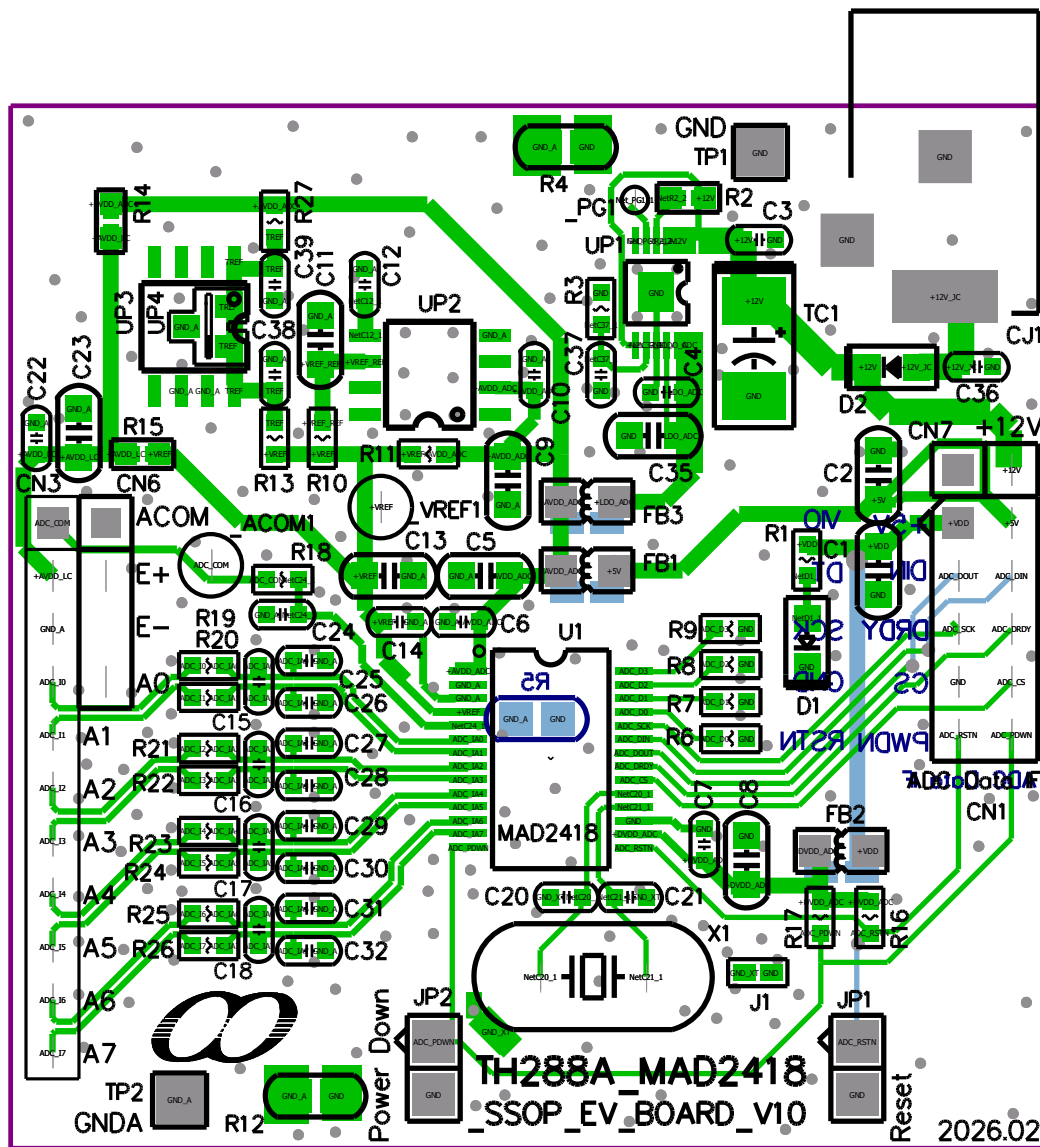
1.4 TH288A MAD2418 Daughter Board PCB

Top



Bottom

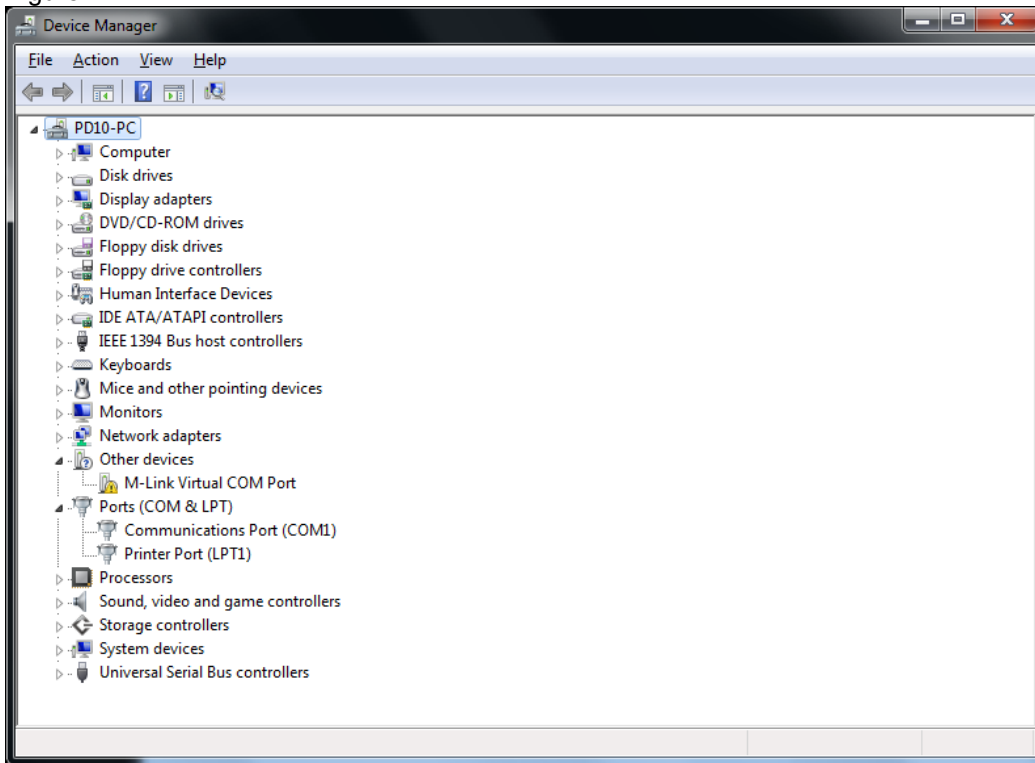




2. Driver Install

