

ET-PIC USB / 4550

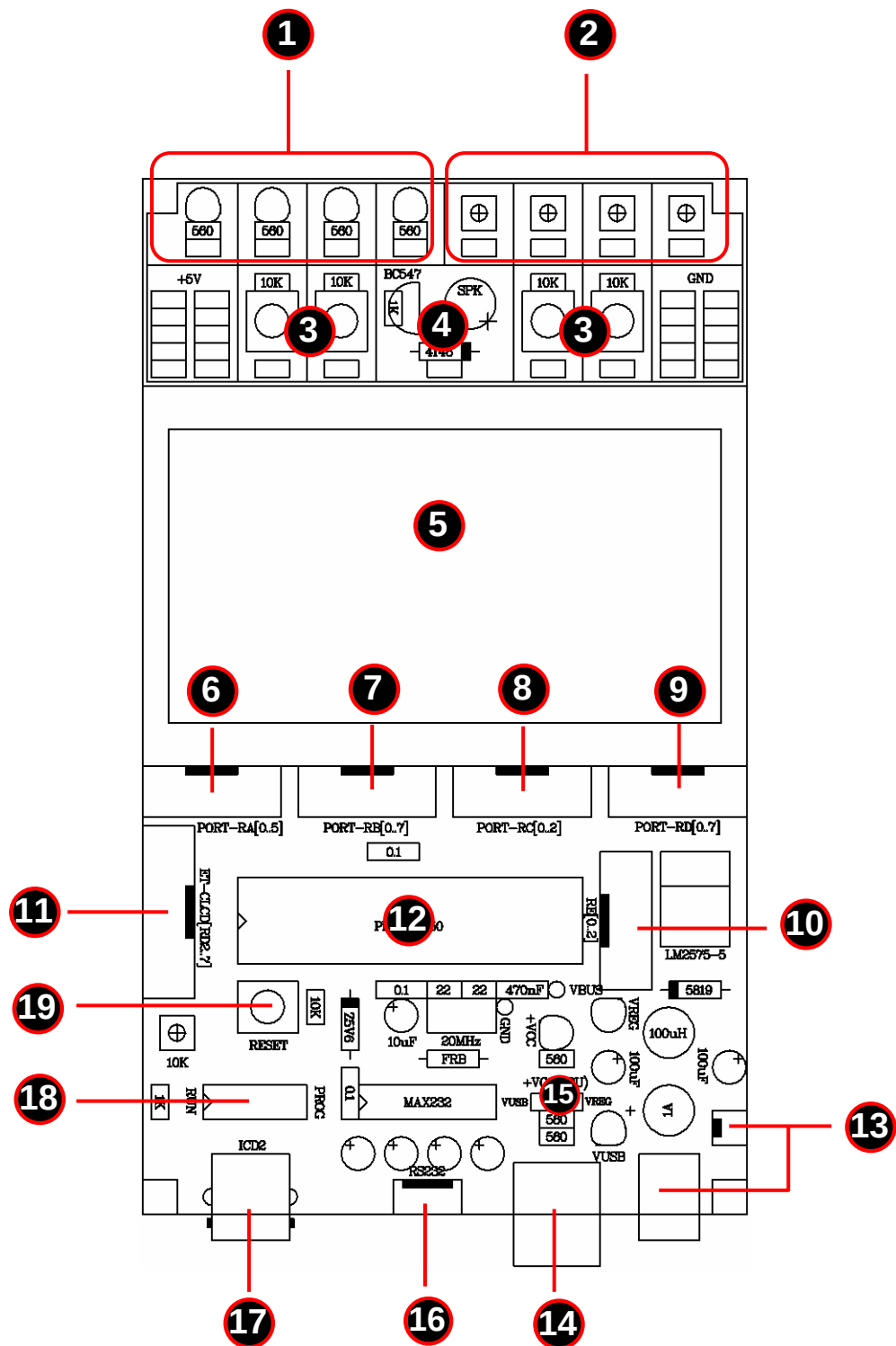
ET-PICUSB/4550 is a PIC Board Microcontroller from Microchip Co., Ltd. that develops PIC18F4550 Microcontroller to be a board. The remarkable specifications of PIC18F4550 is Module USB (Universal Serial Bus) that is widespread communication technology today because of its high speed to communicate data and more convenient to interface. Nowadays, most computers have not RS-232 Port or LPT Port but most connective components are designed to use USB Port. So, ET-PIC USB/4550 is the most suitable device to develop Microcontroller and suitable to learn and study technology of USB communication.

