

# **MG32F04A016 Evaluation Board**

## **Explanation Manual**

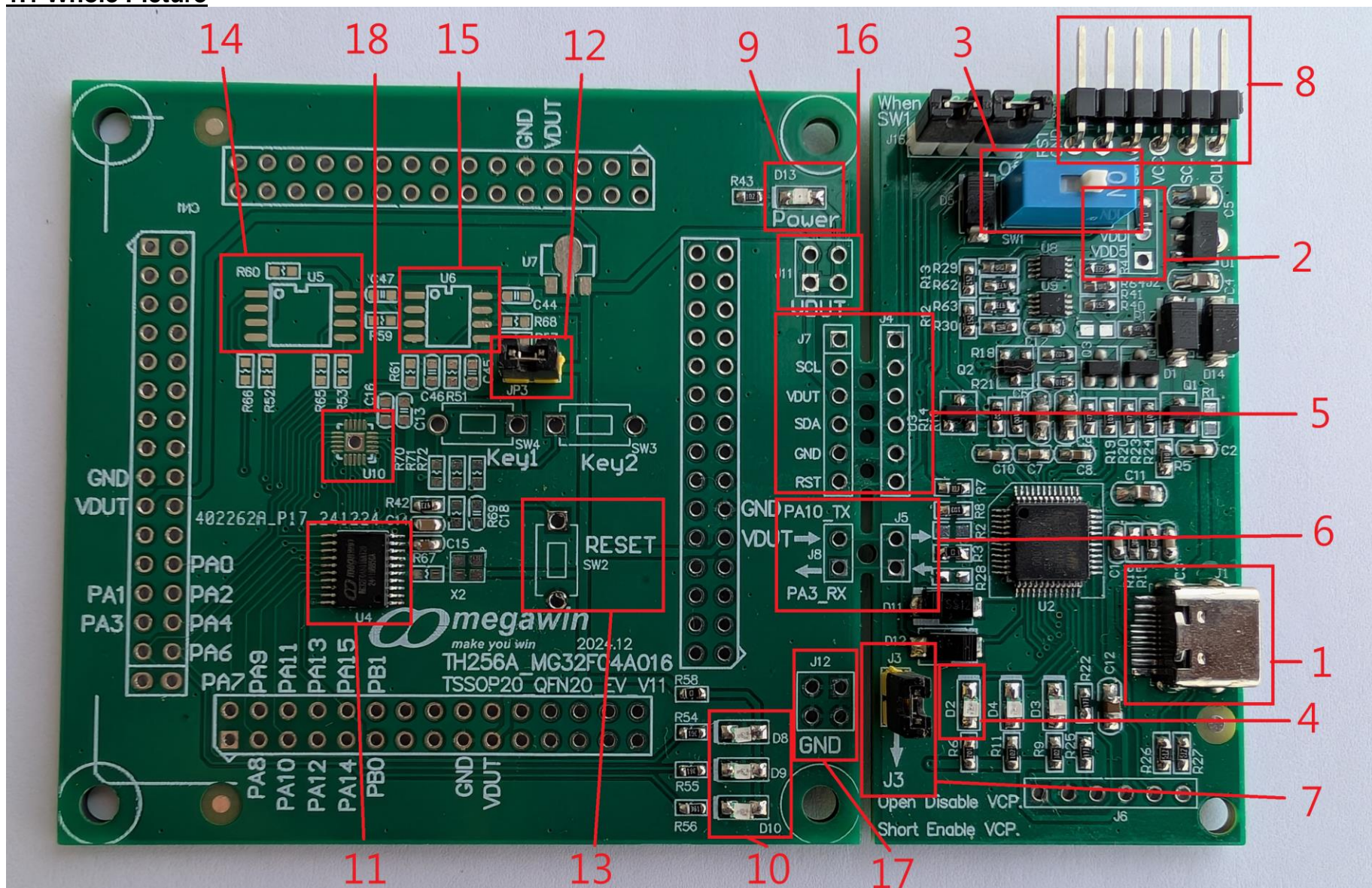
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## 1. Introduction

- Core and system
  - 32-bit Arm® Cortex®M0.
  - Frequency up to 48MHz.
- Memory
  - 16KB embedded Flash storage.
  - 2KB SRAM.
- Clock, reset and power management
  - Power supply ranges from 2.0V to 5.5V.
  - Power-on and Power-down reset (POR/PDR), Programmable voltage detector (PVD).
  - Built-in 48MHz HSI high-speed oscillator.
  - Built-in 40KHz LSI low-speed oscillator.
  - Support up to 48MHz external clock input (HSE, through OSCIN pin).
- Low power
  - Multiple low power modes including Sleep mode, Stop mode and Deep Stop mode.
- Total 5 timers:
  - One 16-bit 4-channel advanced timer (TIM1), capable of generating four PWM outputs or three complementary PWM pairs, support center- or edge-aligned PWM mode, support hardware dead time insertion and fault brake, support PWM phase-shift output mode.
  - One 16-bit 4-channel general purpose timer (TIM3), capable of generating four PWM outputs or capture four channel input signals, support decode of hall sensor and quadrature encoder, support infrared decode.
  - One 16-bit basic timer (TIM14), capable of generating one PWM output or capture one channel input signal.
  - One watchdog timer equipped with independent clock source (IWDG).
  - One 24-bit SysTick timer.
- Up to 18 fast I/O ports:
  - All I/O ports can be mapped to 16 external interrupts.
  - All I/O ports can accept input or generate output signal voltage level is not higher than  $V_{DD}$ .
- Up to 4 communication interfaces:
  - Two USART (support SPI mode).
  - One I2C.
  - One SPI.
- One 12-bit Analog-to-Digital converter (ADC) supports 1 $\mu$ s conversion duration (1MSPS sampling rate), with 8 external inputs and 1 internal input that can sample on-chip voltage sensor.
- Embedded CRC engine
- 96bit unique chip ID (UID)
- Debug mode
  - Serial Wire Debug (SWD).
- Operating temperature range includes -40°C ~ 105°C industrial tier.
- Available in QFN20 and TSSOP20 packages

