TM57 Series

TM57PE12

DEMO CODE FOR

TM57PE12 BASIC FUNCTIONS Sample

Application Note

AMENDMENT HISTORY

Version	Date	Description
V1.0	April, 2011	New release (Translation from AP-TM57PE12_01SV10).

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PRODUCT NAME

TM57 series IC

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APPLICATION NOTE

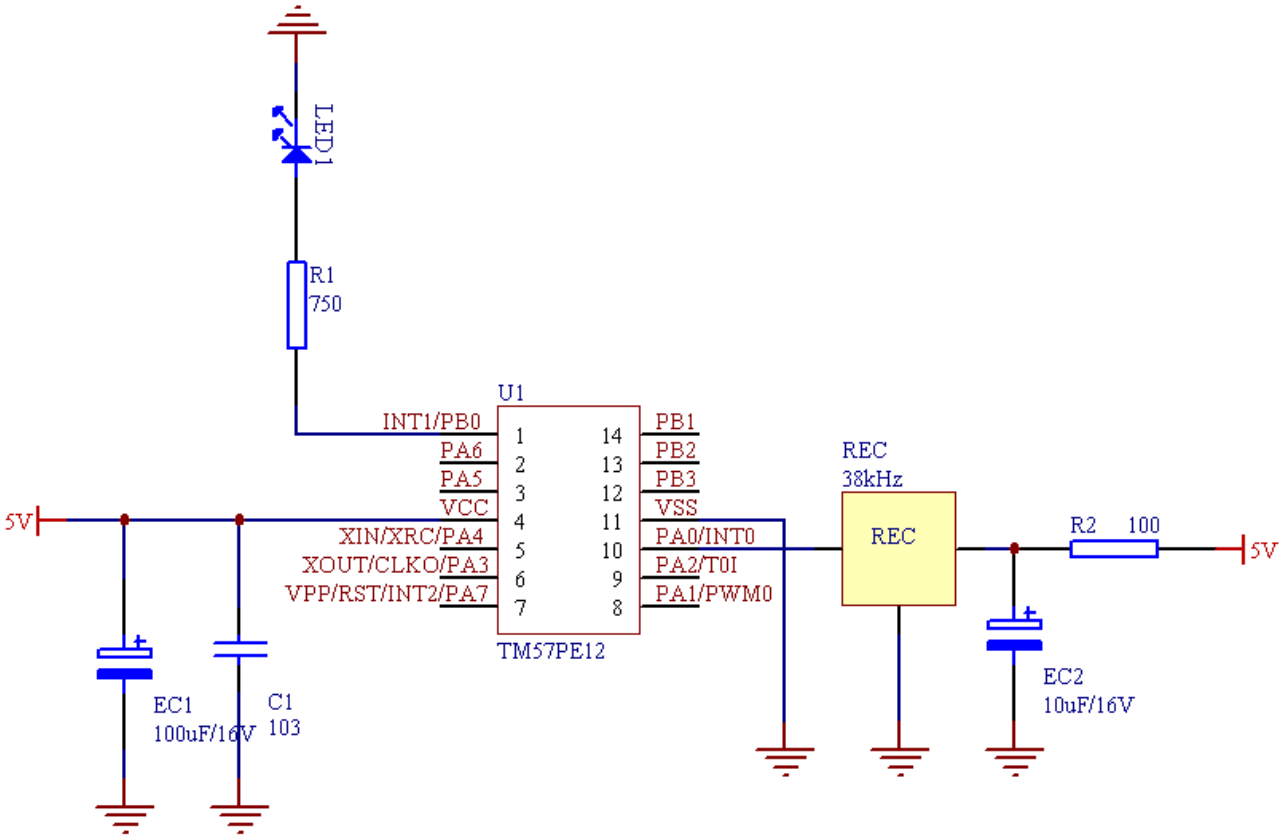
1. TM57PE12_INT0 and TM0 Infrared Remote Decode Sample

Details of DEMO subroutine, please refer to TM57PE12_INT0_TM0.ASM

1-1. Sample description

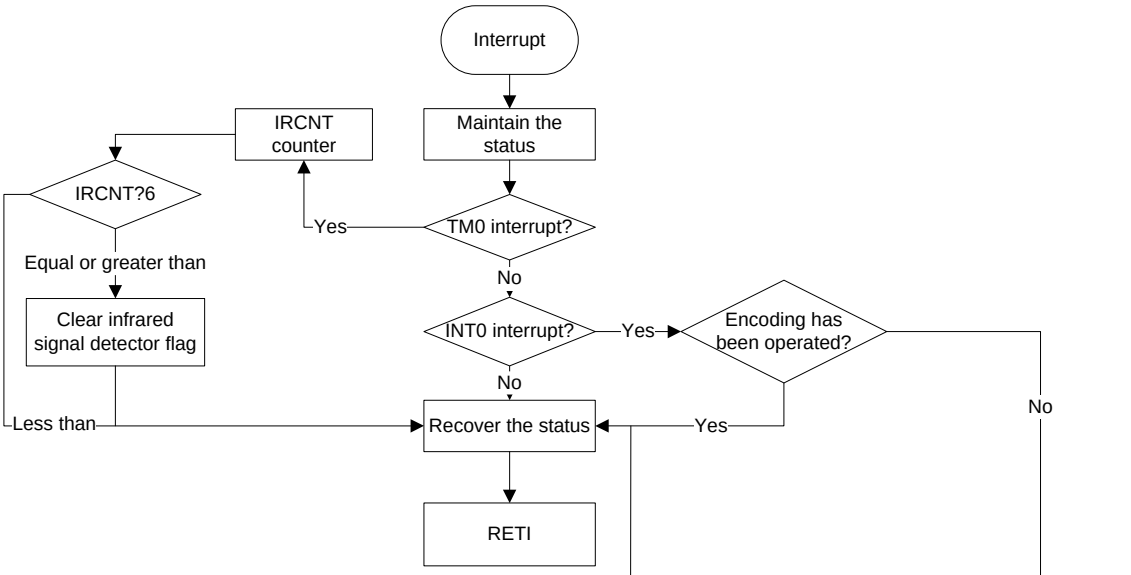
1) Int0 port is used as remote signal receiver pin (as shown in Circuit Diagram).
2) TM0 is used as encode timer, when the correct remote code is received, the indicator lamp LED1 (pbd, 0-pin) will be turned OFF or ON.
3) Remote code type follows the uPD6122 format.
4) After powered ON and a serial of initialization, program will turn ON Int0 and TM0 interrupt, and keep waiting. The decoding operation is performed in interrupt service routine (please refer to routine document for details).

