

# Demo Board Manual

# **megawin**

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**MG32F02**

***STN LCD Demo Set  
(MG04-07)  
Using Manual***

***Version 0.3***

***Date 2024/9/20***

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## 1. Introduction

### PCB Version

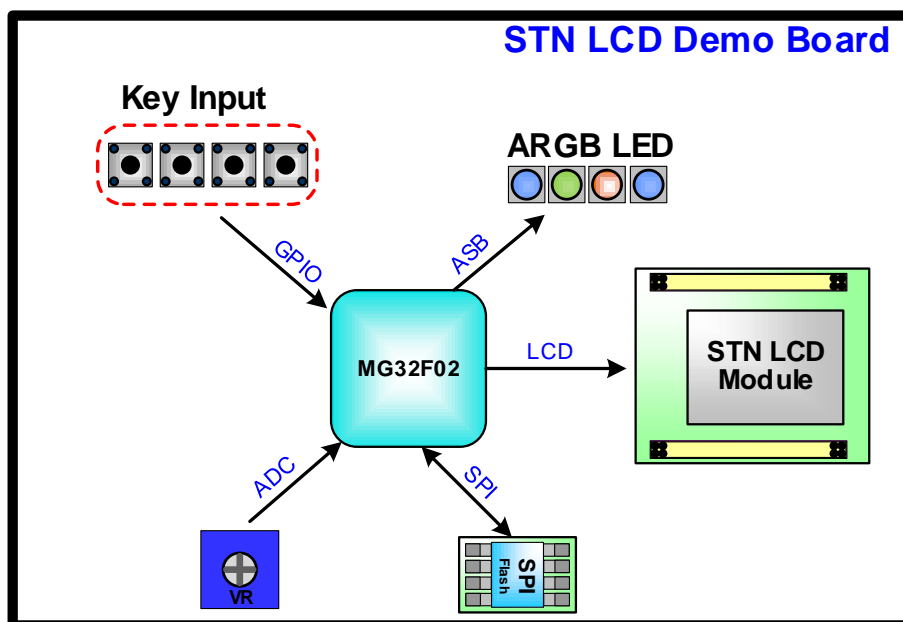
MG04-07(MG32F02\_LCD)

### Features

1. STN LCD Display : Display text and figure pattern on Mono STN LCD.
2. ARGB LED Display : Display serial pattern on ARGB LED\*4.
3. Button Key: Detect multi-key input by GPIO function and show message on LCD.
4. SPI Flash: Store LCD or user data optional.

