ST17H76T-E

Bluetooth Low Energy (BLE)/Private 2.4GHz System on Chip

Key Features

- 32-bit Processor (Max 64MHz) with SWD
- Memory
  - 64KB ROM
  - 8KB Retention SRAM
  - 16KB OTP
  - EEPROM (256Byte)
- 11 General Purpose I/O Pins
  - Configurable as serial interface and programmable IO MUX function mapping
  - All pins can be configured for wake-up
  - All pins for triggering interrupt
  - 3 Quadrature Decoder (QDEC)
  - 6-channel PWM
  - 1-channel I2C
  - 1-channel SPI Master
  - UART
  - SWD
- 10-channel 12-bit ADC
- 4-channel 32-bit Timer, 1 Watchdog Timer
- Real Timer Counter (RTC)
- Power, Clock, Reset Controller
- Flexible Power management
  - Operating voltage range 1.8V to 5.0V
  - Support lithium battery charging
  - Embedded LDOs
  - Battery monitor: support low battery detection
- Power Consumption

- 0.7uA@OFF Mode (IO wake up only)
- 2uA@Sleep Mode with 32KHz RTC
- Receive Mode: 10mA@3.3V Power Supply
- Transmit Mode: 10mA (0dBm output power) @3.3V Power Supply
- RC Oscillator Hardware Calibrations
  - 32KHz RC osc for RTC with +/-200ppm accuracy
  - 32MHz RC osc for HCLK with 3% accuracy
- BLE
  - Bluetooth SIG 5.2
  - Support Master & Slave
- 2.4 GHz Transceiver
  - Support BLE 5.0 RF PHY 1Mbps/2Mbps
  - Proprietary 500K Protocol Stack
  - FSK with configurable Gaussian filter (configurable modulation index)
  - Sensitivity:
    -96dBm@BLE 1Mbps data rate
    -93dBm@BLE 2Mbps data rate
  - Tx power -20 to +10dBm in 3dB steps
  - Single-pin antenna: no RF matching or Rx/Tx switching required
  - RSSI (1dB resolution)
- AES-128 Encryption Hardware
- Operating Temperature: -40˚C ~+125 ˚C
- RoHS Package: SOP16

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1   Introduction

ST17H76T-E is a System on Chip (SoC) for Bluetooth® low energy and proprietary 2.4G applications. It has high-performance low-power 32-bit processer with 8KB retention SRAM, 64KB ROM, 16KB OTP. Also, ST17H76T-E can support BLE with security and application. Serial peripheral IO and integrated application IP enables customer product to be built with minimum bill-of-material (BOM) cost.

2　　　Pin Assignments and Functions

This section describes the pin assignment and the pin functions for the package types of TSSOP16.
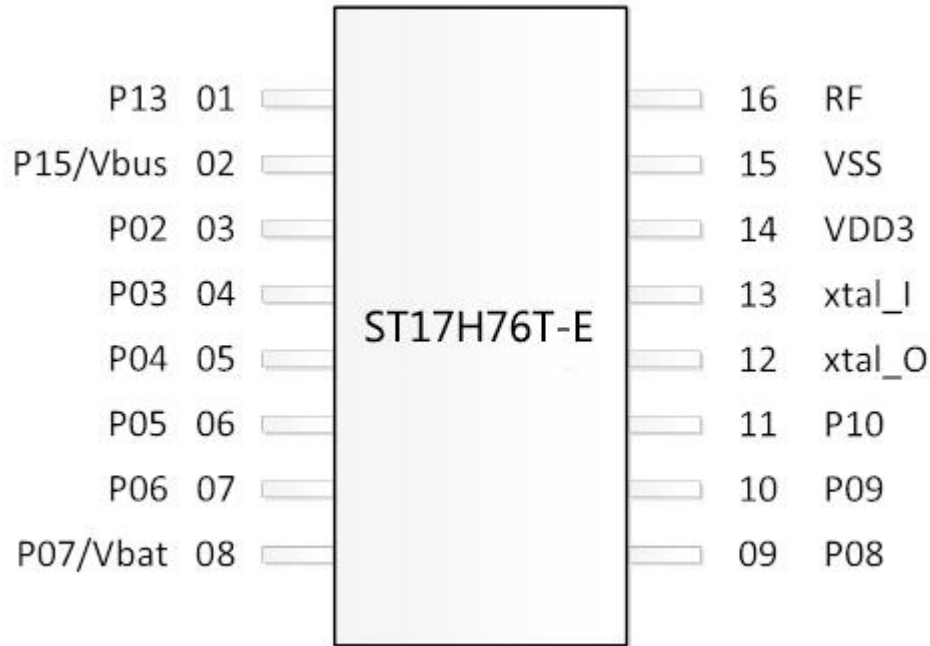
2.1　　　Pin Assignment(SOP16)