1-2. Circuit Diagram

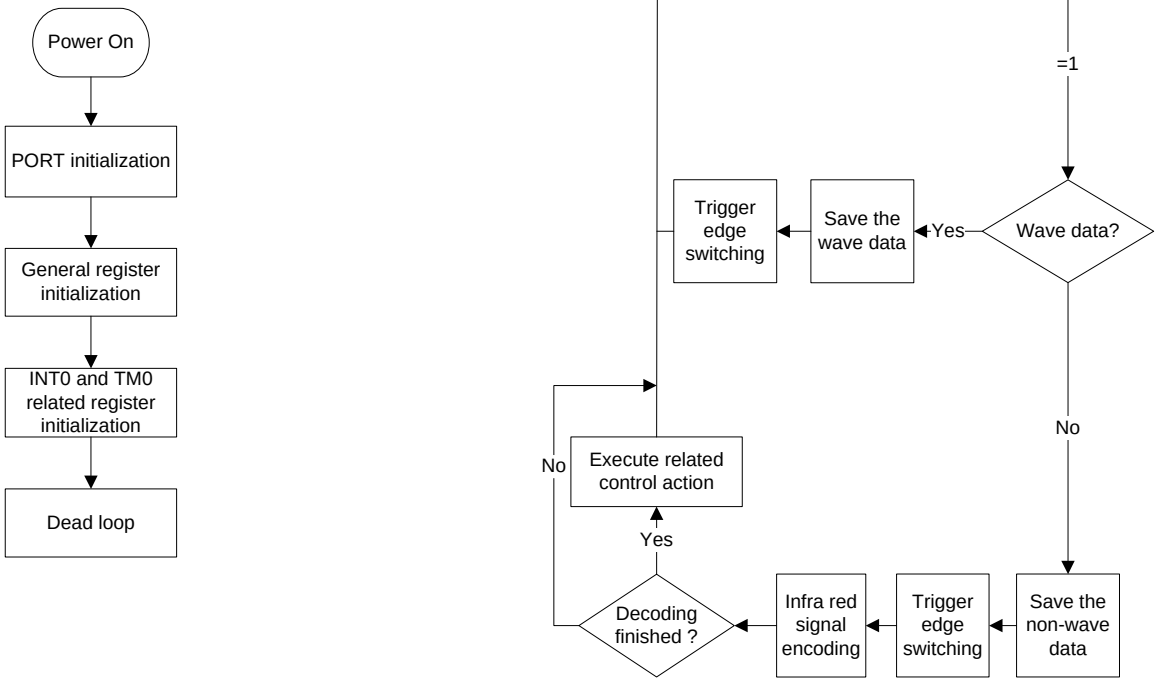


1-3. Subroutine Flow Diagram

Interrupt Procedure Flow Diagram



Main Procedure Flow Diagram



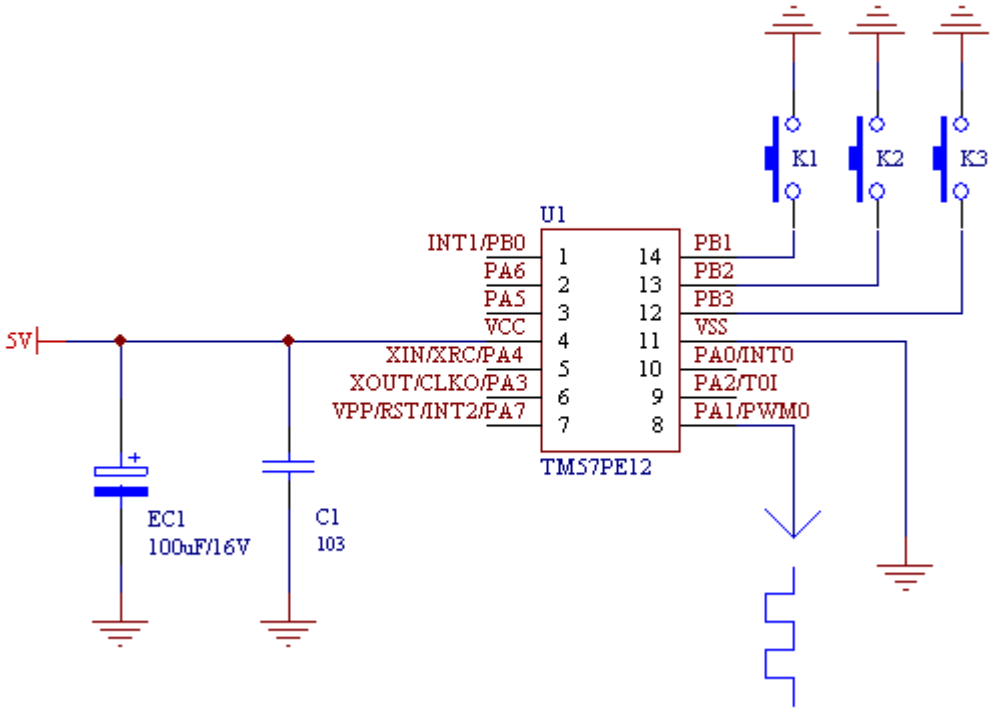
2. TM57PE12_PWM0 Application Sample

Details of DEMO subroutine, please refer to TM57PE12_PWM0.ASM

2-1. Sample description

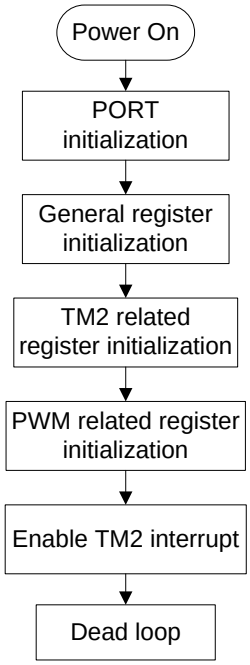
1) Every time the K1 button is pressed, the periodic waveform of PWM0 will be based on 50 us, 100 us, 150 us, 200 us sequences changes by circular.
