Demo Board Manual

megawin

MG32F02

STN LCD Demo Set (MG04-07) Using Manual

Version 0.3

Date 2024/9/20

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1. Introduction

PCB Version

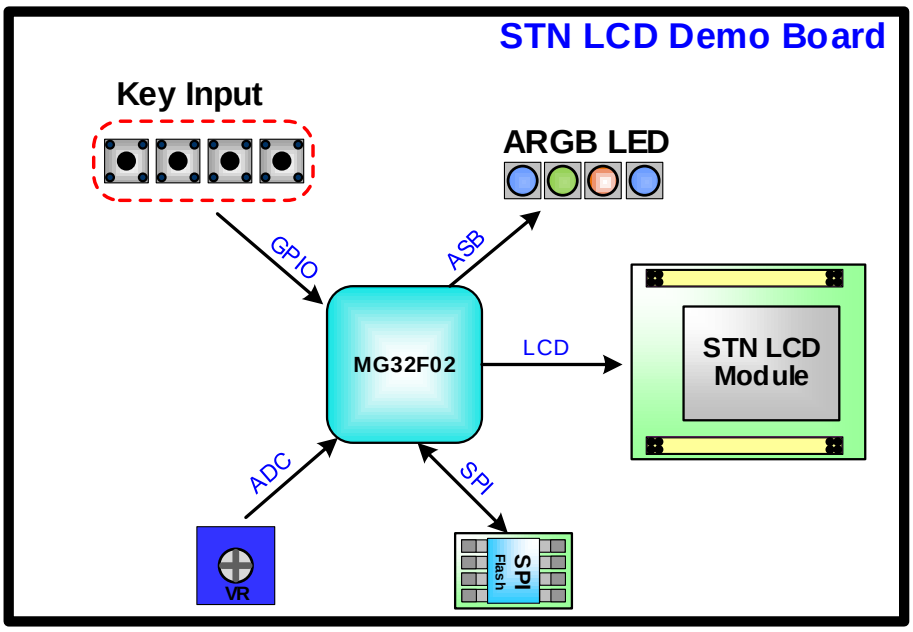
MG04-07(MG32F02_LCD)

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.

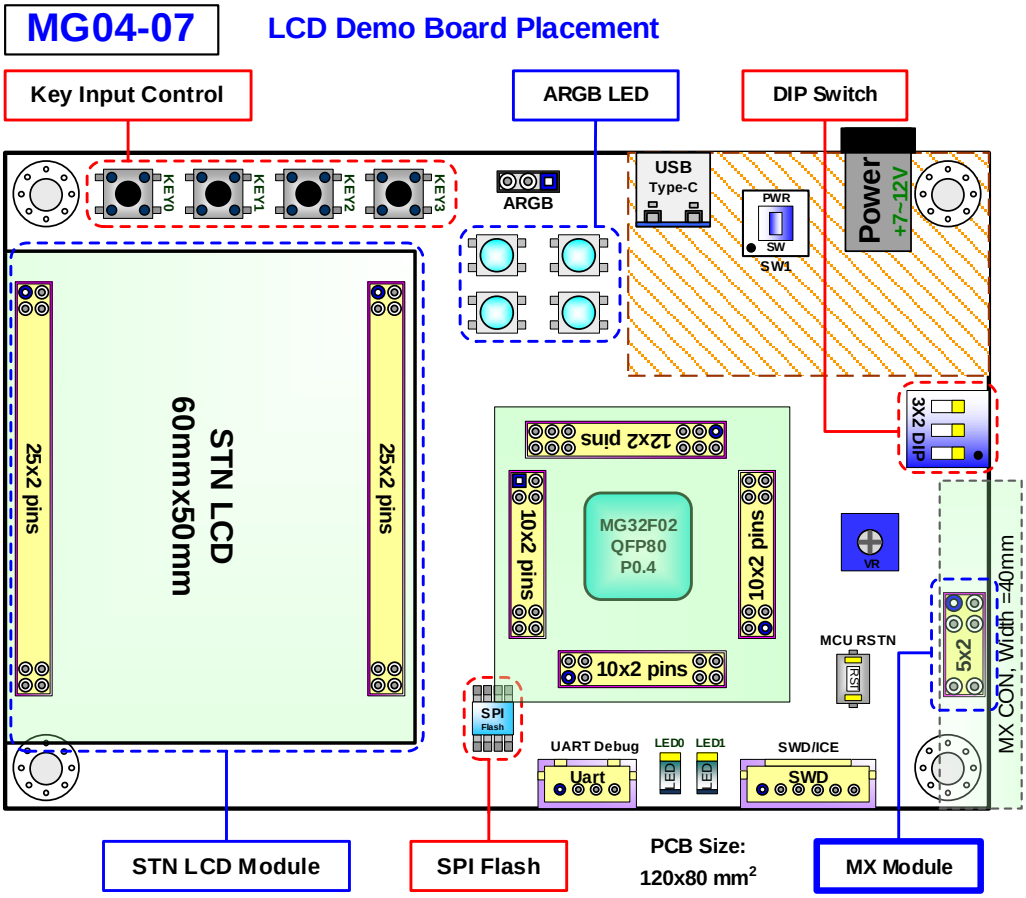
(The SPI Flash function is not implemented in Demo board default project code.)