Table shows specifications of PIC18F4550 Microcontroller

Specifications	PIC18F4550
Operating Frequency	DC – 48 MHz
Program Memory (Bytes)	32768
Data Memory (Bytes)	2048
Data EEPROM Memory (Bytes)	256
Interrupt Sources	20
I/O Ports	Ports A, B, C, D, E
Timers	4
Capture/Compare/PWM Modules	1
Enhanced Capture/Compare/PWM Modules	1
Universal Serial Bus (USB) Module	1
Serial Communications	MSSP, Enhanced USART
Streaming Parallel Port (SPP)	Yes
10-bit Analog-to-Digital Module	13 Input Channels
Resets (and Delays)	POR, BOR, RESET Instruction, Stack Full, Stack Underflow (PWRT, OST), MCLR (optional), WDT
Programmable High/Low-Voltage Detect	Yes
Programmable Brown-out Reset	Yes
Instruction Set	75 Instructions; 83 with Extended Instruction Set enabled
Packages	40-pin PDIP 44-pin QFN 44-pin TQFP

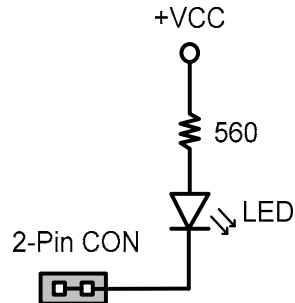
▪ **General Specifications of Board**

- Use 40 PIN PIC18F4550 Microcontroller
- Signal Crystal Oscillator 20 MHz(can use PLL to 48 MHz)
- 5 of 10 Pin I/O Port (under standard arrangement of ETT)
- 1 Port of Circuit Driver RS232
- 1 Port of ET-CLCD to interface LCD (under standard arrangement of ETT)
- Connector ICD2 to download program and Switch Run/Program
- 4 Channel LED to test Output
- 4 Channel Switch BUTTON to test Input
- 4 Channel 0-5V Voltage Generator from VR to test Module A/D
- Mini Speaker
- Switching Regulator to convert DC Input to be 5V
- Connector VCC and GND

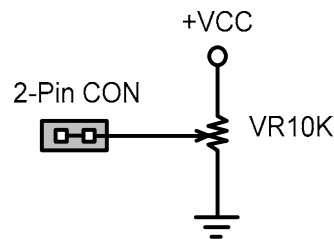


Detailed description

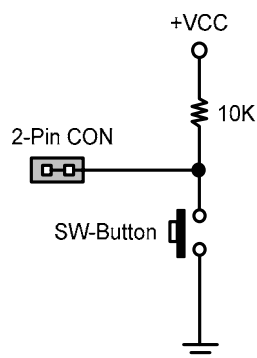
- **No.1** is Test I/O LED that consists of 4 LED as shown in the circuit below.



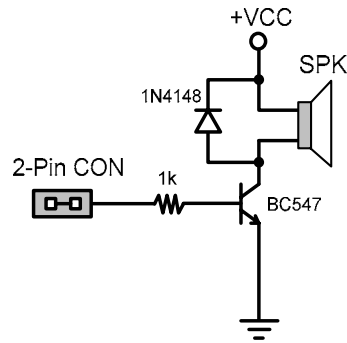
- **No.2** is 4 Test Voltage Analog that can adjust voltage from 0V to 5V and the method to interface circuit is shown below.