2) Every time the K2 button is pressed, the duty waveform of PWM0 will be based on 1/5, 2/5, 3/5, 4/5 sequences changes by circular.
3) Every time the K3 button is pressed, the waveform output by PWM0 is default value (period is 50 us, duty is 1/5).

2-2. Circuit Diagram

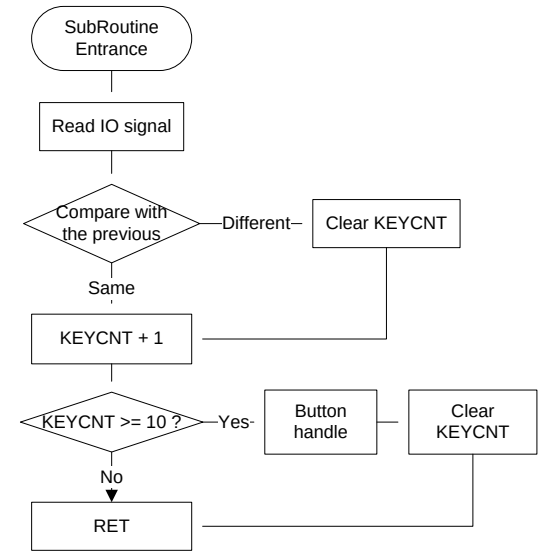


2-3. Subroutine Flow Diagram

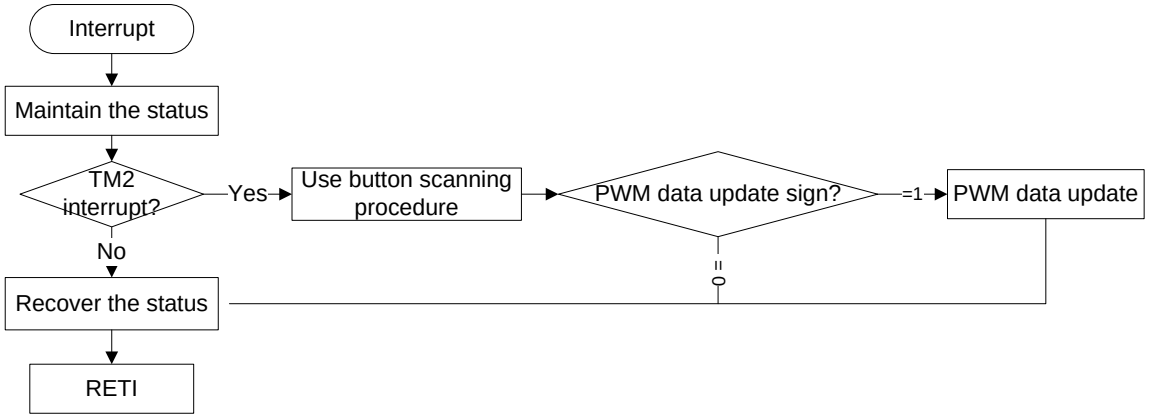
Main Procedure Flow Diagram



Button Scanning SubRoutine Flow Diagram



Interrupt Routine Flow Diagram



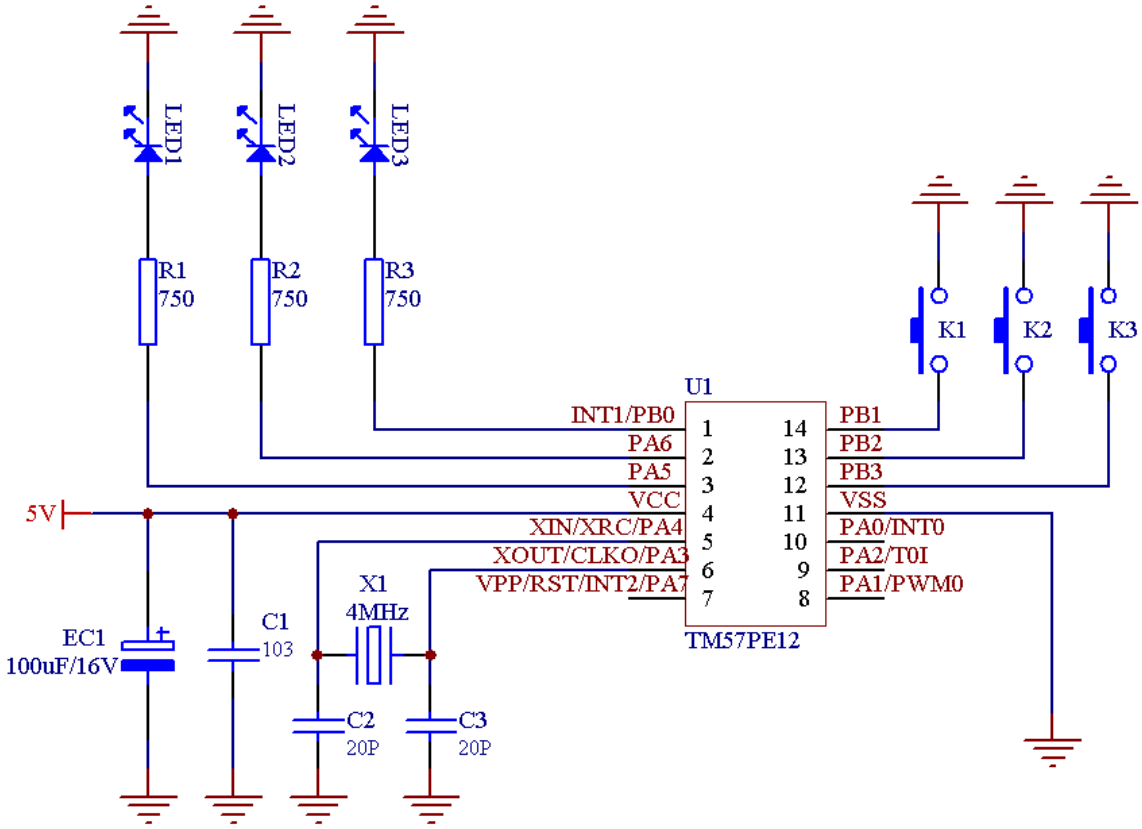
3. TM57PE12_TM2 Wakeup Application Sample