System Block

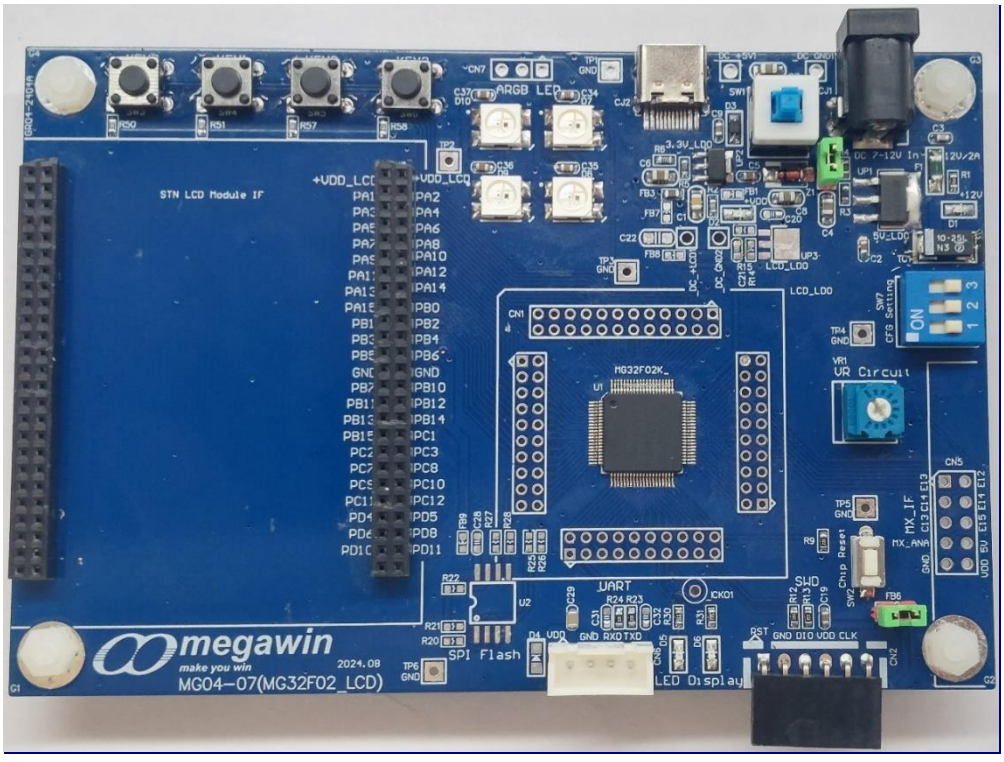


2. PCB Information