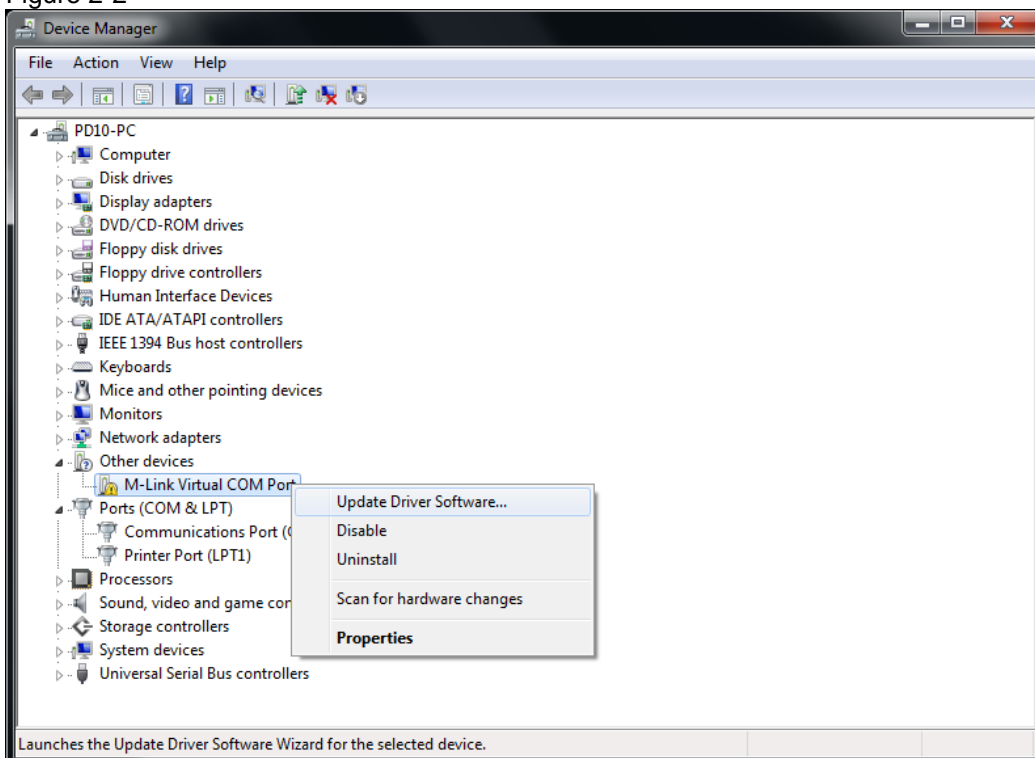
Step 1: The user short J3 plug Delta-Sigma ADC Demo Board into any USB port in a PC, then open Device Manager.