Details of DEMO subroutine, please refer to TM57PE12_WAKEUP_TM2.ASM

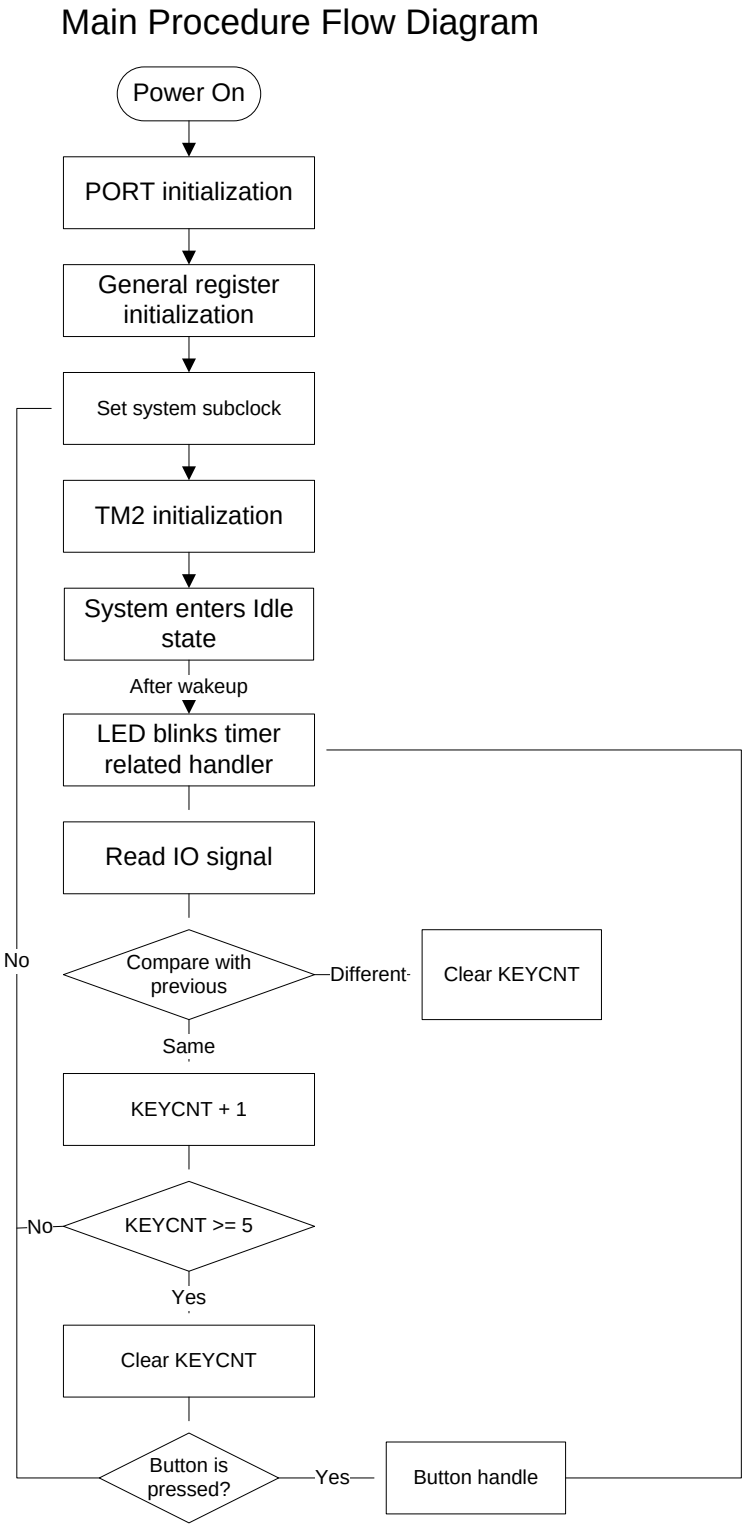
3-1. Sample description

1) After system enters IDLE mode, TM2 will keep counting, when TM2 overflows, system will wake up.
2) Press K1 button, LED1 blinks 10 secs and then turns OFF.
3) Press K2 button, LED2 blinks 10 secs and then turns OFF.
4) Press K3 button, LED3 blinks 10 secs and then turns OFF.
5) System uses external oscillating sources, therefore, the corresponding IO (PA3, PA4) of external oscillating sources must be set to input status, and the corresponding IO must be turned ON and pulled high, otherwise, after MCU enters SLEEP mode, it will affect static current.