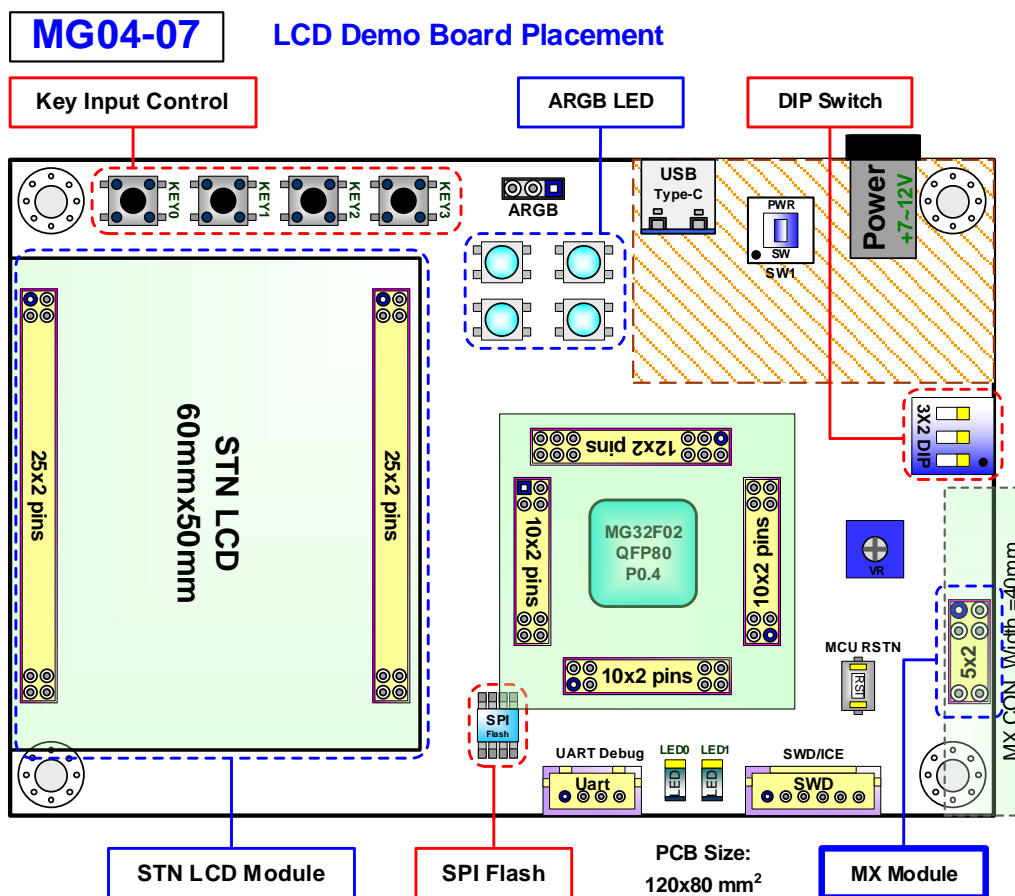
(The SPI Flash function is not implemented in Demo board default project code.)