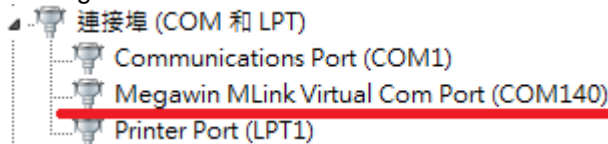
## 1.1 Whole Picture





## 1.2 Ev Board Hardware Instruction

1. J1: Type-C USB Connector.
2. J2: Power select.
  - a. VDD5 – USB 5V Output.
  - b. VDD – Select 5V or 3.3V to MG32F04A016.
  - c. VDD3 -- On Board LDO 3.3V Output(U1).
3. SW1: Control U8 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 EV board to program MG32F serial.  
J7: Connector in EV board for connecting with ICE adaptor(MLink).
6. J5: Connector in ICE adaptor(MLink) for connecting with EV board to transfer UART data.  
J15: Connector in EV board for connecting with ICE adaptor(MLink).
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:

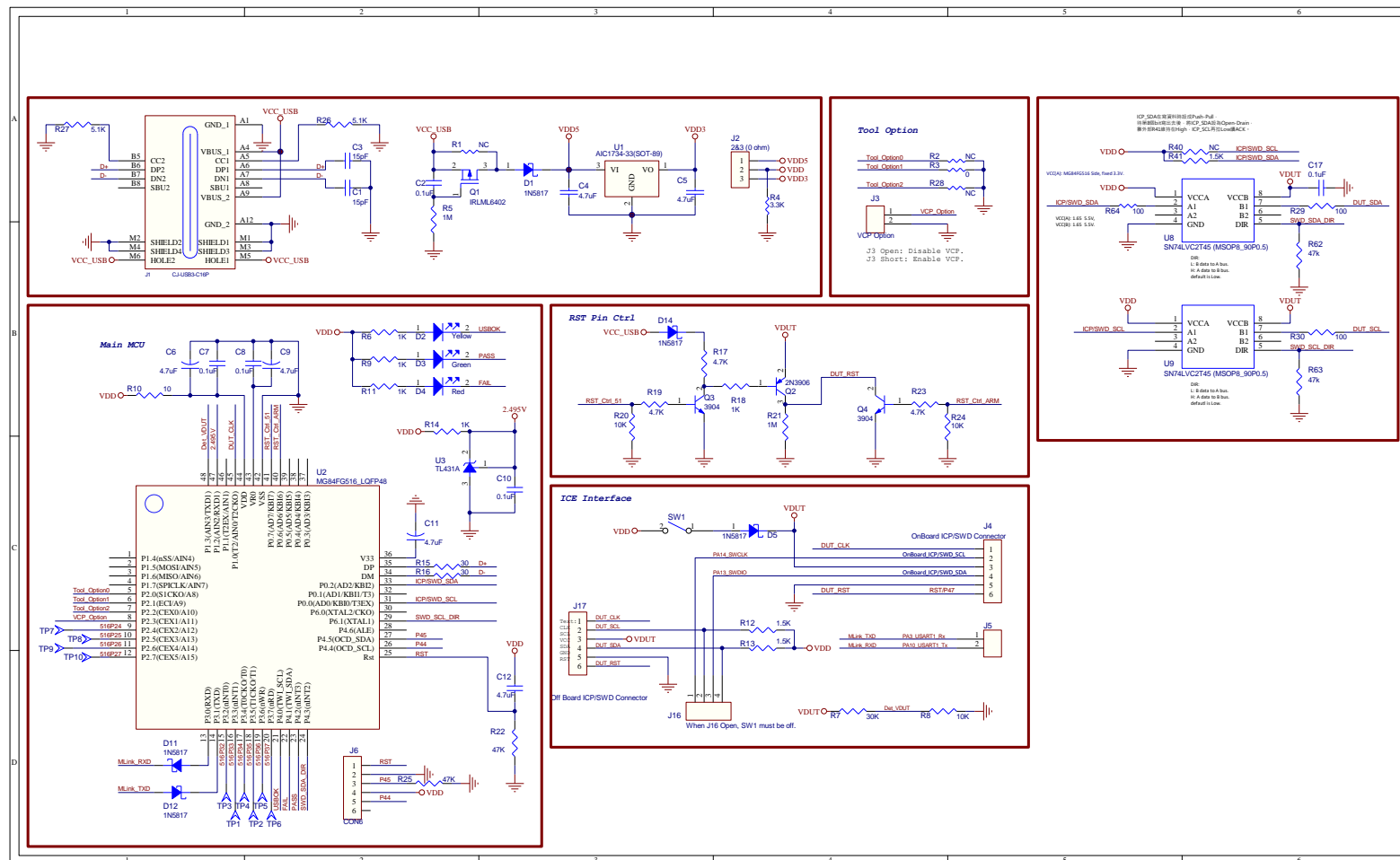
**600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 128000, 7200, 14400, 28800...**etc bps.

