

# **TC35661SBG-501 Bluetooth™ IC Embedded Profile Series [SPP+GATT]**

## **Supported Functions Specification Overview**

**Rev 1.00**



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## 1. General Description

### 1.1 Product Concept

TC35661SBG-501 is a 1-chip CMOS LSI for Bluetooth™ communication, which includes an RF analog part and a Base band digital part. TC35661 provides Bluetooth™ SPP (Serial Port Profile) function, GATT(Generic Attribute Profile) function, and LE(Low Energy) function specified in Bluetooth™ Specifications.

### 1.2 Features

- EEPROM Interface
  - ✧ I2C interface
- Host CPU Interface
  - ✧ UART interface: Baud rate from 2.4kbps to 4.33Mbps
- General Purpose I/O (GPIO) with pull-up and pull-down resistors (19 pins)
- Wake-up Interface
  - ✧ Wake-up input function and remote wake-up output function
- Supports Sleep Clock
  - ✧ Internal divider for base action clock
  - ✧ Supports external input
- Internal Sleep function
- LED Switching Function
- Power Supply: Single 1.8 ~ 3.6V
- Package
  - ✧ P-TFBGA64-0505-0.5 [64balls, 5x5 mm, 0.5 mm pitch, 1.2 mm height]

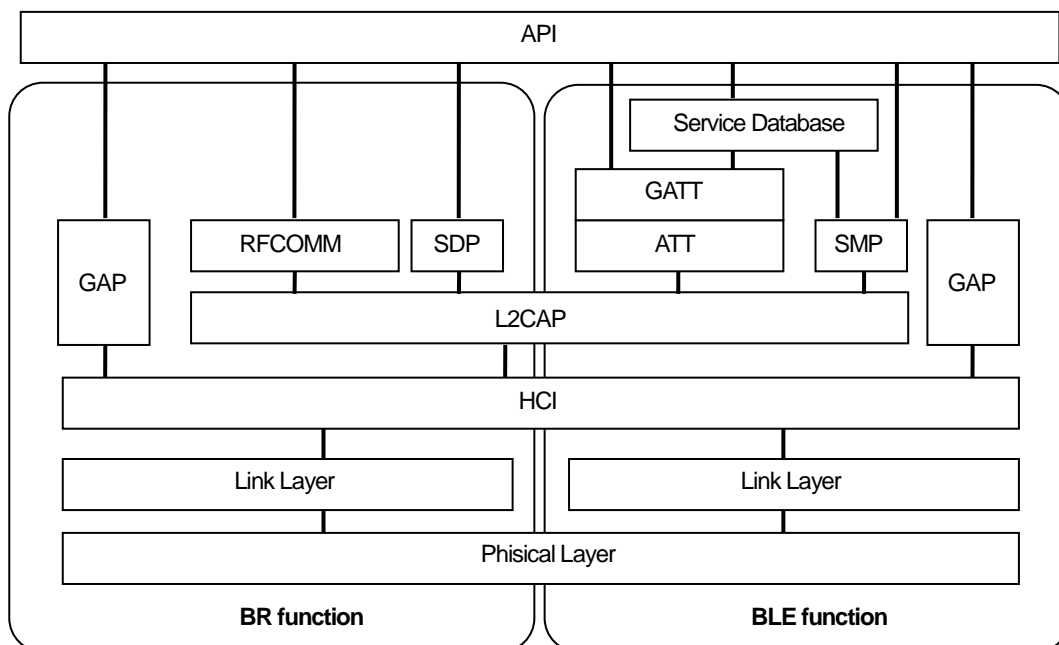


Figure 1-1 Bluetooth™ stack in TC35661SBG-501

### 1.3 Bluetooth™ Support Feature List

Items	Description	Notes
Bluetooth Core	4.0 Power Class 2	Basic Rate(BR) Supported LE Supported HS is not supported.
Feature (BR)	Sniff	Supported
	Park	Not Supported
	Hold	Not Supported
	BR- 3slot packet	Supported
	BR- 5slot packet	Supported
	2Mbps EDR-3slot packet	Not Supported
	2Mbps EDR-5slot packet	Not Supported
	3Mbps EDR-3slot packet	Not Supported
	3Mbps EDR-5slot packet	Not Supported
	RSSI	Supported
	SecureSimplePairing	Supported
	PowerControl	Supported
	AFH	Supported
	SCO	Not Supported
	eSCO	Not Supported
	CQDDR	Not Supported
	Sniff subrating	Supported
	Secure Simple Pairing	Supported
	UART Baudrate	115.2kbps is default. Selectable by command.
	UART Protocol	UART Transport Layer(Core4.0 Transport Layer Part A)
	Multi Profile/point	Not supported
	SPP-A	Supported
	SPP-B	Supported
	SPP UUID Assignment	Supported
	USB	Not Supported
	WIFI Co-Ex	Not Supported
	ScatterNet	Not Supported
Feature (LE)	Central	Not Supported
	Peripheral	Supported