### System Block

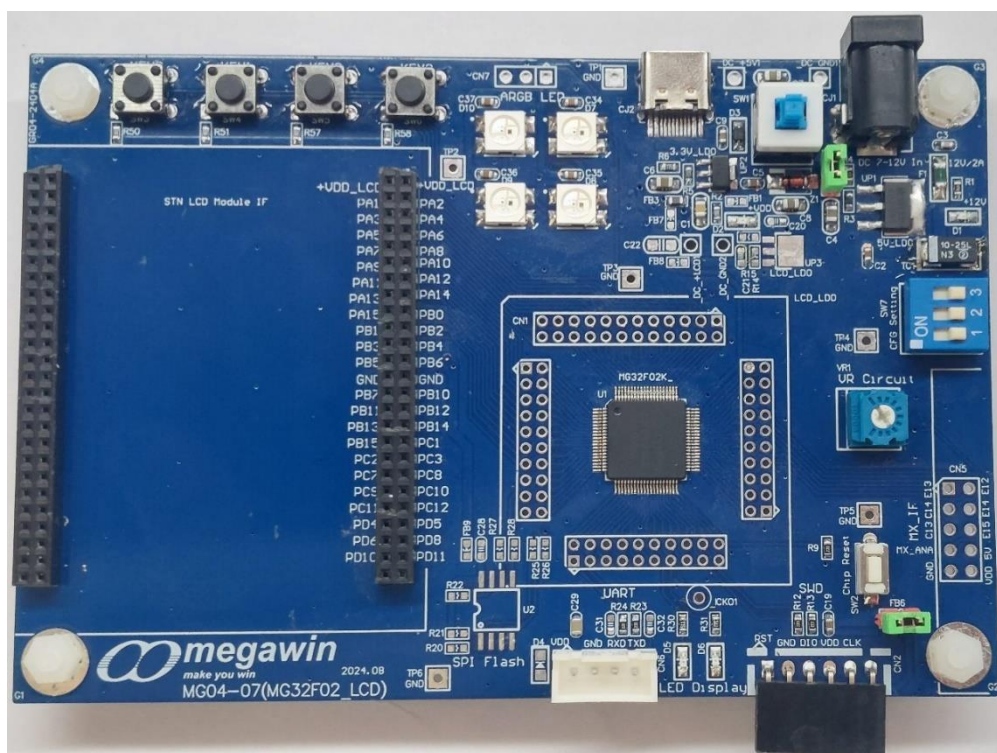


## 2. PCB Information

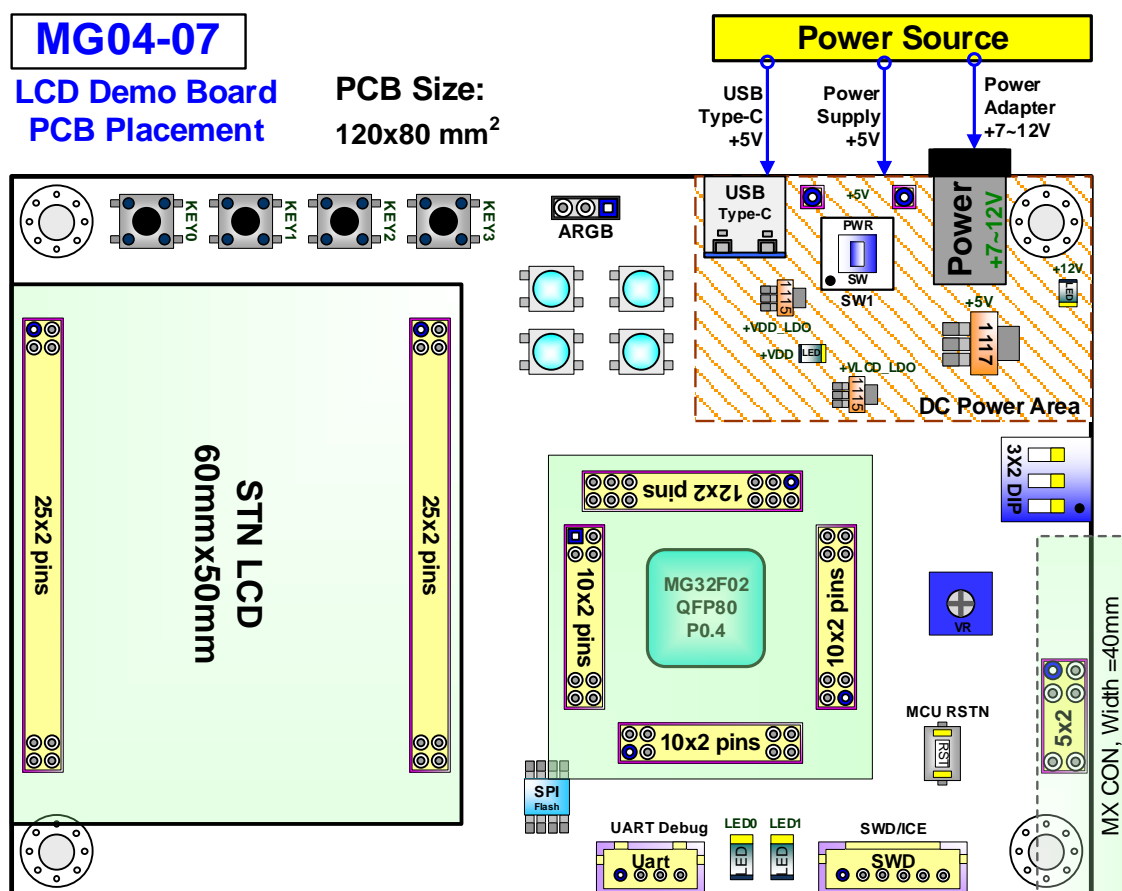
### PCB Placement and Function Block Diagram