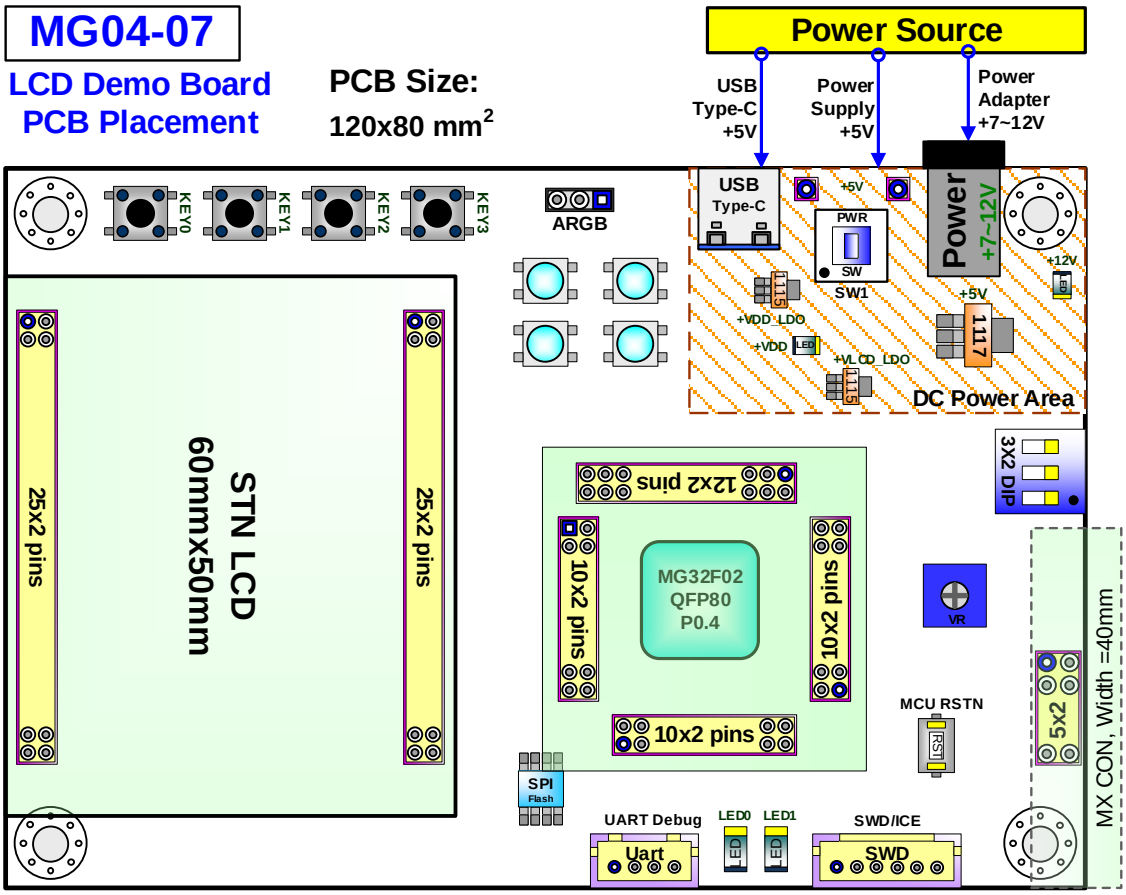
PCB Placement and Function Block Diagram