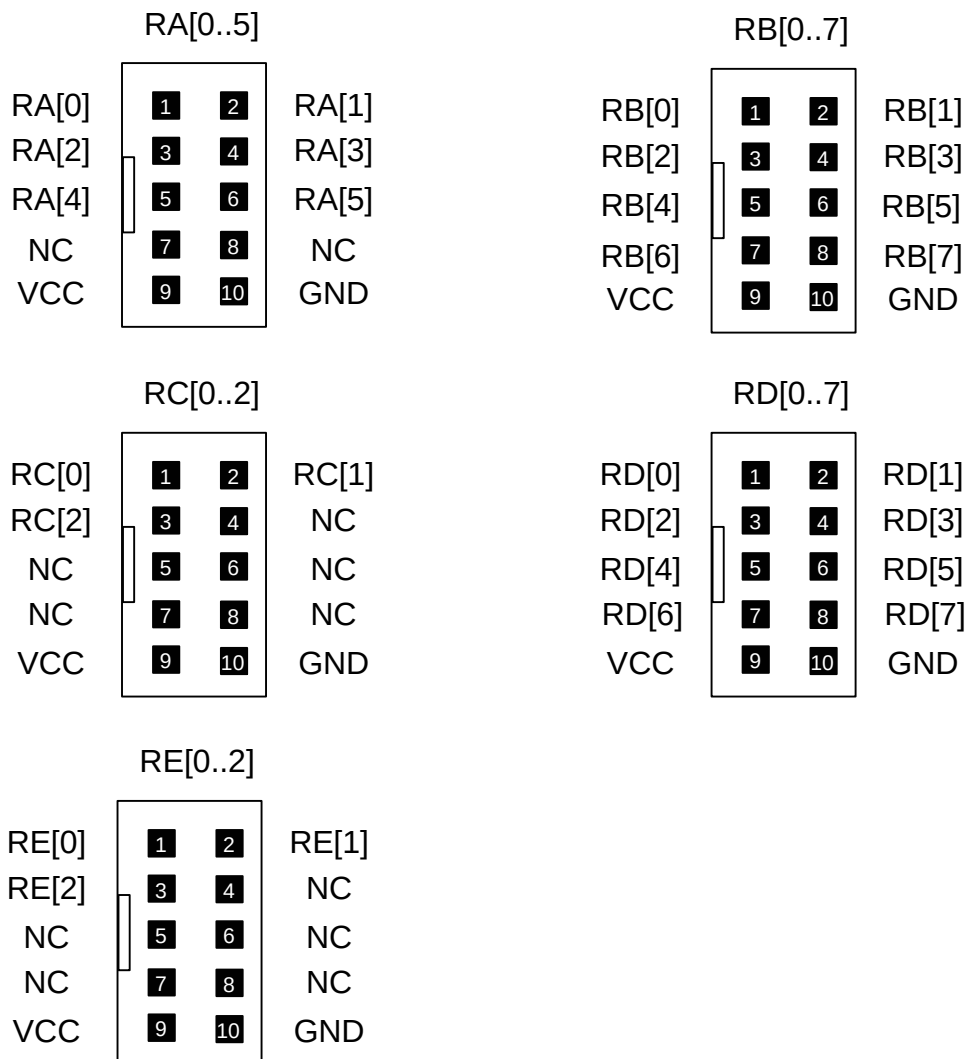
- **No.3** is 4 Test signal Input from Switch and can create signal Logic "0" (0 Volt) and Logic "1" (5 Volt) as shown in the circuit below.



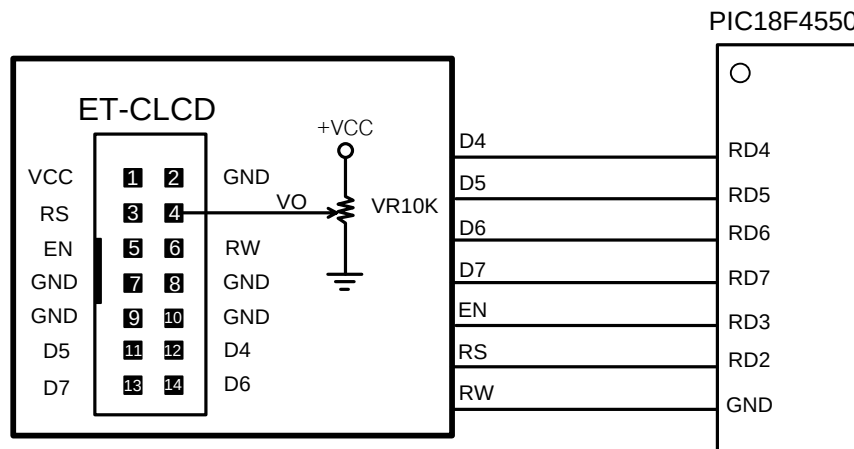
- **No.4** is Test Mini Speaker that can input frequency to make sounds as shown in the circuit below.