### Main Board Pictures



## PCB Outline and Functions

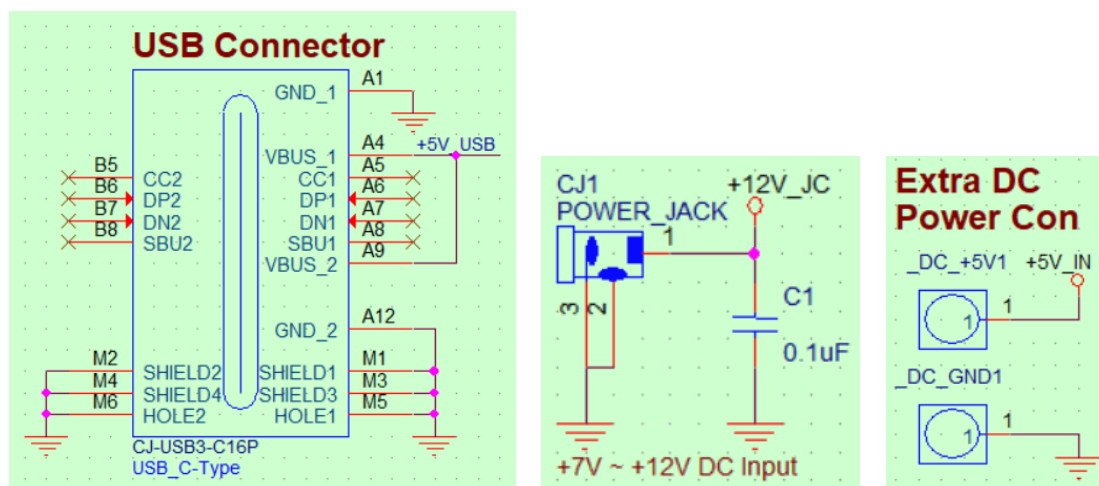


### ◆ DC Input Power Source

User can input +5 volt DC power to the C-type USB connector (CJ2) from external USB power source or optional on board +5V/GND connection holes from external power supply. The push button SW1 is used to turn on/off the input DC +5V power.

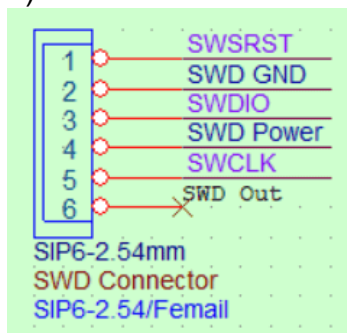
*[Notify]: Please use “Type-A to Type-C” cable when power inputs from C-type connector.*

These is one optional +7~12 volt DC input to the DC power jack (CJ1) from external power adapter. The input +7~12 volt DC power can also generate the +5 volt DC power by through the optional +5V\_LDO power regulator.



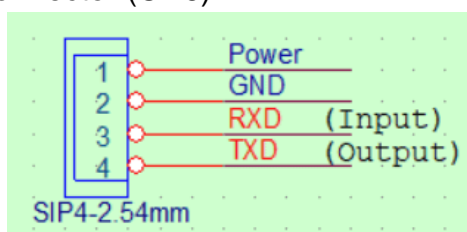
### ◆ SWD Connector

User can connect the MG32F02x MCU to the external SWD controller or debug ICE by through the SWD connector (CN2).



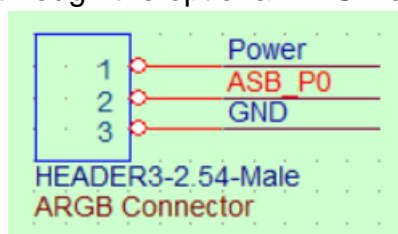
### ◆ UART Connector

User can connect the MG32F02x MCU to the external UART controller or PC COM port by through the UART Debug connector (CN6).



### ◆ ARGB LED and ARGB Connector

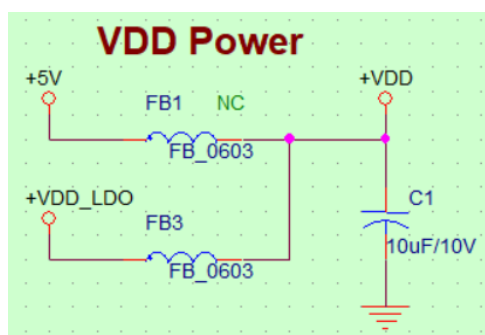
There are four on-board ARGB LED parts. User can connect the MG32F02x MCU to the external ARGB LED strip line through the optional ARGB connectors (CN7).



