5 Key Touch Waterproof Demo Board User Guide

TK MCU Series Application Tools

Revision 1.0
Apr. 2015

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Revision History

Version	Description	Date
V1.0	Initial Release	2015/04

Content

1. Characteristics

- ene touch IC part number: **TK18A22W8B** SOP28
- 5 com Touch keys with high SNR and high stability
- Ability to drive 4 digits LED display and 5 LEDs (5 com x 8 seg) with 15 intervals of greyscale
- Ability to drive 2KHz buzzer directly
- 10 bit ADC
- UART interface
- Able to demonstrate the effects under [water coverage] or [non water coverage] operation modes through a 3mm x 5mm acrylic lid (user is able to configure these two operation effects by the ene SW package, the default for demo board is under [water coverage] mode)
- User is able to proceed realtime TK signal adjustment via ISP communication ports (VCC、ICLK、IDAT、GND)

Diagram 1.1 outlook of 5 key waterproof demo board

2. Application circuit

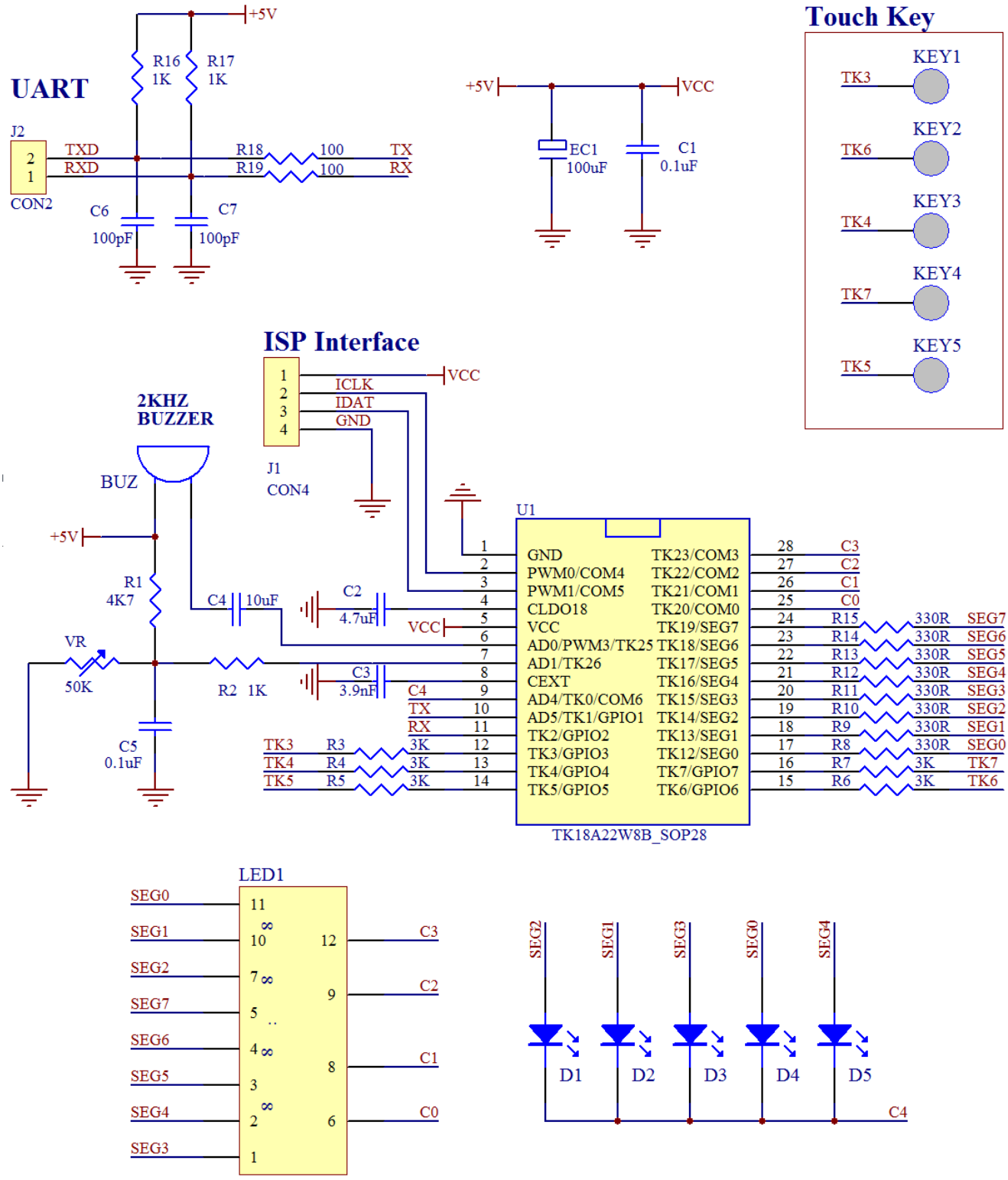

Diagram 2.1 circuit diagram

3. Introduction of demo board outlook

3.1 Front view of demo board

Diagram 3.1 front view of 5 key waterproof demo board

Table 3-1 5 front side function descriptions of waterproof touch key demo board

Item	Function	Description
1	J1: ISP communication port Pin1: **VCC** Pin2: ICLK Pin3: IDAT Pin4: **GND**	● ISP I/F pin has four pins （**VCC**、**ICLK**、**IDAT**、**GND**） and it is connected with X-ISP tool. ● **VCC** power can be +5V or +3.3V, it is controlled by X-ISP.
2	LED1: 4 digits LED display	Display the No. of touch key in action or the ADC result
3	J2: UART interface Pin1: TXD, Pin2: RXD	Standard UART communication port (User is able to configure this port as needed)
4	VR: 50KΩ VR.	To emulate ADC input, when VCC=5V, the voltage range emulated is 0V~4.57V
5	BUZ: 2KHz buzze	Demo board will create a Beep sound every time a key is touched
6	J3: demo board power input Pin1: VCC,Pin2: GND	DC in +5V
7	3mm x 5mm (thickness x depth) acrylic water lid	The touch lid for KEY1~KEY5, able to demonstration the waterproof effect
8~12	KEY1~KEY5 touch keys	Location of KEY1~KEY5 touch key

3.2 Rear view of demo board

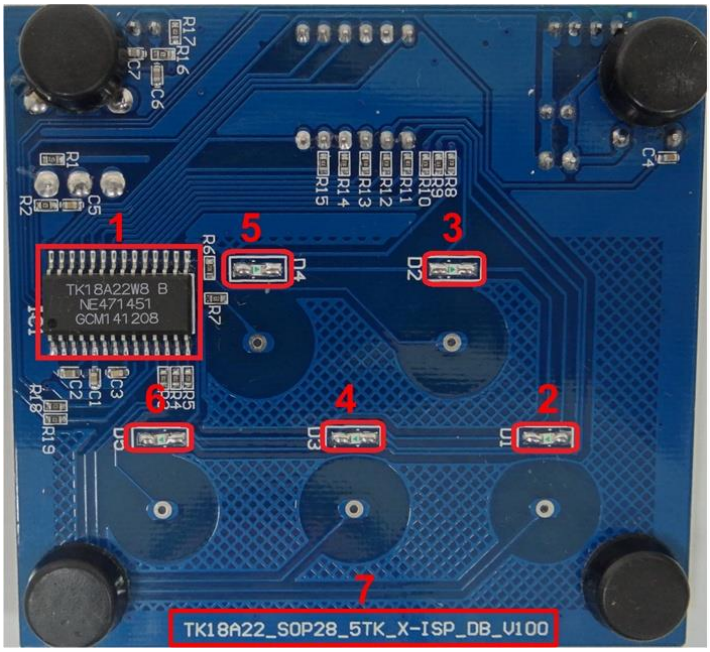

Diagram 3.2 Rear view of 5 key waterproofdemo board

Table 3-2 rear side funciton descriptions of 5 key waterproof demo board

Item	Function	Description
1	IC1: ene Touch Key MCU	Part number on this demo board is : **TK18A22W8B** SOP28
2~6	D1~D5: touch key LED indicator	When any of KEY1~KEY5 is touched，corresponding D1~D5 LED will be illuminated and vice versa
7	Demo board title and version number	