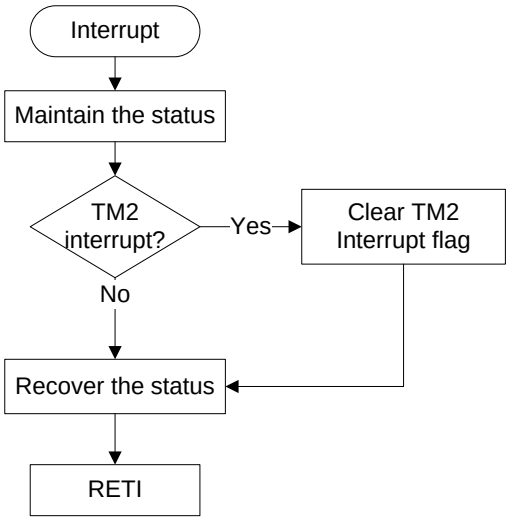
3-2. Circuit Diagram



3-3. Subroutine Flow Diagram



Interrupt Routine Flow Diagram



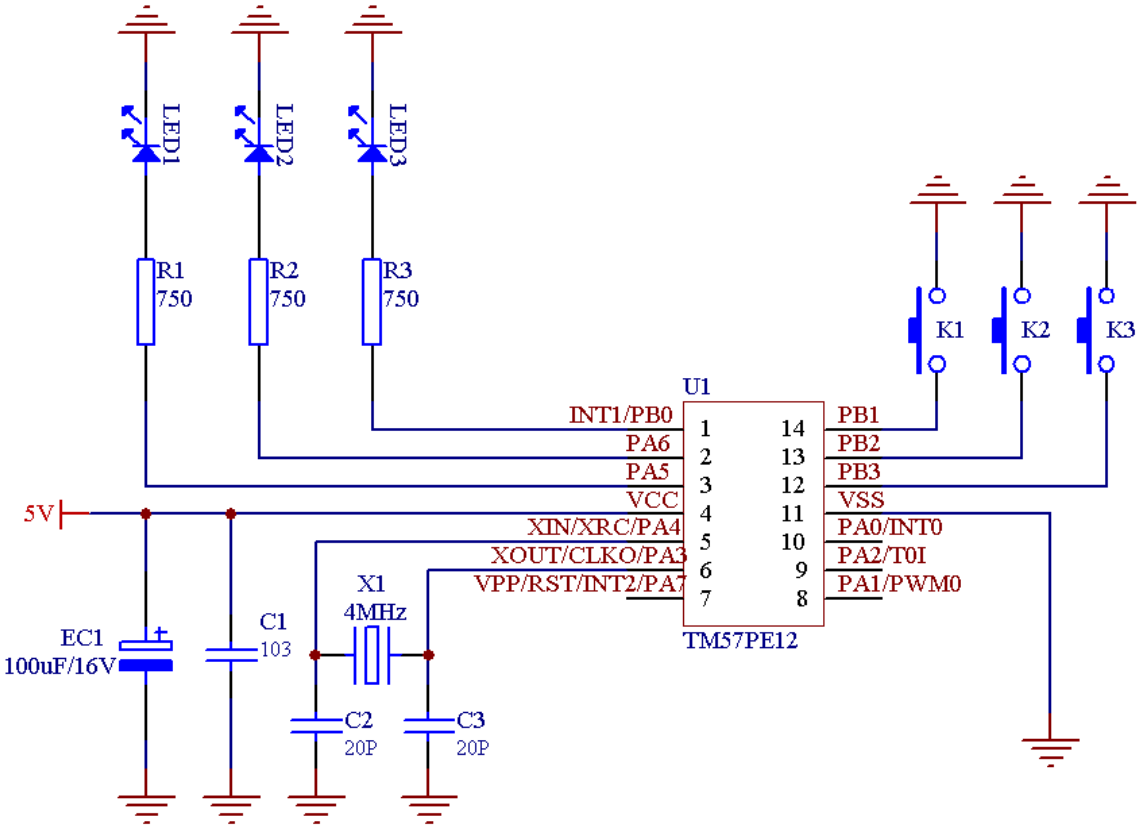
4. TM57PE12_Button_Wakeup_Application_Sample