## PCB Design Options

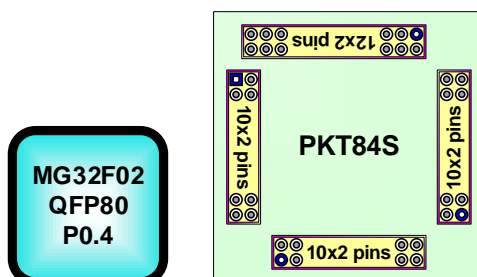
### ◆ VDD Power Option

The VDD power are default from +VDD\_LDO. The +VDD\_LDO is outputted from the UP1 LDO about +3.33 volt. Please notify the operation voltage of actual used SPI flash.



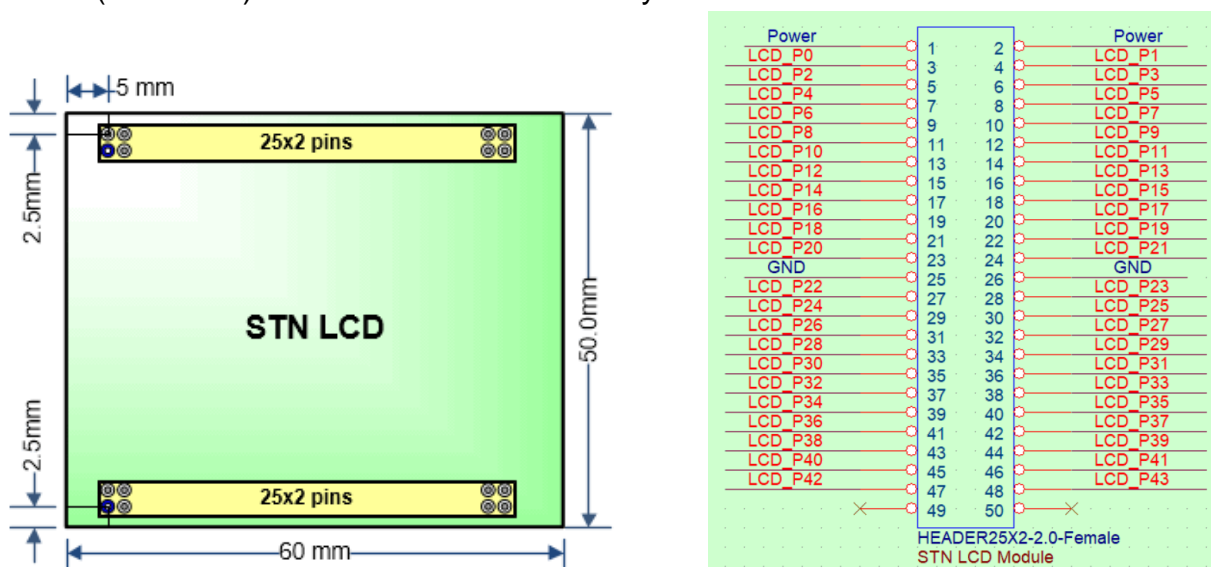
## Module Board and Components

1. MG32F02Nxxx/Kxxx : 32-Bit ARM Cortex M0 MCU ~ directly chip on board or PKT84S MCU daughter board (MG07-03/04/05/06) option

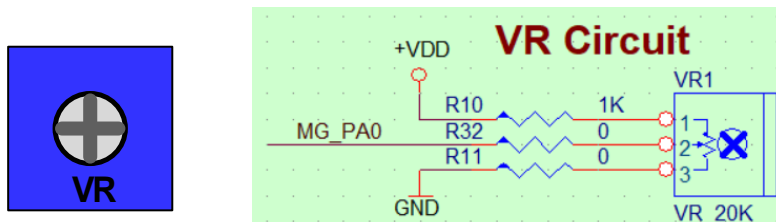


2. STN LCD Module : Display STN LCD with LCD driver interface

User can connect the MG32F02x MCU to the external STN LCD glass through the LCD connector (CN3/CN4). CN4 connector is a dummy connector.