	Multi Profile/point	Not Supported
	ConnectionUpdate	Supported
	Random Address	Supported
	WhiteList	Supported
	SecurityProperty(JustWork)	Supported
	SecurityProperty(PassKey)	Supported
	SecurityProperty(NumericComparison)	Supported
	GATT-Client	Supported
	GATT-Server	Supported
	Broadcaster	Supported
	Observer	Not Supported
Dual	BR Page scan and LE Advertising simultaneously	Supported
	SPP+GATT connection establishment simultaneously	Not Supported

Table 1-1 Support Feature List

## 2. Pin Function

### 2.1 Pin Functions

**Table 1-1 Pin Functions**

Pin name	Pin No.	Attribute VDD category Direction Type	Conditon After bootsetip	Functional description
<b>USB interface</b>				
USBDP	B7	DVDD33USB IN/OUT Differential	IN	Unused. This pin have to be connected to GND.
USBDM	B8	DVDD33USB IN/OUT Differential	IN	Unused. This pin have to be connected to GND.
<b>General purpose I/O port</b>				
GPIO0	C7	DVDDA IN/OUT PullReg Schmitt 1,2,4mA	IN	General purpose I/O pin 0(RequestWake-Up Input) After pin configuration by UART command, this pin is able to operate as Wake-Up input pin. If not used for this function, this pin needs to be pulled down by 100 kΩ.
GPIO1	A4	DVDDA IN/OUT PullReg Schmitt 1,2,4mA	OUT	General Purpose I/O pin 1(Status Output) After pin configuration by UART command, this pin is able to operate as Status output pin. If not used for this function, this pin needs to be kept open.
GPIO2	H8	DVDDDB IN/OUT PullReg Schmitt 1,2,4mA	OUT	General Purpose I/O pin 2(LED Switching Output) After pin configuration by UART command, this pin is able to operate as LED Switching output port. If not used for this function, this pin needs to be kept open.
GPIO3	G8	DVDDDB IN/OUT PullReg Schmitt 1,2,4mA	OUT	General Purpose I/O pin 3(LED Switching Output) After pin configuration by UART command, this pin is able to operate as LED Switching output port. If not used for this function, this pin needs to be kept open.
GPIO4	G7	DVDDDB IN/OUT PullReg Schmitt 1,2,4mA	OUT	General Purpose I/O pin 4(Request Wake-Up for Host CPU Output) After pin configuration by UART command, this pin is able to operate as Request Wake-Up for Host CPU output port. If not used for this function, this pin needs to be