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

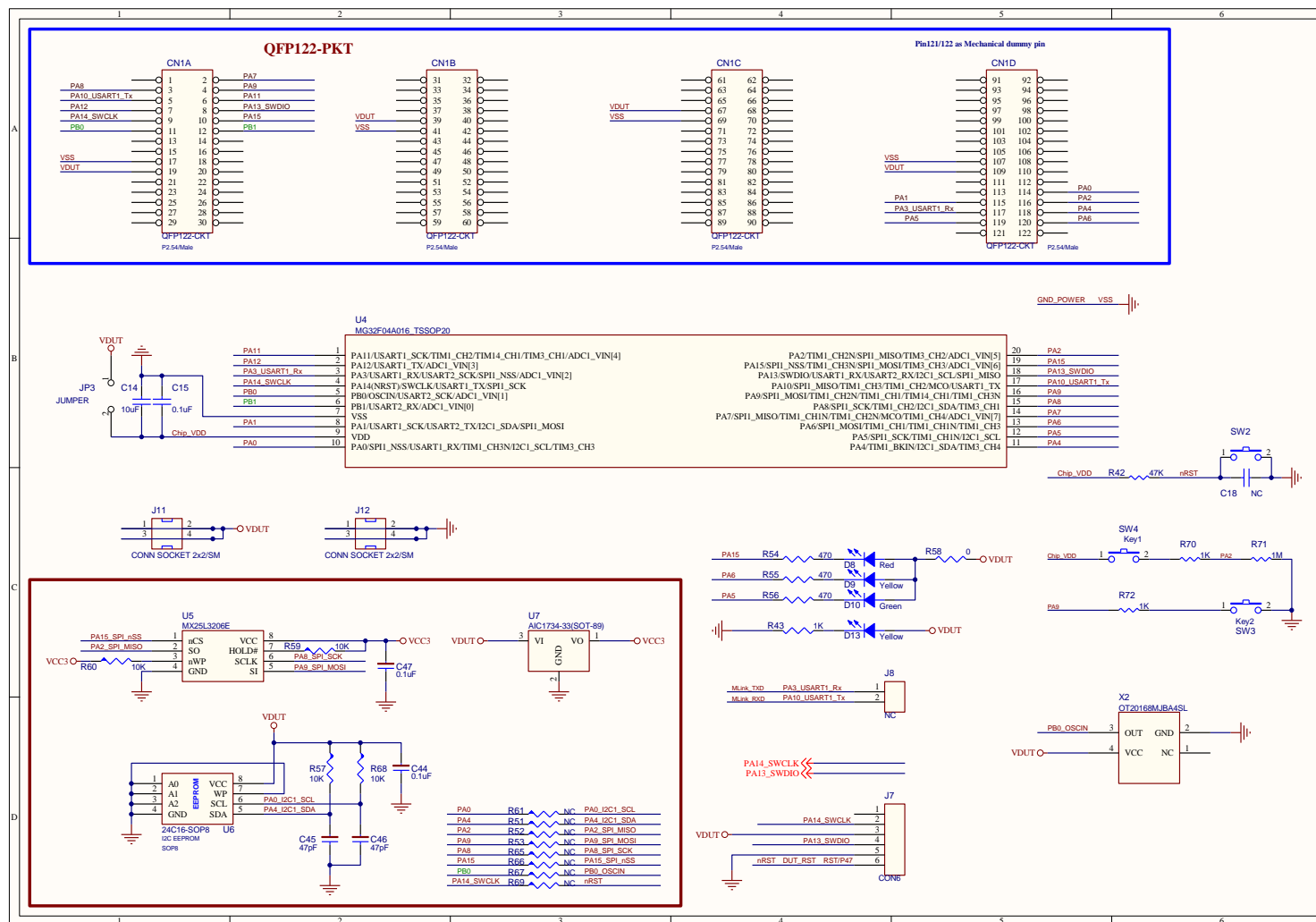
8. J17: When J16 open and SW1 off, MLink can program other DUT board through J17 connector.
9. D13: EV board power indicator LED.
10. D8, D9, D10: SMD LED.
11. U4: MG32F04A016 TSSOP-20 package.
12. JP3: User can measure MG32F04A016 operating current by connecting an ammeter.
13. SW2: The reset pin of MG32F04A016 is PA14, but PA14 is SWCLK function by default. If you want to enable the Reset function, you need to set it through FW. Pressing the button will trigger external reset signal to U4(MG32F04A016). It is NC default.
14. U5: SPI flash, user can choose a SPI flash then place on the position. It is NC default.
15. U6: I<sup>2</sup>C EEPROM, user can choose a I<sup>2</sup>C EEPROM then place on position. It is NC default.
16. J11: EV board VDUT connector.
17. J12: EV board GND connector.
18. U8: MG32F04A016 QFN-20 package. It is NC default.