Main Board Pictures



PCB Outline and Functions

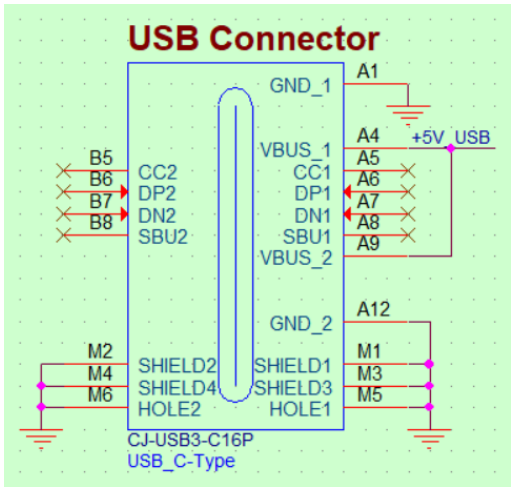


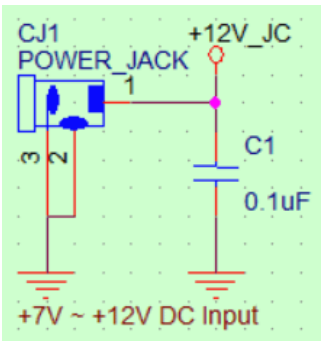
◆ DC Input Power Source

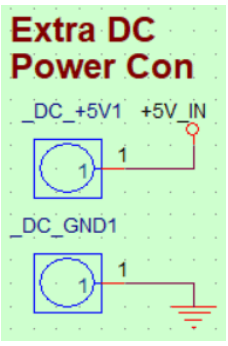
User can input +5 volt DC power to the C-type USB connector (CJ2) from external USB power source or optional on board +5V/GND connection holes from external power supply. The push button SW1 is used to turn on/off the input DC +5V power.

[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.

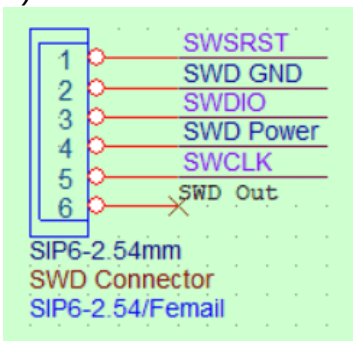






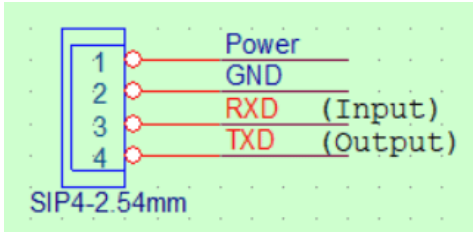
- **SWD Connector**

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



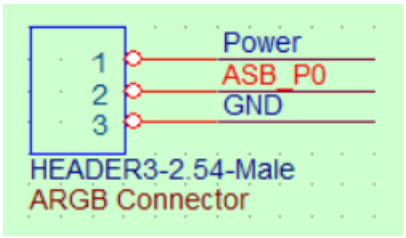
- **UART Connector**

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**

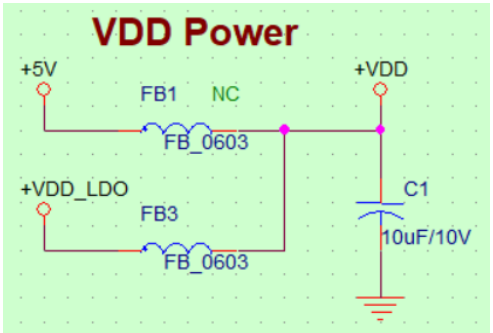
There are four on-board ARGB LED parts. User can connect the MG32F02x MCU to the external ARGB LED strip line through the optional ARGB connectors (CN7).



PCB Design Options

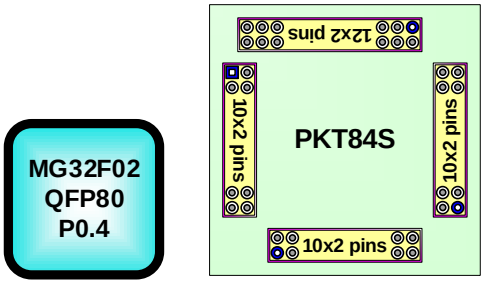
- **VDD Power Option**

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.