Figure 1: Pin Assignment – ST17H76T-E SOP16 package

2.2　　Pin Functions

Pin	Pin name	Description
1	P13	GPIO 13/ spi_ssn/ PWM3/ dbg_mux[1]/clk_rc32k/ analog_io[7]
2	P15/Vbus	GPIO 15/spi_tx/ PWM5/ iic_sda/ Vbus
3	P02/SWD_IO	GPIO 02/SWD debug data inout/ spi_rx/ pwm0/ uart_tx
4	P03/SWD_CLK	GPIO 03/SWD debug clock/ spi_ssn/ pwm1/ uart_rx
5	P04	GPIO 04/iic_scl/spi_sck/ ADC input 0/ uart_tx
6	P05	GPIO 05/iic_sda/ uart_tx/ ADC input 1/ uart_rx
7	P06	GPIO 06/PWM2/ ADC input 2
8	P07/Vbat	GPIO 07/ PWM3/ Vbat
9	P08	GPIO 08/ PWM4/ rf_rx_en
10	P09	GPIO 09/ iic_scl/UART_Tx/ analog_io[3]
11	P10	GPIO 10/UART_Rx/ iic_sda/ analog_io[4]
12	xtal_out	16MHz crystal output
13	xtal_in	16MHz crystal input
14	VDD3	3.3V power supply
15	VSS	GND
16	RF	RF antenna

Table 1: Pin Functions of ST17H76T-E SOP16 package

3   Package dimensions

Figure 2: SOP16 package dimensions
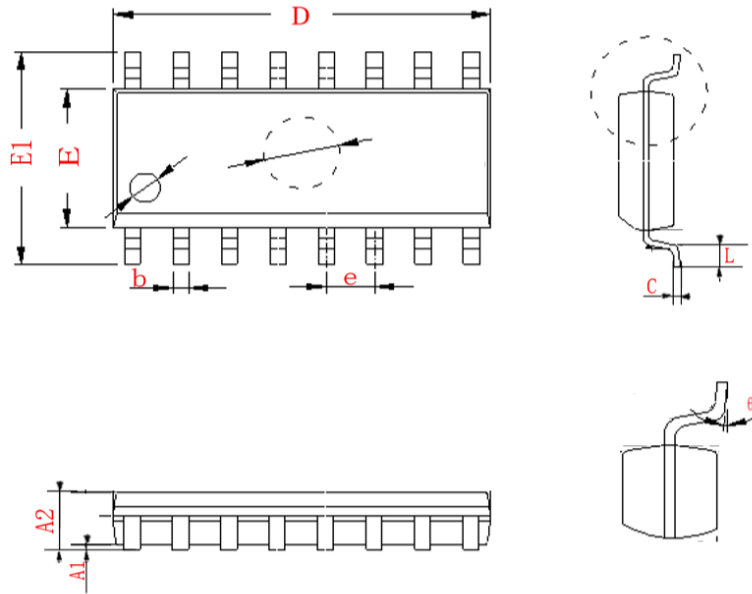
名称	尺寸	
	Min	Max
A1	0.1	0.25
A2	1.25	1.55
b	0.33	0.51
E	3.8	4
E1	5.8	6.2
D	9.8	10.2
e	1.27BSC	
C	0.17	0.25
L	0.4	1.27
θ	0°	8°