## 1.3 Ev Board Circuit

### 1.3.1 MLink Circuit

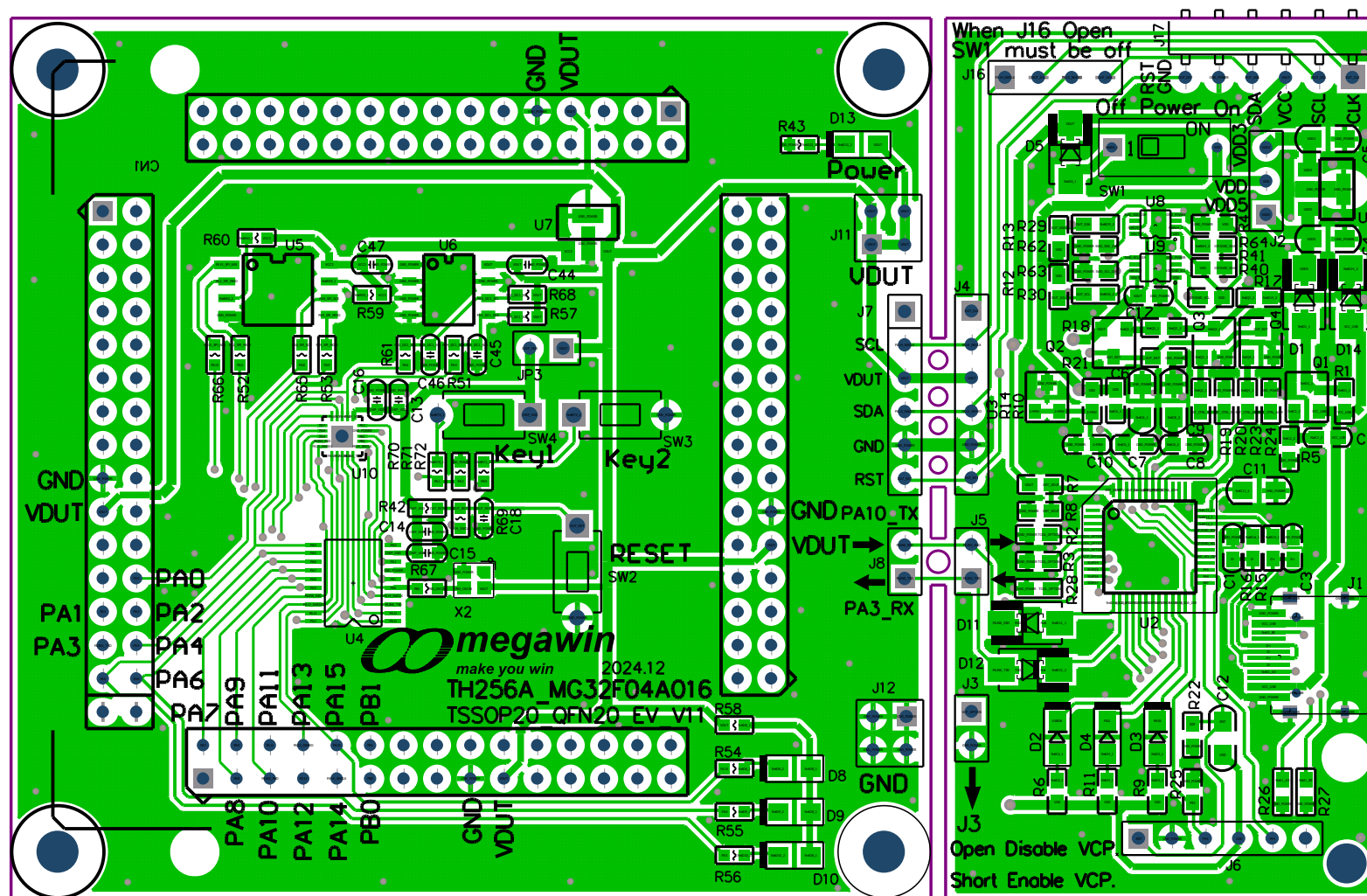


### 1.3.2 MG32F04A016 Circuit



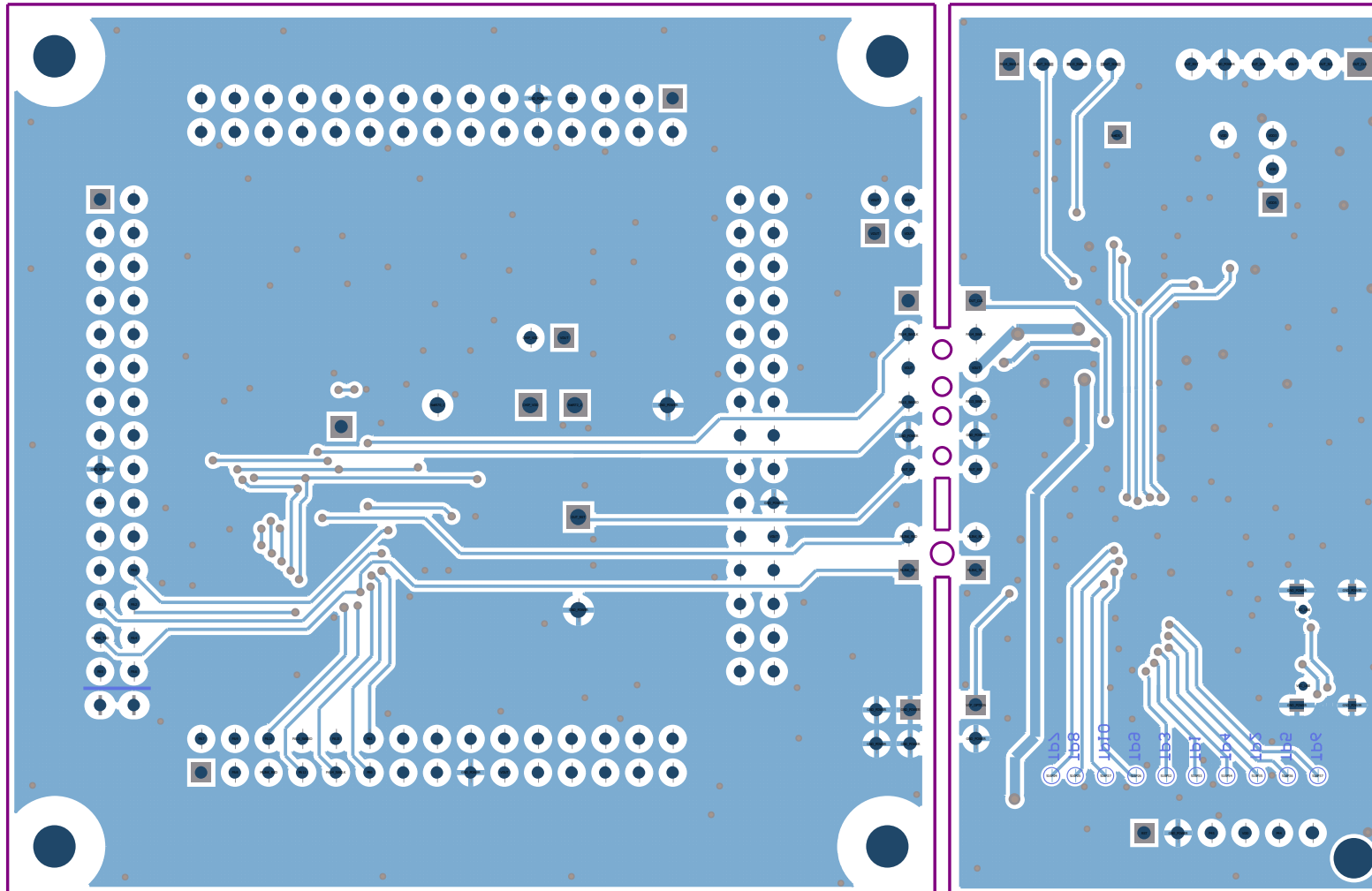