Figure 2-1



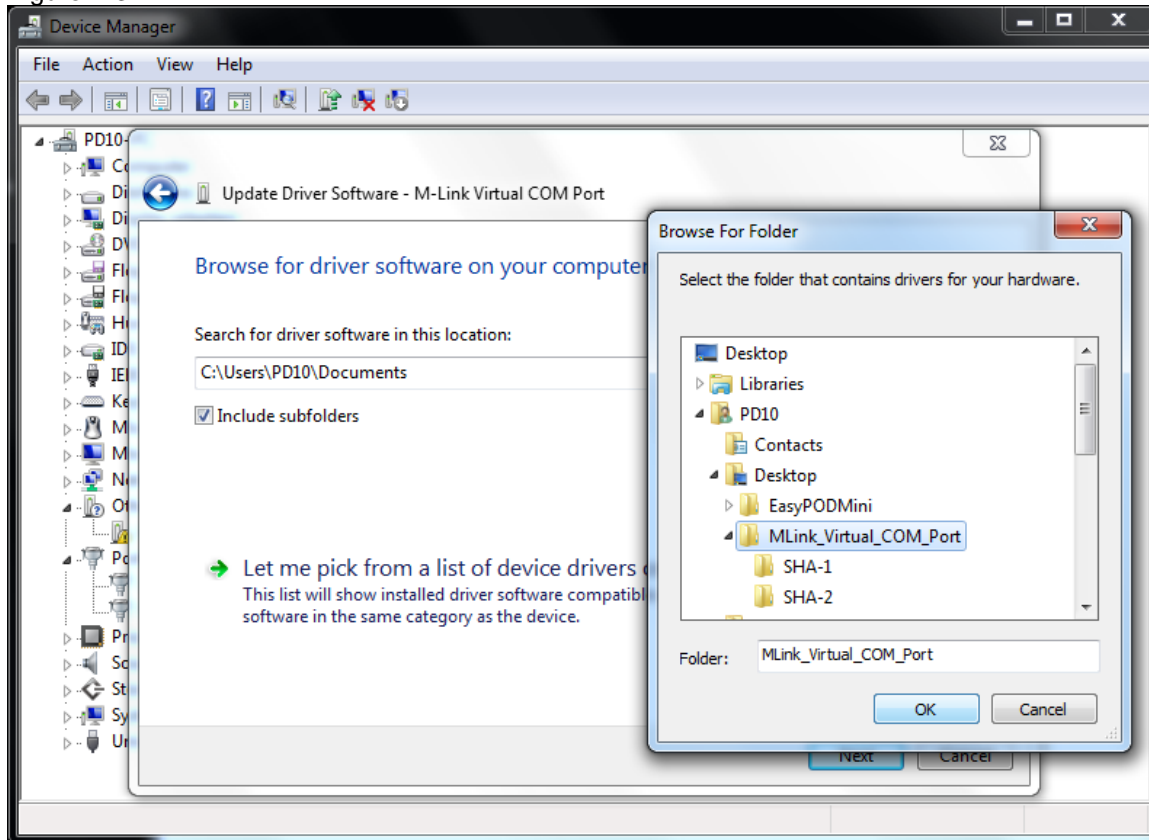
Step 2: Click "Right" key on Megawin MLink Virtual Com Port and "Update Driver Software"...