Details of DEMO subroutine, please refer to TM57PE12_WAKEUP_KEY.ASM

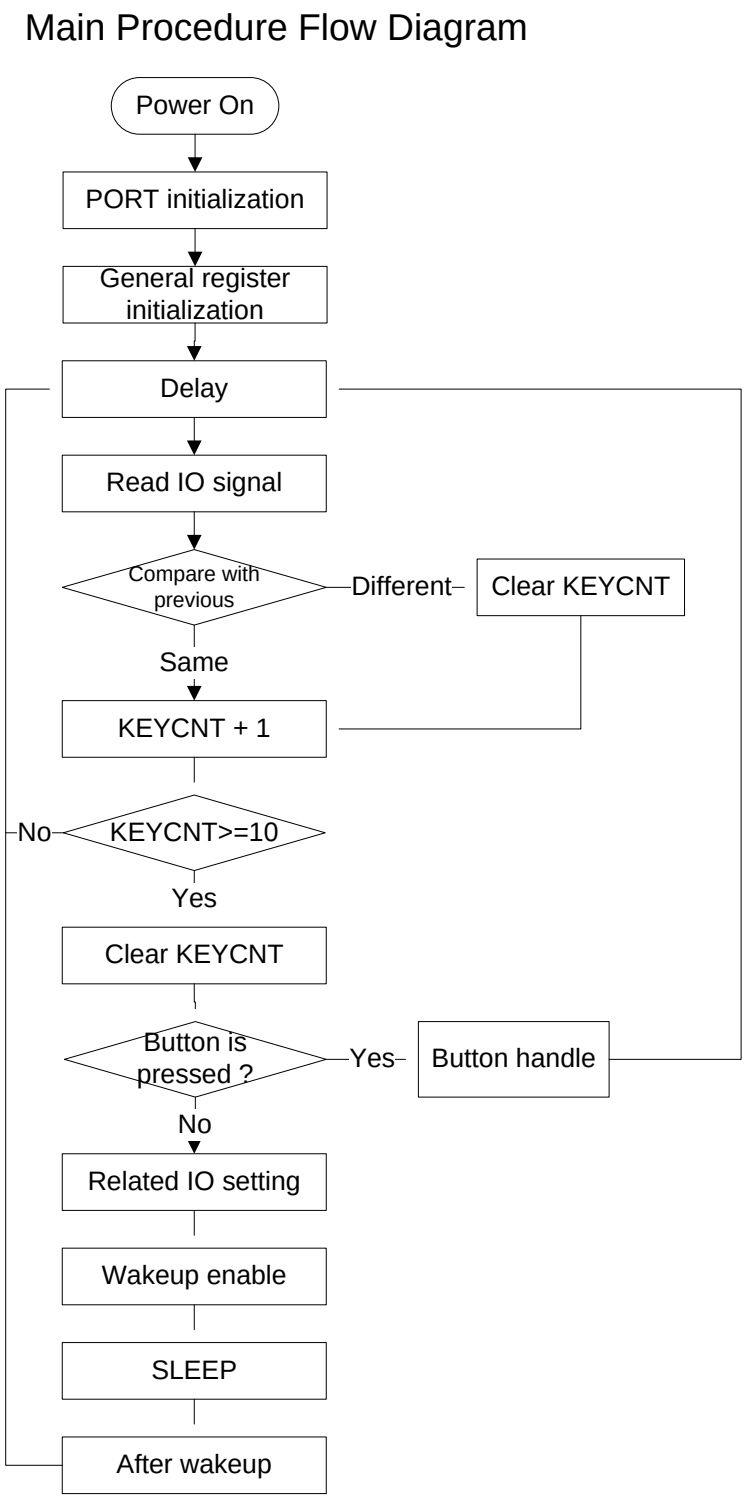
4-1. Sample description

1) Press K1 button, LED1 lights ON, and press again to switch OFF.
2) Press K2 button, LED2 lights ON, and press again to switch OFF.
3) Press K3 button, LED3 lights ON, and press again to switch OFF.
4) System uses external oscillating sources, therefore, the corresponding IO (PA3, PA4) of external oscillating sources must be set to input status, and the corresponding IO must be turned ON and pulled high, otherwise, after MCU enters SLEEP mode, it will affect static current.

4-2. Circuit Diagram



4-3. Subroutine Flow Diagram



5. TM57PE12_Speed_Mode_Switch_Sample

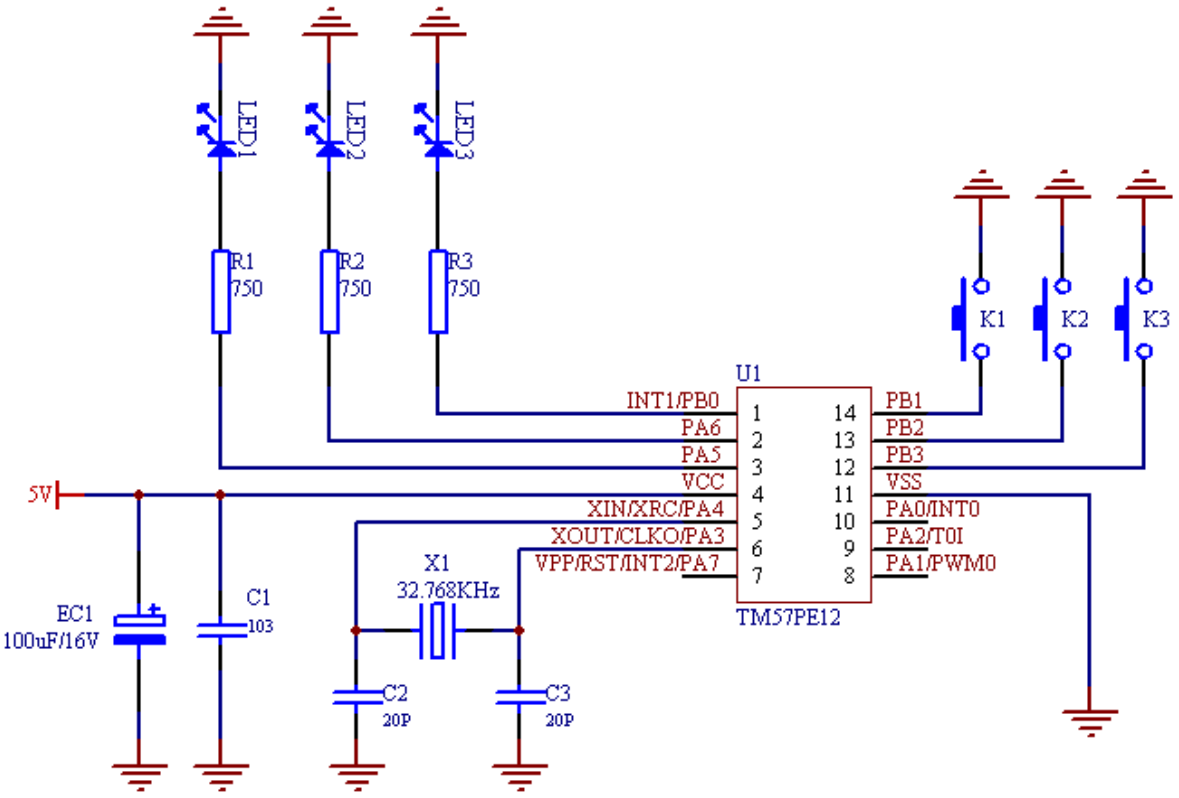
Details of DEMO subroutine, please refer to TM57PE12_SPEEDMODE_TM.ASM