## 1.4 Ev Board PCB

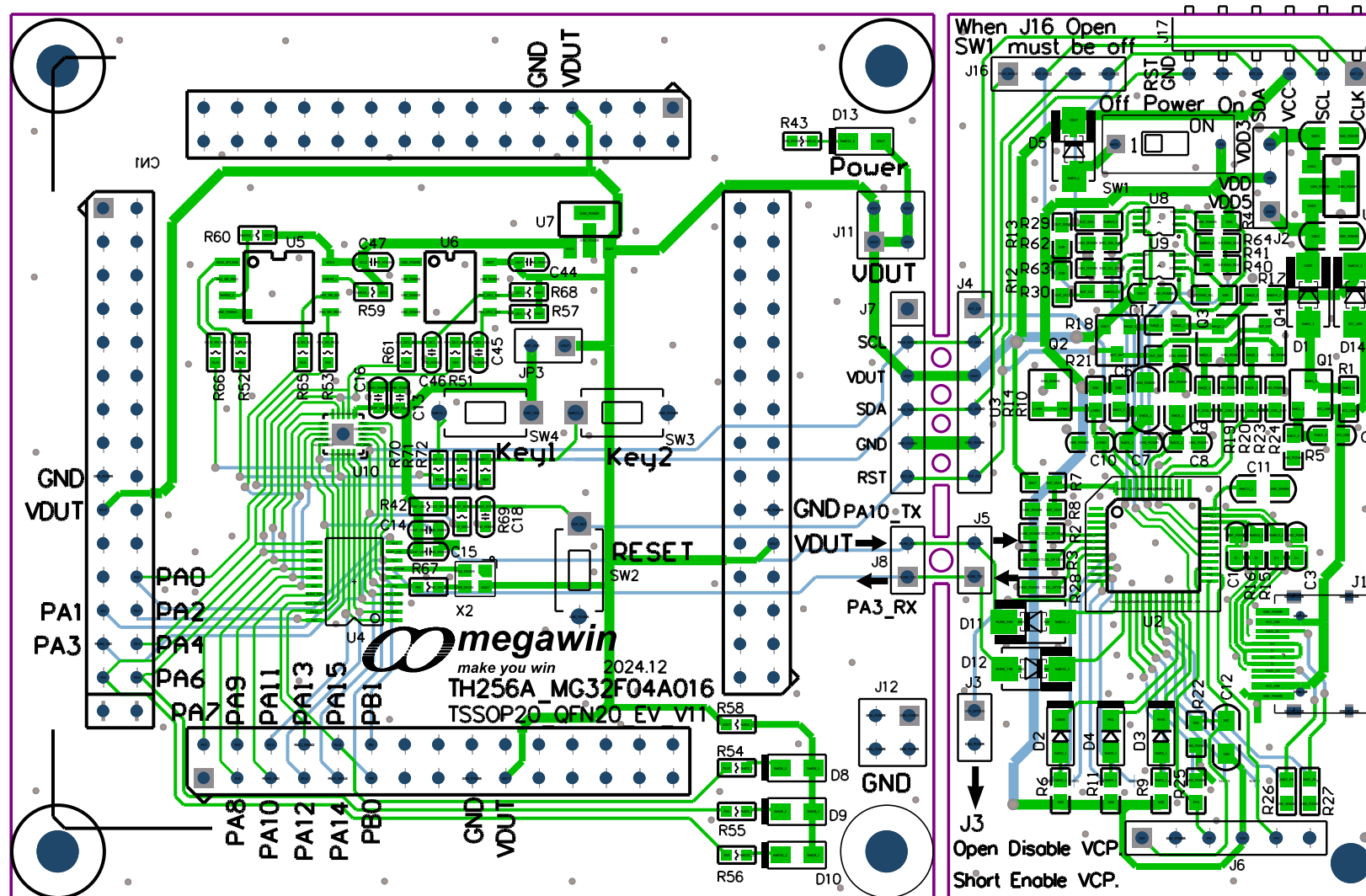
### Top





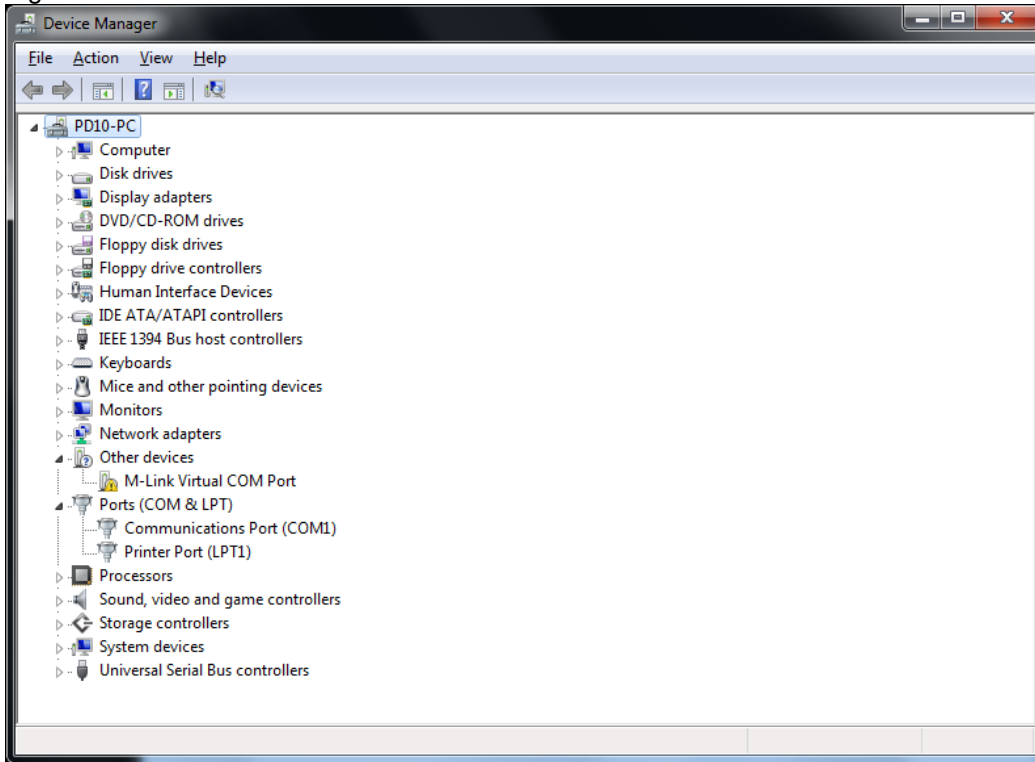
**Bottom**



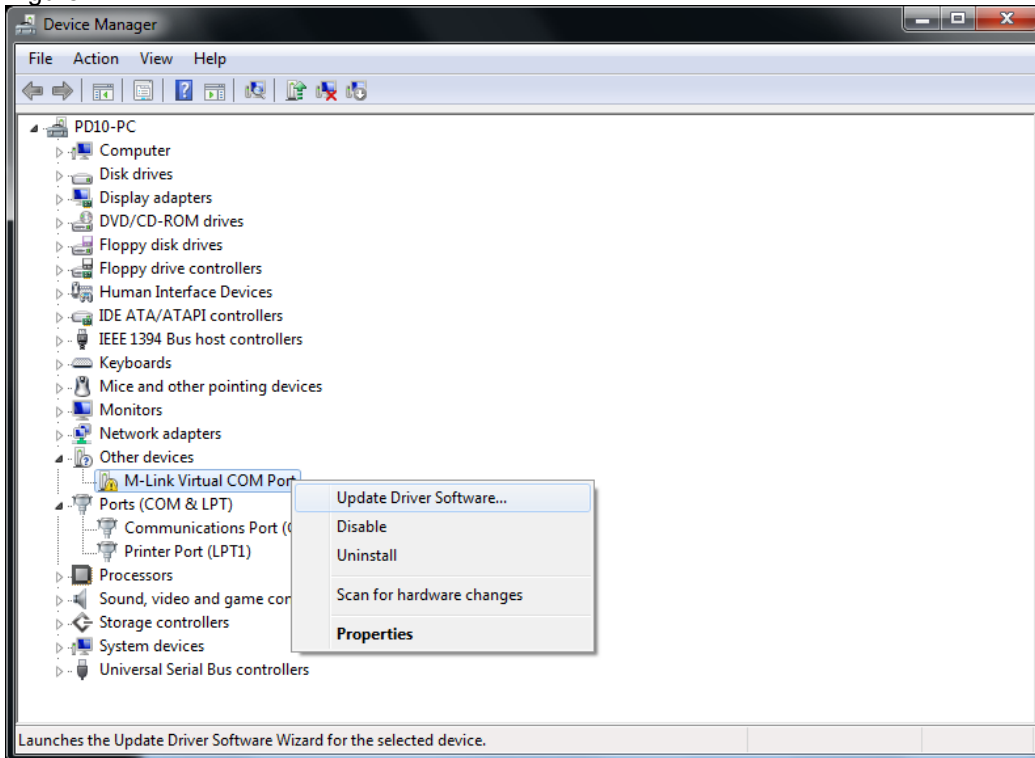


## 2. Driver Install

Step 1: The user short J3 plug MG32F04A016 EV board into any USB port in a PC, then open Device Manager.  
Figure 2-1