3. Variable Resistor : The variable resistor is used to do as a potentiometer. The voltage of potentiometer can be inputted to MCU ADC. User can get the ADC code and calculate to show 0 ~ 100 on LCD.

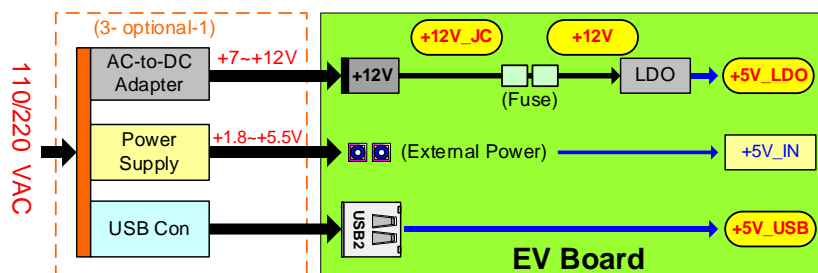


4. Mono LED : There are two on- board mono LED parts of LED0 and LED1.

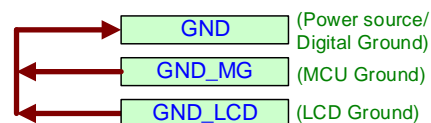


## PCB Power Connection

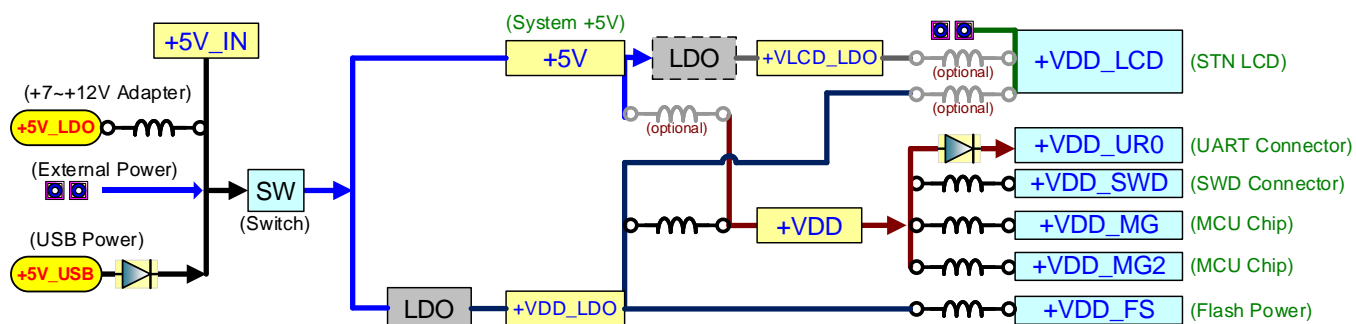