- **No.5** is Project board.
- **No.6, 7, 8, 9 and 10** are Port I/O of Microcontroller that consists of Port A, B, C, D and E respectively. Signal of each Port is arranged as shown in the circuit below.

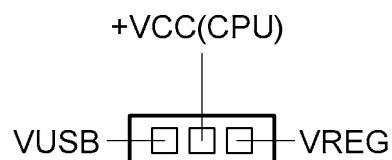


- **No.11** is Port ET-LCD to interface with Character LCD Display and the method to arrange signal Pin is shown in the circuit below.

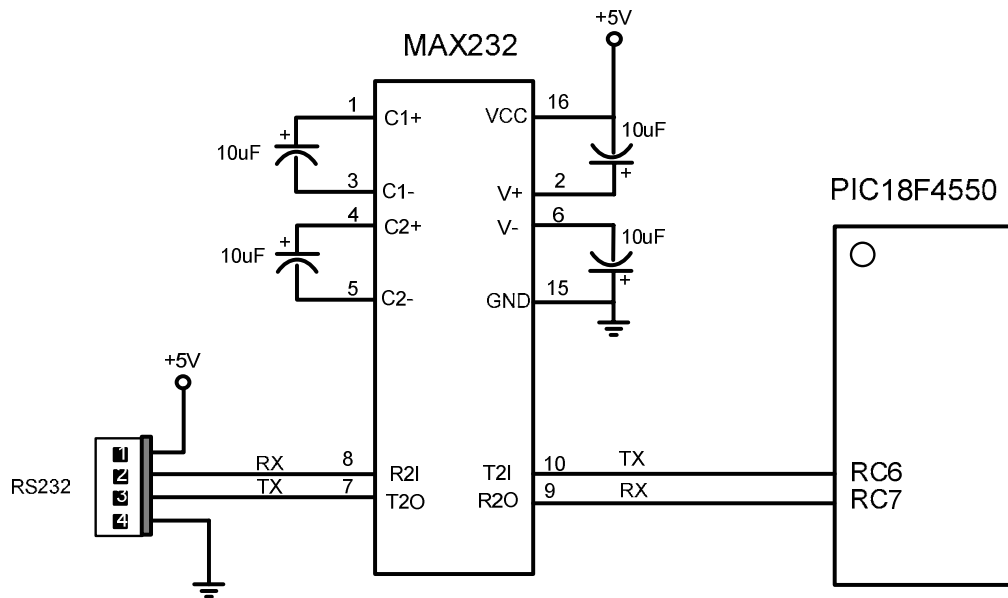


LCD Pin	PICMCU
D4	RD4
D5	RD5
D6	RD6
D7	RD7
EN	RD3
RS	RD2

- **No.12** is PIC18F4550 Microcontroller.
- **No.13** is Connector Power Supply that is designed to be both 2-Pin CPA and DC-JACK.
- **No.14** is Connector USB.
- **No.15** is Jumper to select source of Power Supply.



- **No.16** is Port RS232 and the method to interface circuit is shown below.



- **No.17** is Connector Download Program that is arranged under standard of ICD2, so it can support Programmer that is ICD2 Interface such as PICKit2, ICD2 and ETT Programmer "ET-PGM PIC USB".
- **No.18** is Switch to select RUN mode or PROGRAM Mode. When we shift Switch to PROG position, it will ON/OFF signal Pin that is used to program data code into programmer and start programming data that is designed by us instantly. When we shift Switch to RUN position, signal Pin will be back to be I/O and we can use it as usual.



- **No.19** is RESET Switch.

Source Code Programming

The method to program Source Code into Microcontroller of Board ET-PICUSB4550 must use external Programmer such as ICD2, PICKit2 or ETT Programmer "ET-PGMUSB4550" and we must interface cable Program with Connector ICD2 as shown in the picture below.