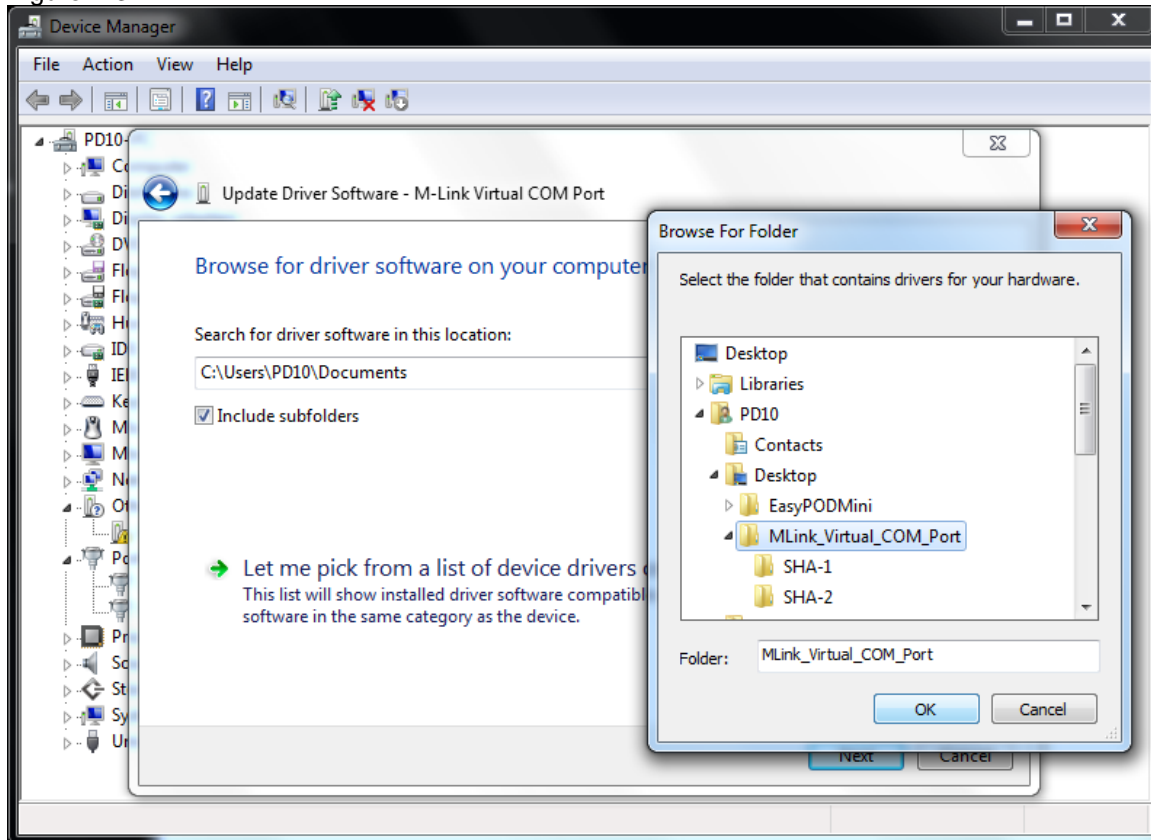


Step 2: Click “Right” key on Megawin MLink Virtual Com Port and “Update Driver Software”...  
Figure 2-2



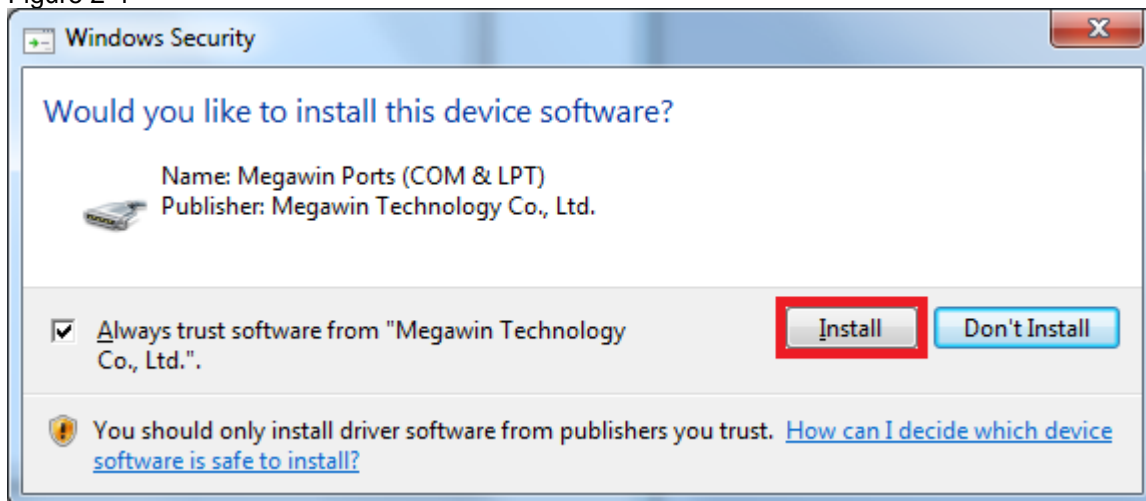
Step 3: Indicate Megawin MLink Virtual Com Port Driver path in the user's PC, OS will select SHA-1 or SHA-2 automatic.

Figure 2-3



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

Figure 2-4



Step 5: The user install driver successfully...

