ST17H78T

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

Key Features

- 32-bit Processor (Max 64MHz)
- Memory
  - 64KB ROM
  - 8KB Retention SRAM
  - 16KB OTP
  - EEPROM (256Byte)
- 3 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)
  - 2-channel PWM
  - 1-channel I2C
  - UART
- 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

ST17H78T 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, ST17H78T 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(SOP8)

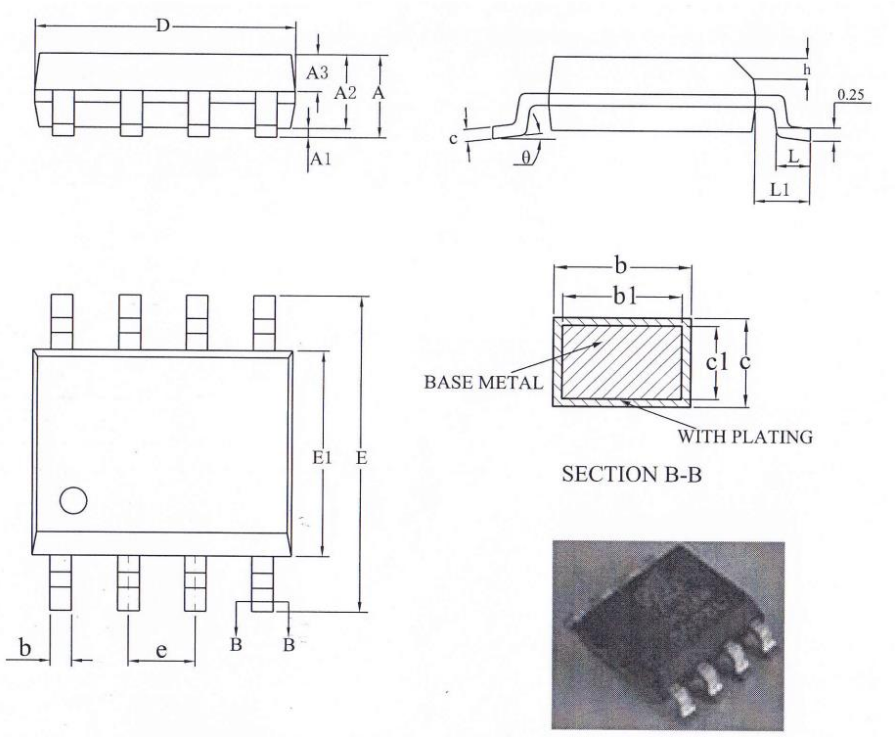
Figure 1: Pin Assignment – ST17H78T SOP8 package

2.2 Pin Functions

Pin	Pin name	Description
1	VSS	GND
2	P00/P04	GPIO 00/GPIO 04/USBDP
3	P01/P05/P06	GPIO 01/GPIO 05 /GPIO P6/USBDM
4	P07/Vbat	GPIO 07/Vbat
5	Pad_xtal_in	16MHz crystal input
6	Pad_xtal_out	16MHz crystal output
7	VDD3	3.3V power supply
8	RF	RF antenna

Table 1: Pin Functions of ST17H78T SOP8 package

3 Package dimensions



	SYMBOL	MILLIMETER		
		MIN	NOM	MAX
	A	—	—	1.75
	A1	0.10	—	0.225
	A2	1.30	1.40	1.50
	A3	0.60	0.65	0.70
1	b	0.39	—	0.47
1	b1	0.38	0.41	0.44
1	c	0.20	—	0.24
	c1	0.19	0.20	0.21
1	D	4.80	4.90	5.00
	E	5.80	6.00	6.20
1	E1	3.80	3.90	4.00
	e	1.27BSC		
	h	0.25	—	0.50
	L	0.50	—	0.80
	L1	1.05REF		
	θ	0	—	8°

Figure 2: SOP8 package dimensions