Power Supply Source Diagram



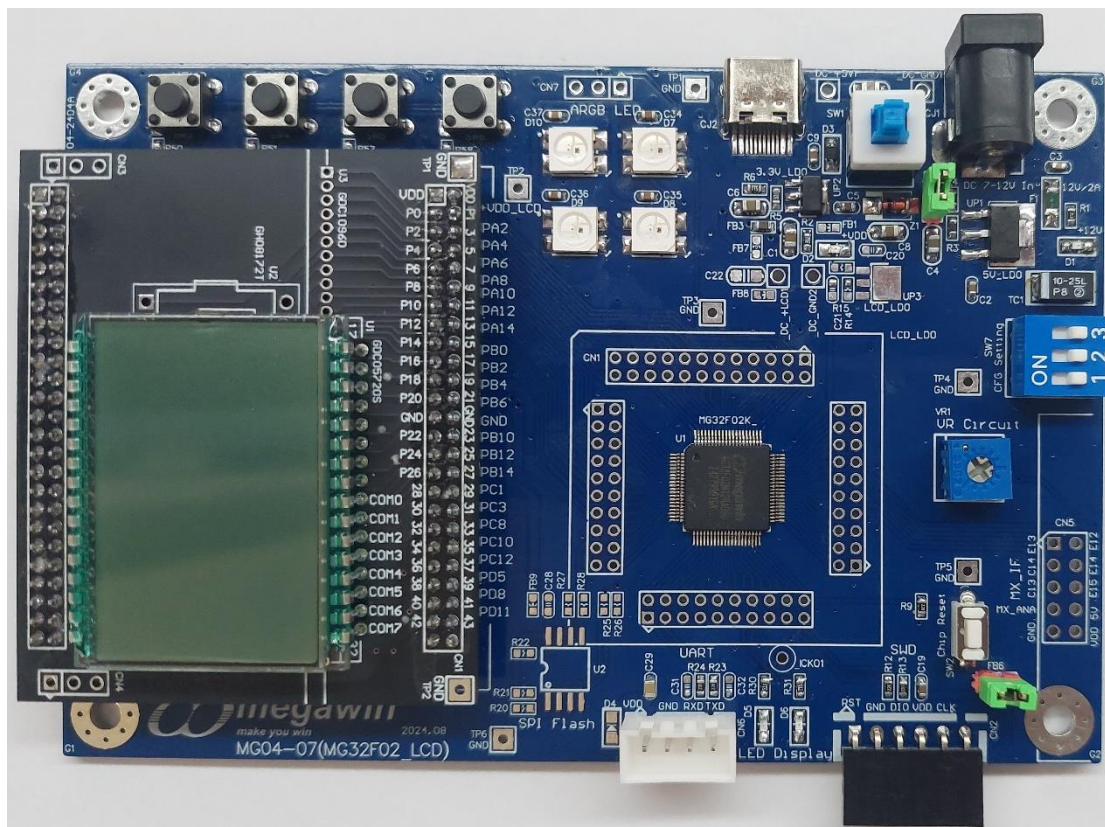
Ground Connection Diagram



Power Connection Diagram



## PCB Assembly

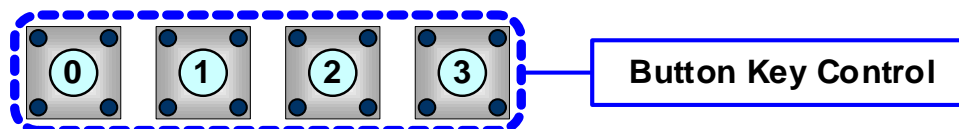




### 3. Board Function

#### Button Keys

The keys of 0, 1, 2 and 3 are used for STN LCD display control by push-pop button-key.



#### ◆ <KEY0>

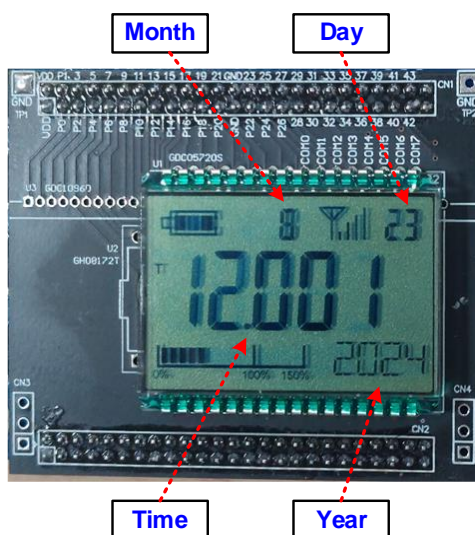
User can directly press this key to enable or disable STN LCD display.