5-1. Sample description

1) In FAST mode, LED1 blinks, the frequency is 4 Hz.
2) In SLOW mode, LED2 blinks, the frequency is 2 Hz.
3) In IDLE mode, LED1~ LED3 are turned OFF.
4) In SLEEP mode, LED1~ LED3 are turned OFF.
5) In FAST mode, press K1 button, system will enter SLOW mode.
6) In FAST mode, press K2 button, system will enter IDLE mode.
7) In FAST mode, press K3 button, system will enter SLEEP mode.
8) In SLOW mode, press K1 button, system will enter FAST mode.
9) In SLOW mode, press K2 button, system will enter IDLE mode.
10) In SLOW mode, press K3 button, system will enter SLEEP mode.
11) After system entering IDLE mode, TM2 keeps counting, when TM2 overflows and interrupt happens, system will be waken up (the system clock mode after wake up will agree with that before entering IDLE mode; if it is FAST mode, then it will be FAST mode after wake up). The button after wakeup will be invalid. If the system mode is FAST mode, then LED3 will turn ON. If the system clock is in SLOW mode, LED3 will blink with 2 Hz frequency.

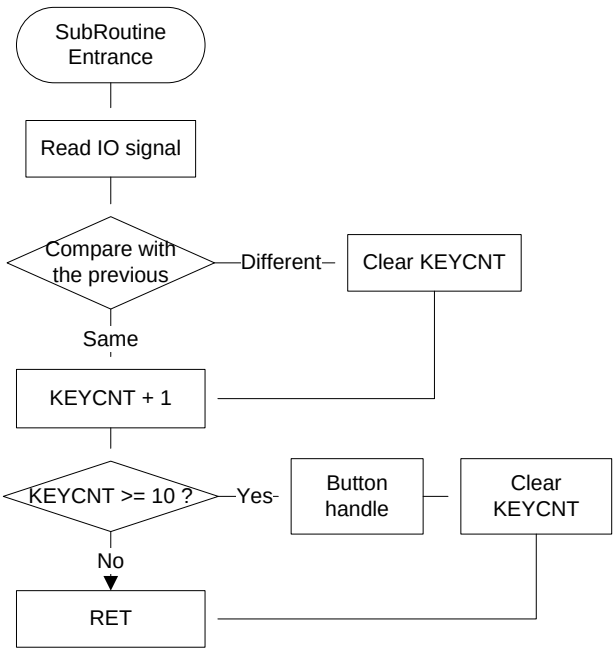
    Note: It is TM2 interrupt wake up, therefore, before entering IDLE mode, TM2 interrupt must be enabled, otherwise, it cannot be waken up.
12) After system entering SLEEP mode, system can be waken up by pressing K1~K3 buttons (the system clock mode after wake up will agree with that before entering SLEEP mode; if it is FAST mode, then it will be FAST mode after wake up). The button after wakeup will be invalid. If the system mode is FAST mode, then LED3 will turn ON. If the system clock is in SLOW mode, LED3 will blink with 2 Hz frequency.
13) System uses external oscillating sources, therefore, the corresponding IO (PA3, PA4) of external oscillating sources must be set to input status, and the corresponding IO must be turned ON and pulled high, otherwise, after MCU enters SLEEP mode, it will affect static current.