				kept open.
GPIO5	G6	DVDDDB IN/OUT PullReg Schmitt 1,2,4mA	IN/OUT	General Purpose I/O pin 5 After pin configuration by UART command, this pin is able to operate as general-purpose input and output port. If not used for this function, this pin needs to be kept open.
GPIO6	E7	DVDDA IN/OUT PullReg Schmitt 1,2,4mA	OUT	General Purpose I/O pin 6(UART-TX port) After pin configuration by internal processing software, UART-TX pin for Host CPU interface.
GPIO7	F8	DVDDA IN/OUT PullReg Schmitt 1,2,4mA	IN	General Purpose I/O pin 7(UART-RX port) After pin configuration by internal processing software, UART-RX pin for Host CPU interface.
GPIO8	F7	DVDDA IN/OUT PullReg Schmitt 1,2,4mA	OUT	General Purpose I/O pin 8(UART-RTSX port) After pin configuration by internal processing software, UART-RTSX pin for Host CPU interface.
GPIO9	D7	DVDDA IN/OUT PullReg Schmitt 1,2,4mA	IN	General Purpose I/O pin 9(UART-CTSx port) After pin configuration by internal processing software, UART-CTSx pin for Host CPU interface.
GPIO10	B2	DVDDA IN/OUT PullReg Schmitt 1,2,4mA	IN/OUT	General Purpose I/O pin 10 After pin configuration by UART command, this pin is able to operate as general-purpose input and output port. If not used for this function, this pin needs to be kept open.
GPIO11	A2	DVDDA IN/OUT PullReg Schmitt 1,2,4mA	IN/OUT	General Purpose I/O pin 11 .After pin configuration by UART command, this pin is able to operate as general-purpose input and output port. If not used for this function, this pin needs to be kept open.
GPIO12	C6	DVDDA IN/OUT PullReg Schmitt 1,2,4mA	IN/OUT	General Purpose I/O pin 12 After pin configuration by UART command, this pin is able to operate as general-purpose input and output port. If not used for this function, this pin needs to be kept open.

GPIO13	D8	DVDDA IN/OUT PullReg Schmitt 1,2,4mA	IN/OUT	General Purpose I/O pin 13 After pin configuration by UART command, this pin is able to operate as general-purpose input and output port. If not used for this function, this pin needs to be kept open.
GPIO14	B6	DVDDA IN/OUT PullReg Schmitt 1,2,4mA	OUT	General Purpose I/O pin 14(SCL port) After pin configuration by UART command, this pin is able to operate as SCL signal for I2C function pin of serial memory interface. If not used for this function, this pin needs to be kept open.
GPIO15	B5	DVDDA IN/OUT PullReg Schmitt 1,2,4mA	IN/OUT	General Purpose I/O pin 15(DATA port) After pin configuration by UART command, this pin is able to operate as DATA signal for I2C pin of serial memory interface. If not used for this function, this pin needs to be kept open.
GPIO16	A5	DVDDA IN/OUT PullReg Schmitt 1,2,4mA	IN/OUT	General Purpose I/O pin 16 After pin configuration by UART command, this pin is able to operate as general-purpose input and output port. If not used for this function, this pin needs to be kept open.
GPIO17	A3	DVDDA IN/OUT PullReg Schmitt 1,2,4mA	IN/OUT	General Purpose I/O pin 17 After pin configuration by UART command, this pin is able to operate as general-purpose input and output port. If not used for this function, this pin needs to be kept open.
GPIO18	B4	DVDDA IN/OUT PullReg Schmitt 1,2,4mA	IN/OUT	General Purpose I/O pin 18 After pin configuration by UART command, this pin is able to operate as general-purpose input and output port. If not used for this function, this pin needs to be kept open.

**2.1.1 Power Supply Pins****Table 1-2 Power supply pins**

Pin name	Pin No.	Attribute	Conditon	Functional description
		type VDD/GND		
VDD/ GND				
DVDD33USB	A8	Digital VDD/GND	GND	Power supply pin for USB interface USB is not supported. This pin needs to be connected to GND.



## 2.2 System Configuration Example

This figure shows an example of system configuration.