4. Operation instruction

- Connect J1 **ISP** port (diagram 4.1 red square 1) with X-ISP tool and connect the power of demo board (please refer to X-ISP and X-ANA User Guide for connection and operation method)

- User is able to supply +5V power source to demo board if user prefer not to connect X-ISP via ISP port.

- When supply +5V power source to demo board, LED display will show "8.8.8.8" and buzzer will make 2KHz Beep sound. After one second, buzzer will stop beeping and display board will show the current ADC value. When the above sequence is completed, demo board is successfully turned on and the default [water coverage] mode is ready.

- When turn VR (diagram 4.1 red square 3) randomly, ADC will sample the corresponding input voltage (ranges 0~4.57V) at the speed of 50mS (user is able to configure this speed from the SW package).

- When any of KEY1~KEY5 is touched, 4 digits LED display board will indicate the no. of touch key at the maximum illumination (15th interval). When the keys are released, the 4 digits LED display board will show the current ADC value. If any key is not touched for 6 seconds, the 4 digits LED display board will be dimmed from the 15th interval to the dimmest 1st interval within 2 seconds.

- When KEY1~KEY5 is touched respectively, buzzer will make a 2KHz/80mS Beep sound, and D1~D4 LED status and the content of LED display will differ in according to the selected touch keys:
  Press KEY1 will display **"- 0 1 –"** and D1 LED illuminates, press Key2 will display **"- 0 2 –"** and D2 LED illuminates, Press KEY3 will display **"- 0 3 –"** and D3 LED illuminates, Press KEY4 will display **"- 0 4 –"** and D4 LED illuminates, Press KEY5 will display **"- 0 5 –"** and D5 LED illuminates.

- Even though demo is under default [water coverage] mode, Key1~Key5 is still operational if there is no water coverage (diagram 4.1 red square 4).

- When pour water (approximately 5 mm diameter) into the water tank at speed of 5cm/second (diagram 4.1 red square 4), touch key is able to operate normally. When water fills the tank (4.5 mm pure water or 2 mm mineral water), touch keys are still functioning normally.
- Under [water coverage] mode, the response rate of TK is 3 times per every second to ensure the TK stability. If user does not required operation under water coverage mode, user is able to configure demo board as [non water coverage] mode in from the SW package, and the response rate will be 6.5 times per every second.

Diagram 4.1 operation of 5 key waterproof demo board

5. Contact Details

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