#### ◆ <KEY1>

User can directly press this key to enable or disable STN LCD blinking display.

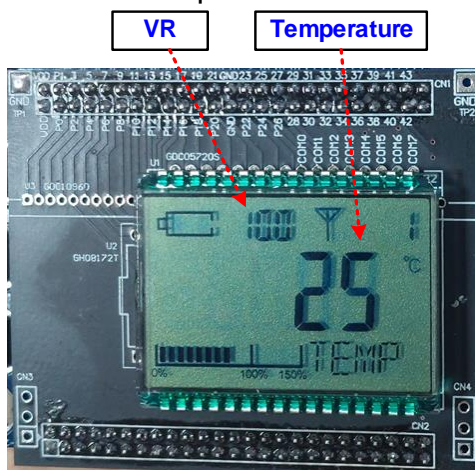
#### ◆ <KEY2>

User can directly press this key to switch STN LCD to day/time display mode. This mode can show year, month, day and time. Every time PCB power-on, the time restart at 12:00.



#### ◆ <KEY3>

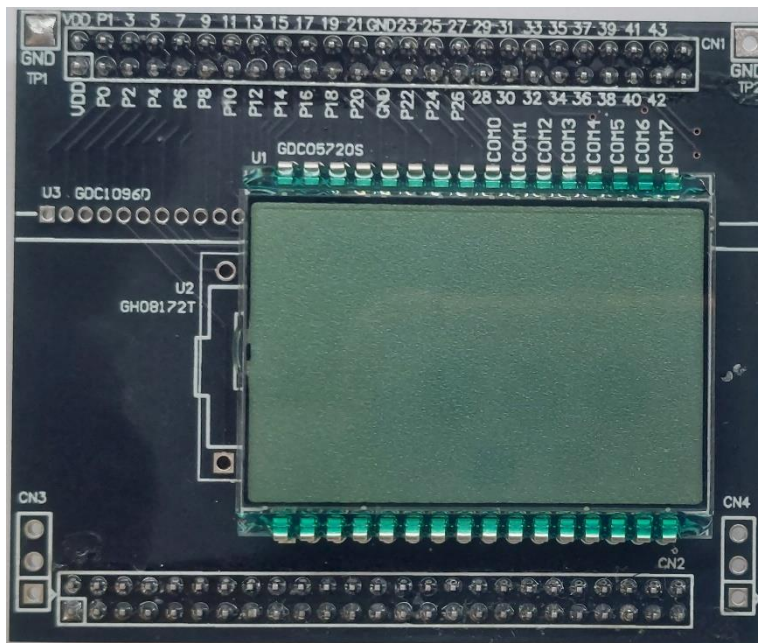
User can directly press this key to switch STN LCD to measurement display mode. This mode can show temperature and 0 ~ 100 potentiometer value from on board variable resistor.



## 4. Test List

### STN LCD Module List

1. DB09-02 : STN LCD ~ GDC05720S(T)P10V3T



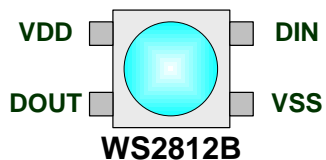
### SPI Flash Part List

1. MXIC MX25L3206E 32M-bit
2. MXIC MX25L12835F 128M-bit
3. Winbond W25Q16BV 16M-bit



### ARGB Part List

1. Worldsemi : WS2812B



## 5. Revision History

Revision V0.3 (2024_0920)		Chapter
1	Add descriptions about C-type USB connector in the section of "DC Input Power Source".	2
Revision V0.2 (2024_0910)		Chapter
1	Update "PCB Placement and Function Block" diagram.	2
2	Add related circuit diagrams. PCB Placement and Function Block Diagram.	2
3	Update "PCB Power Connection" diagram.	2
4	Add the section of "PCB Design Options".	3
Revision V0.1 (2024_0830)		Chapter
1	Initial version	