Host interface = UART, Reference Clock = OSC Connection, external EEPROM connection

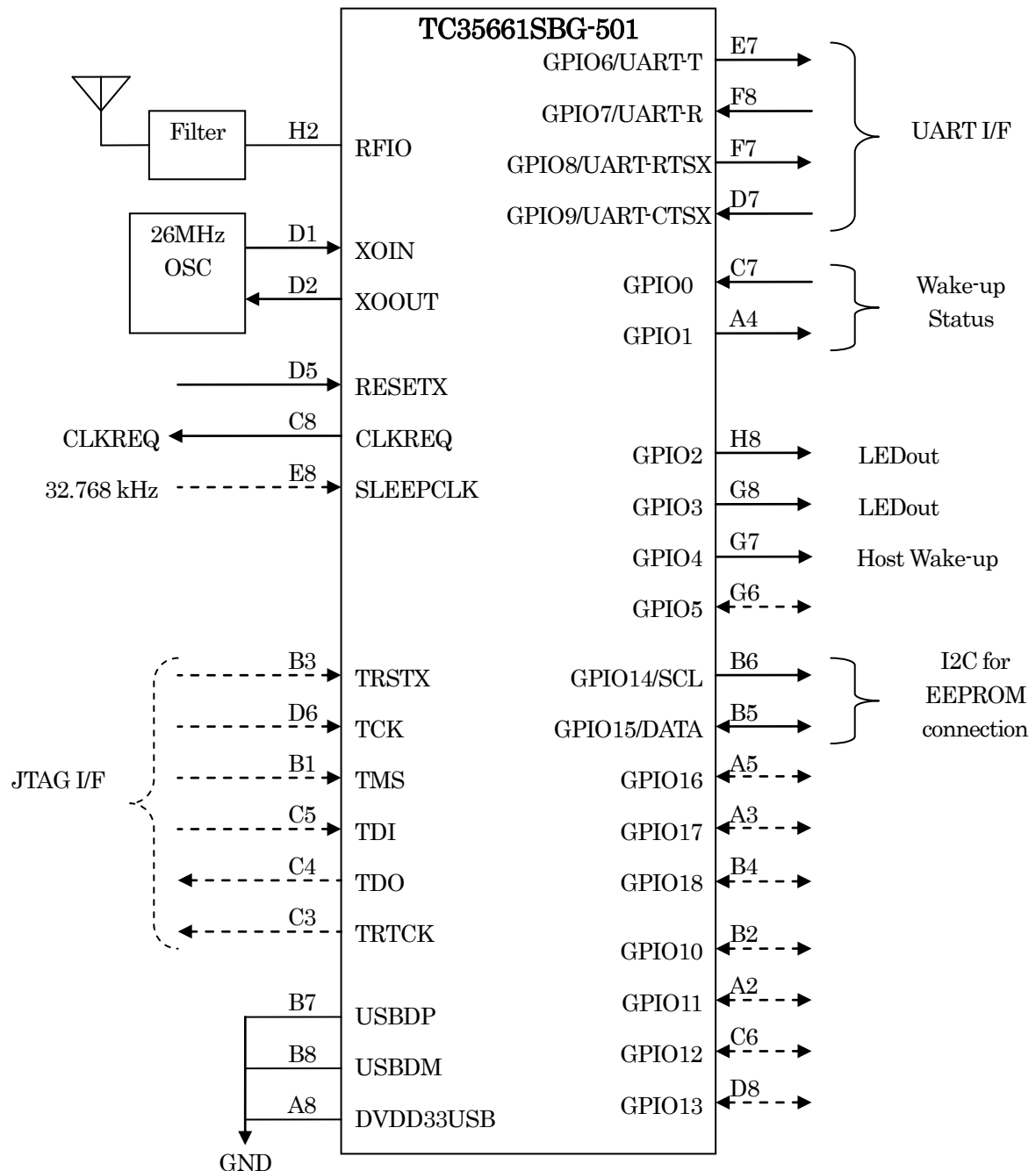


Figure 2-2 TC35661SBG-501 System Configuration Example

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