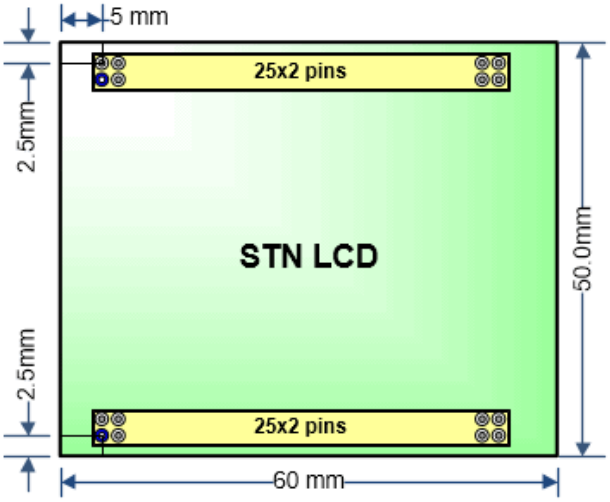
Module Board and Components

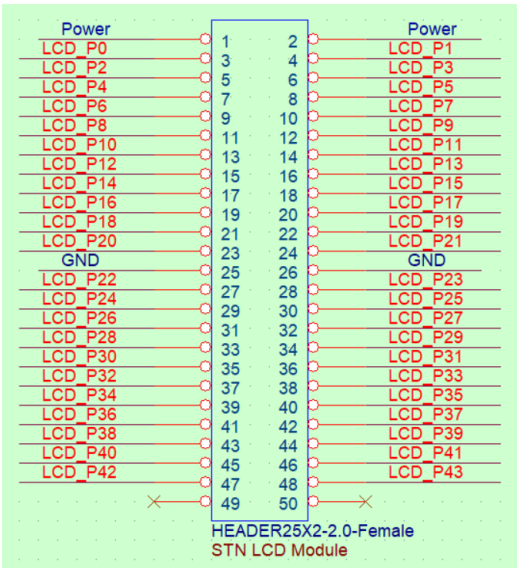
1. MG32F02Nxxx/Kxxx : 32-Bit ARM Cortex M0 MCU ~ directly chip on board or PKT84S MCU daughter board (MG07-03/04/05/06) option



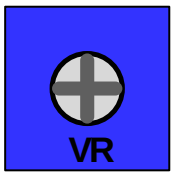
2. STN LCD Module : Display STN LCD with LCD driver interface

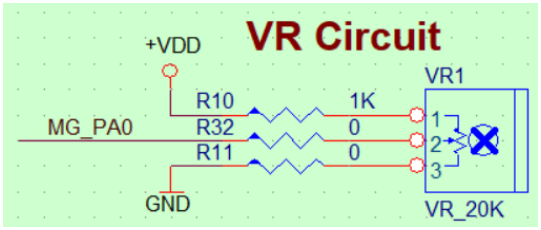
User can connect the MG32F02x MCU to the external STN LCD glass through the LCD connector (CN3/CN4). CN4 connector is a dummy connector.





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.

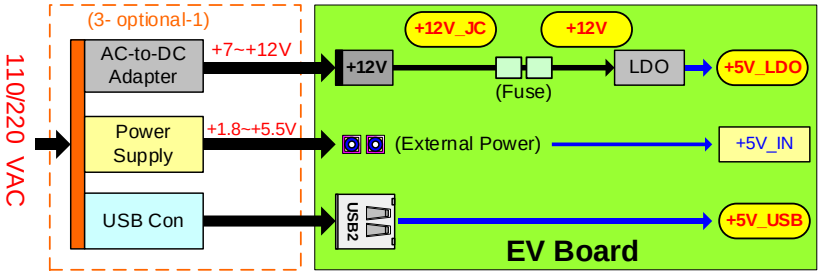




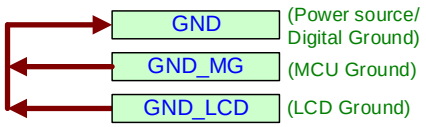
4. Mono LED : There are two on- board mono LED parts of LED0 and LED1.