Figure 2-2



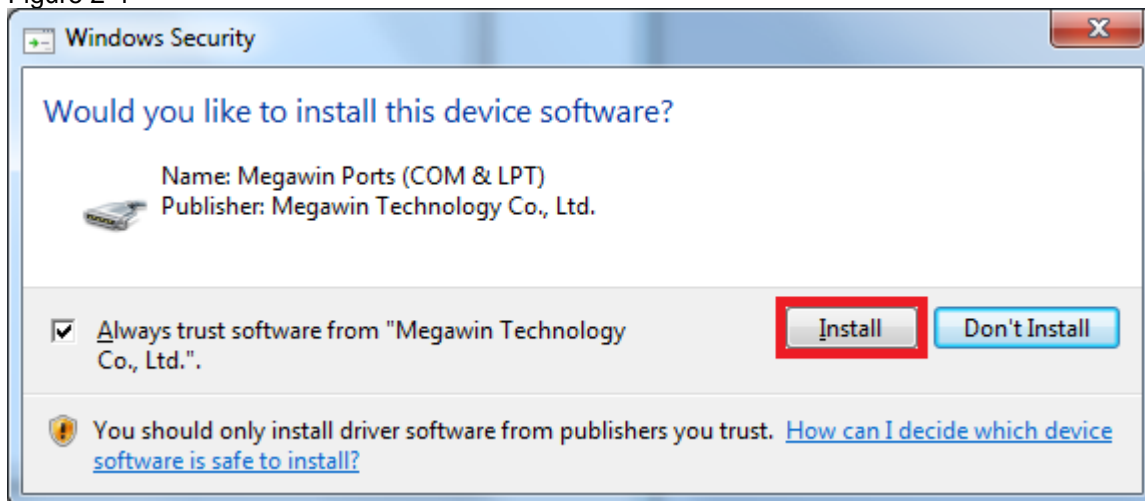
Step 3: Indicate Megawin MLink Virtual Com Port Driver path in the user's PC, OS will select SHA-1 or SHA-2 automatic.

Figure 2-3



Step 4: Click **"Install"** and wait a while.

Figure 2-4



Step 5: The user install driver successfully...