5-2. Circuit Diagram

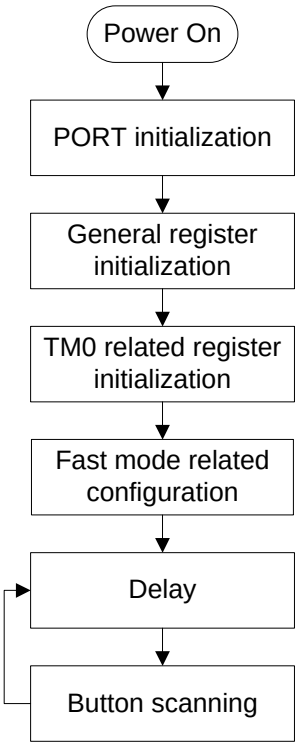


5-3. Subroutine Flow Diagram

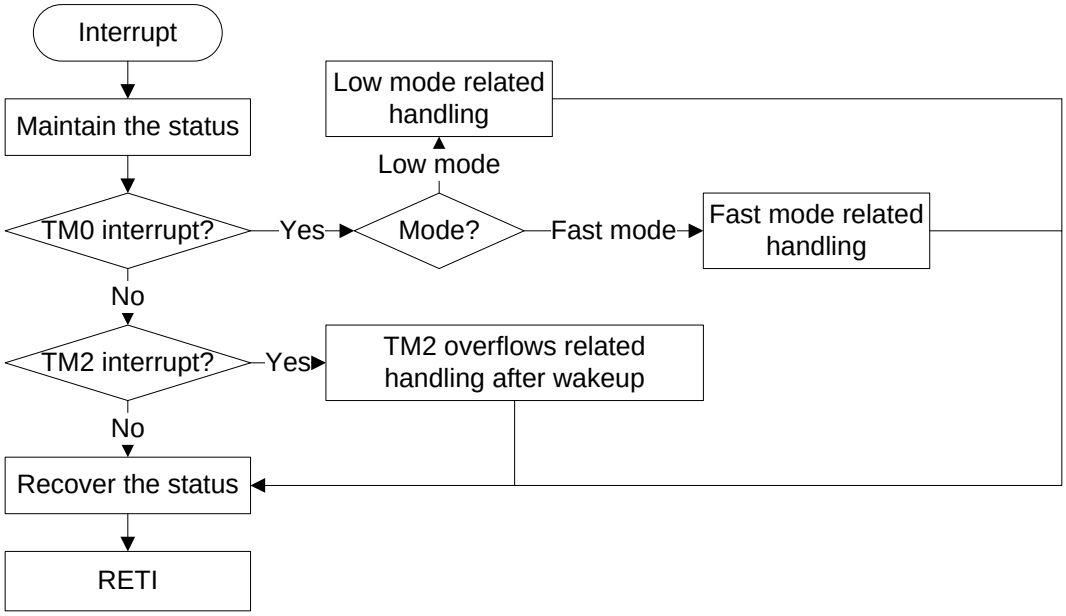
Button Scanning SubRoutine Flow Diagram



Main Procedure Flow Diagram



Interrupt Procedure Flow Diagram



6. TM57PE12_External_ Interrupt_Wakeup_Application_Sample

Details of DEMO subroutine, please refer to TM57PE12_WAKEUP_INT0_TM0.ASM

6-1. Sample description

1) Int0 port is used as remote signal receiver pin (as shown in Circuit Diagram).

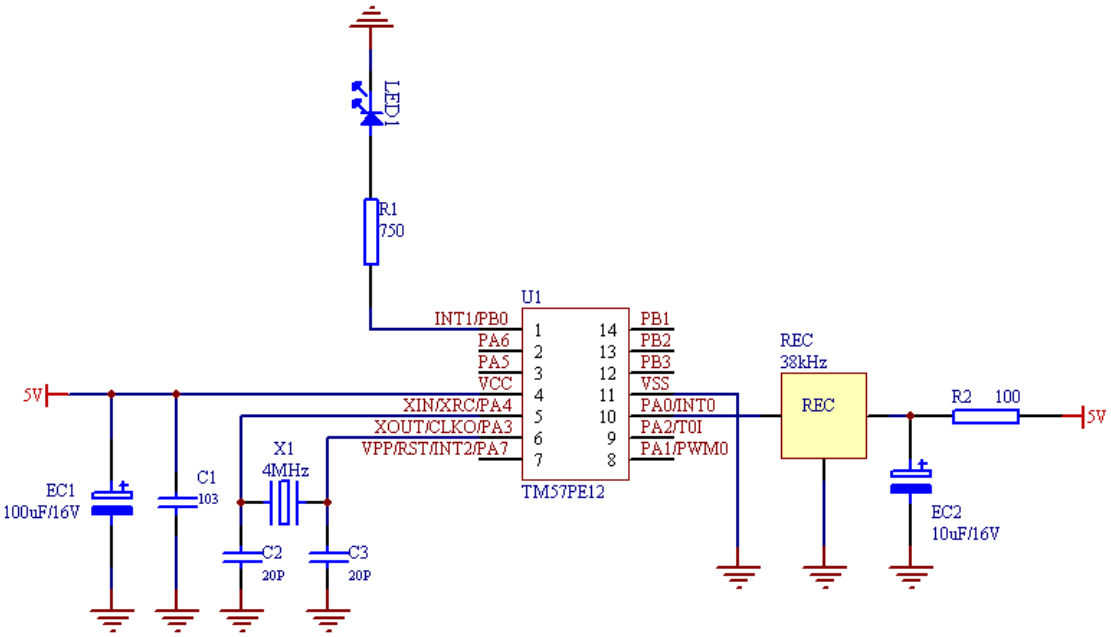
2) TM0 is used as encode timer, when the correct remote code is received, the indicator lamp LED1 (pbd, 0-pin) will be turned OFF or ON.

3) Remote code type follows the uPD6122 format.

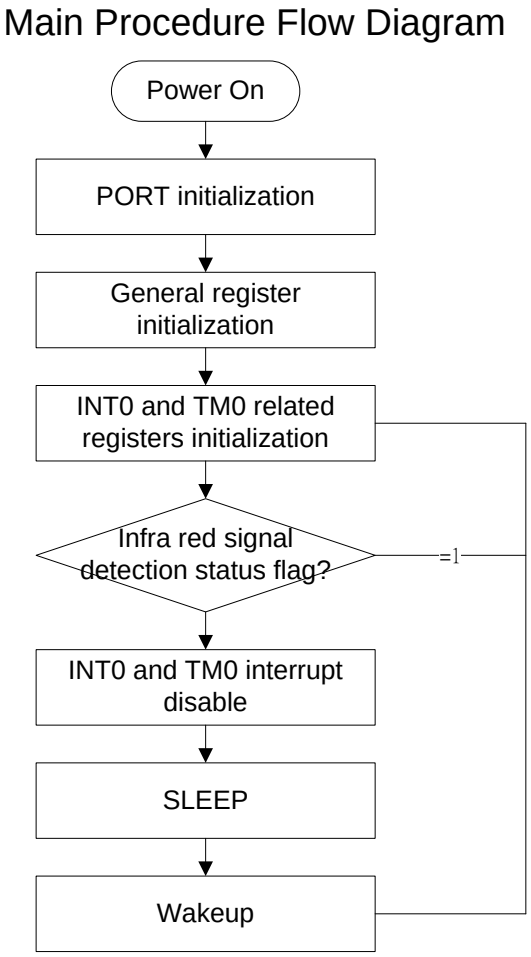
4) After the subroutine is powered ON after a serial of initialization, turn ON Int0 and TM0 interrupt, and finally will enter SLEEP mode. Once the remote signal enters, MCU will be waken up, chip clock start working, subroutine can continue operating (please refer to subroutine document).

5) System uses external oscillating sources, therefore, the corresponding IO (PA3, PA4) of external oscillating sources must be set to input status, and the corresponding IO must be turned ON and pulled high, otherwise, after MCU enters SLEEP mode, it will affect static current.

6-2. Circuit Diagram



6-3. Subroutine Flow Diagram



Interrupt Procedure Flow Diagram