PCB Power Connection

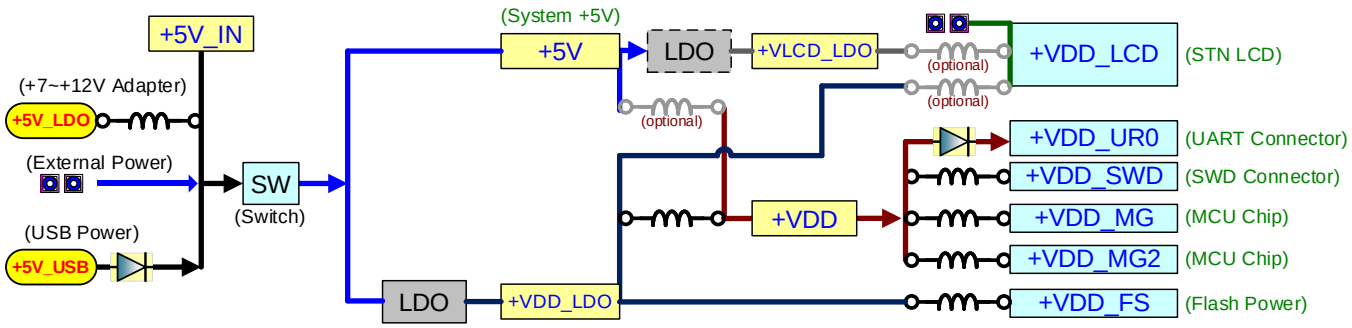
Power Supply Source Diagram



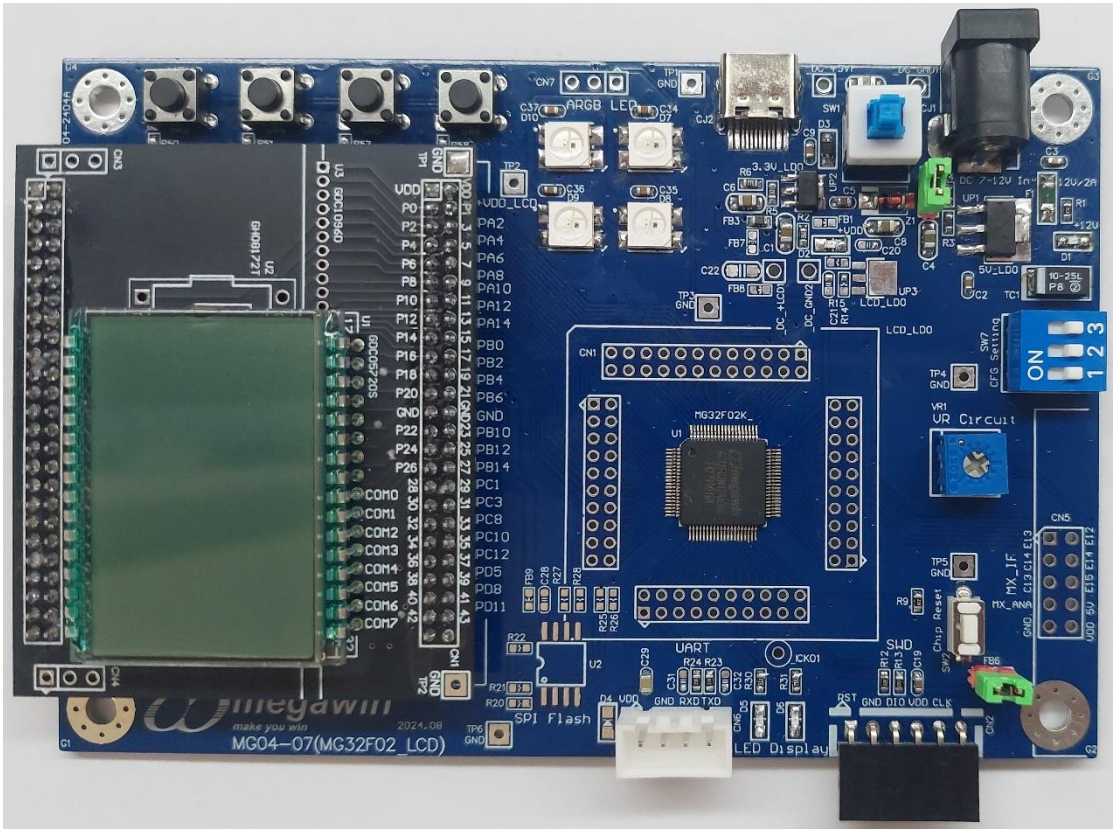
Ground Connection Diagram



Power Connection Diagram



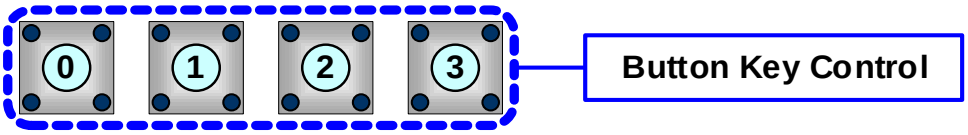
PCB Assembly



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>**

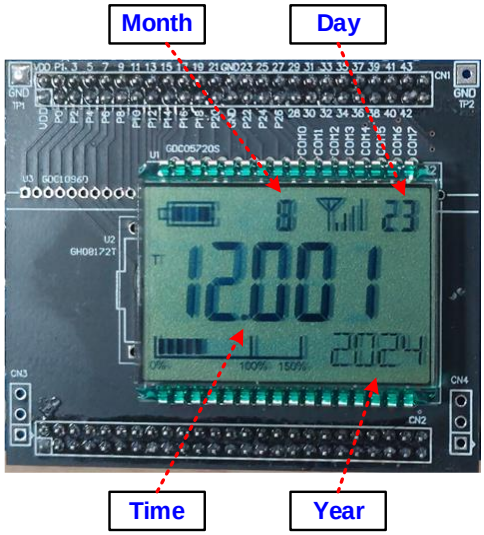
User can directly press this key to enable or disable STN LCD display.

- **<KEY1>**

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

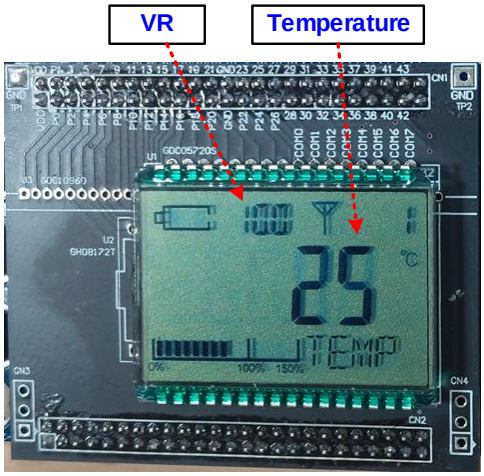