Figure 2-5

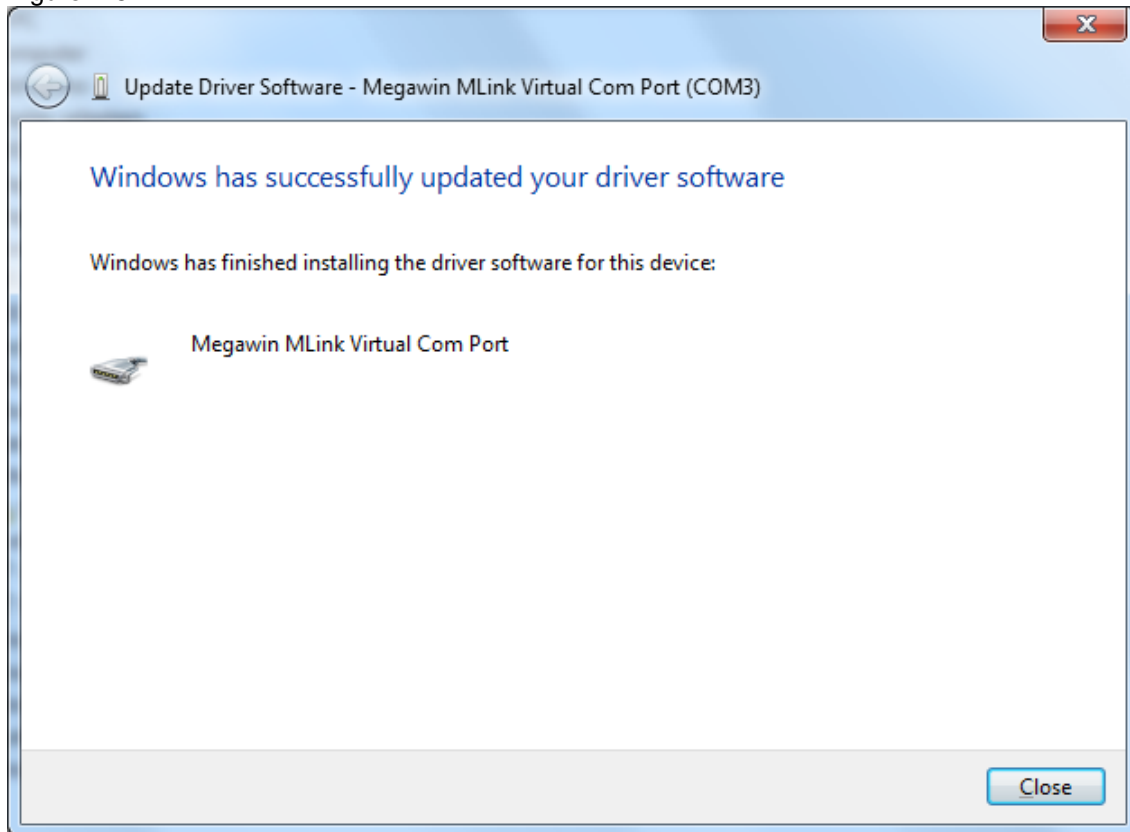
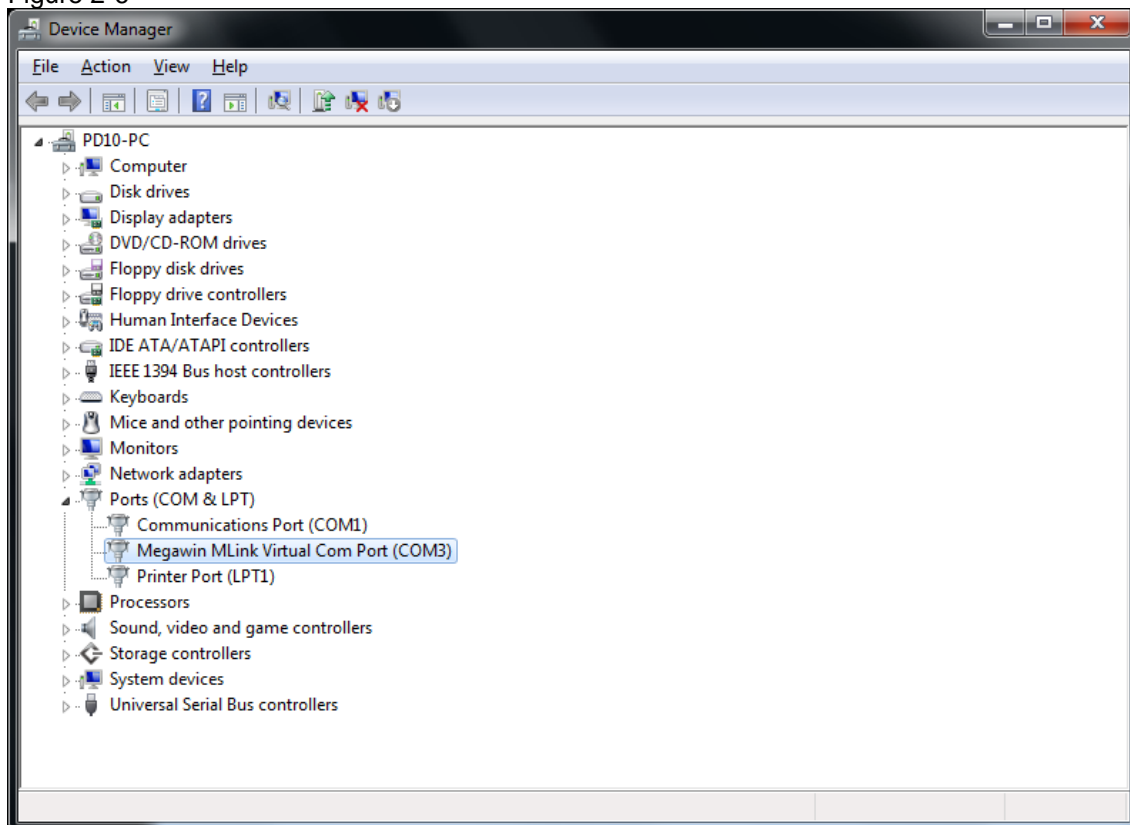


Figure 2-6





### 3. Revision History

Revision	Description	Date
V1.00	(1) New Create.	2024/11/12
V1.01	(1) Update Picture.	2025/03/19

## **4. Disclaimers**

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**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.

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