Figure 2-5

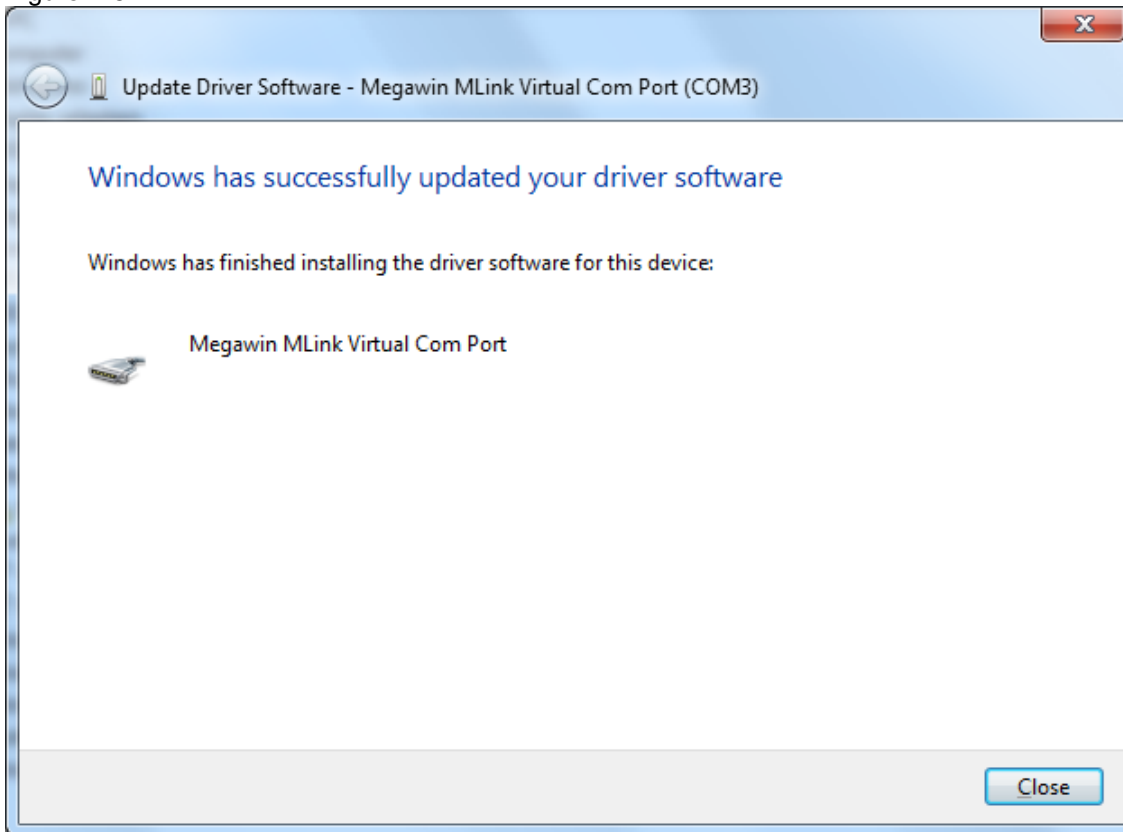
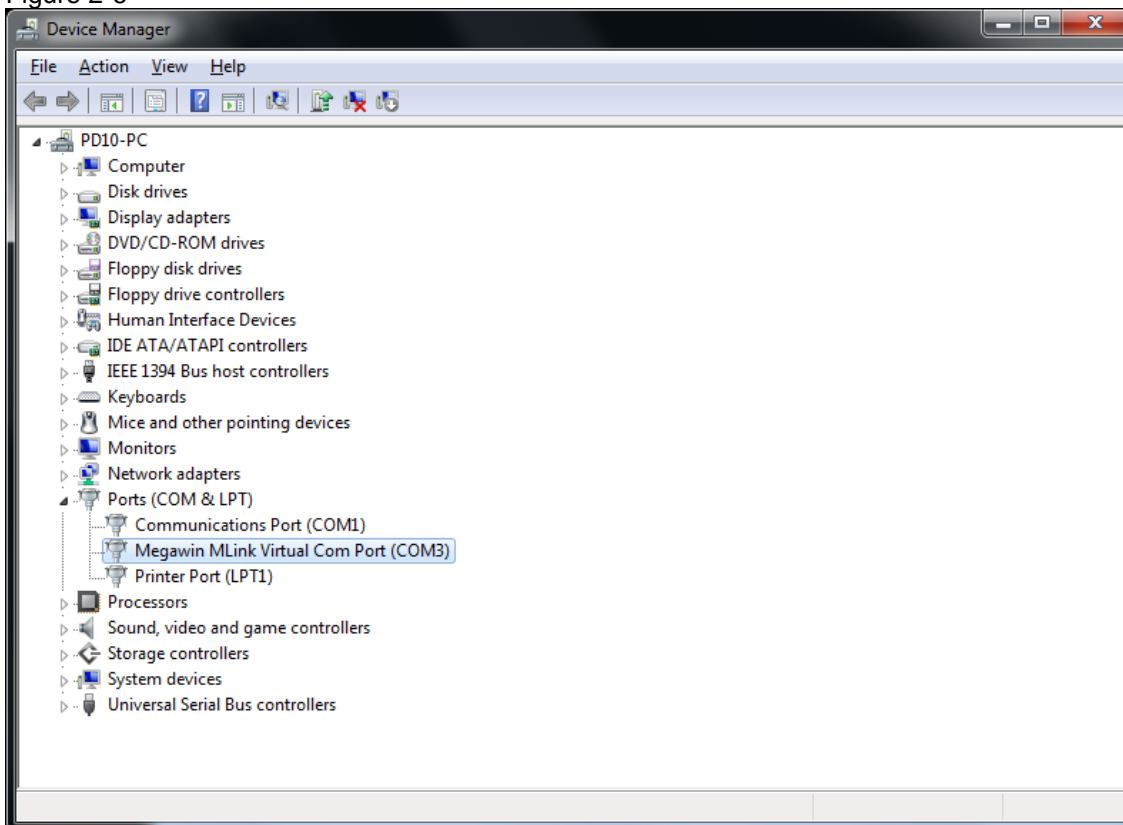


Figure 2-6



3. Revision History

Revision	Description	Date
V1.00	(1) New Create.	2026/04/07

4. Disclaimers

Herein, Megawin stands for “**Megawin Technology Co., Ltd.**”

Life Support — This product is not designed for use in medical, life-saving or life-sustaining applications, or systems where malfunction of this product can reasonably be expected to result in personal injury. Customers using or selling this product for use in such applications do so at their own risk and agree to fully indemnify Megawin for any damages resulting from such improper use or sale.

Right to Make Changes — Megawin reserves the right to make changes in the products - including circuits, standard cells, and/or software - described or contained herein in order to improve design and/or performance. When the product is in mass production, relevant changes will be communicated via an Engineering Change Notification (ECN).