- **<KEY2>**

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>**

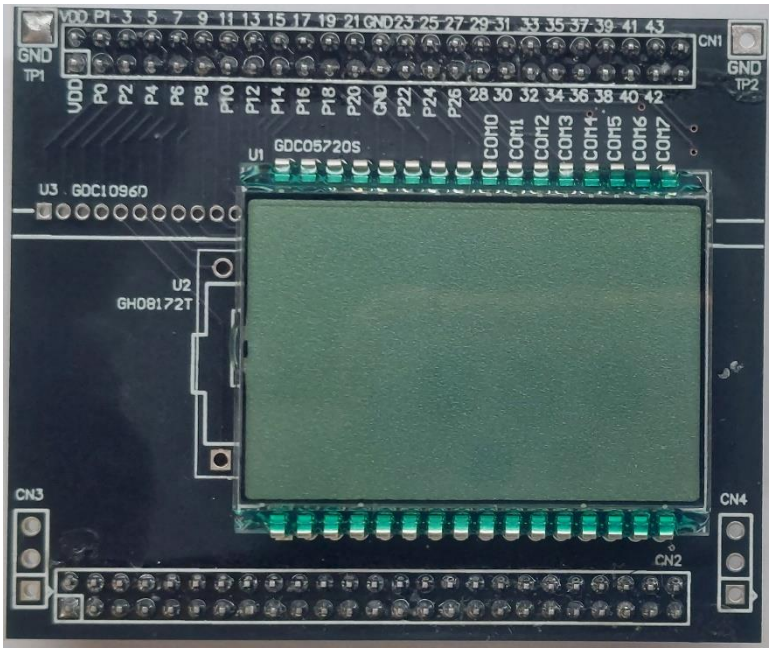
User can directly press this key to switch STN LCD to measurement display mode. This mode can show temperature and 0 ~ 100 potentiometer value from on board variable resistor.



4. Test List

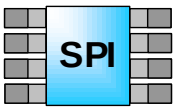
STN LCD Module List

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



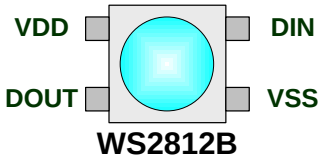
SPI Flash Part List

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	