User Manual

BMP561 EVM

Version: V1.0

1. Introduction

The BMP561EVM is an evaluation module (EVM) designed to test the BMP561 lithium battery fuel gauge IC. It includes the BMP561 IC and all necessary components to accurately measure and estimate the capacity of lithium-ion or lithium-polymer batteries.

1.1 Key Features

- Complete fuel gauge evaluation solution
- Pre-installed circuit modules for fast setup
- Supports data logging and system parameter configuration via PC

2. BMP561-Based Circuit Evaluation Module

The BMP561 EVM integrates the BMP561 fuel gauge IC and an external sense resistor for precise lithium-ion battery capacity measurement.

It requires a battery (or power supply) and an I2C communication link (via the communication box). The module also supports connection to loads or chargers for charge/discharge testing.

2.1 Evaluation Module Interface Connections

- Battery/Power: Connect battery positive (B+) and negative (B-) terminals via connector P1.
- System Load/Charger: Connect through P2 terminals (P/C+ and P/C-) for charging and discharging.
- I2C Communication: Connect to PC using USB interface through P5 pins (SDA, SCL, GND).
- Signal Output: GPIO0 and GPIO1 pins serve as general-purpose IO and programming interface (SWDIO, SWCLK).

2.2 Pin Description

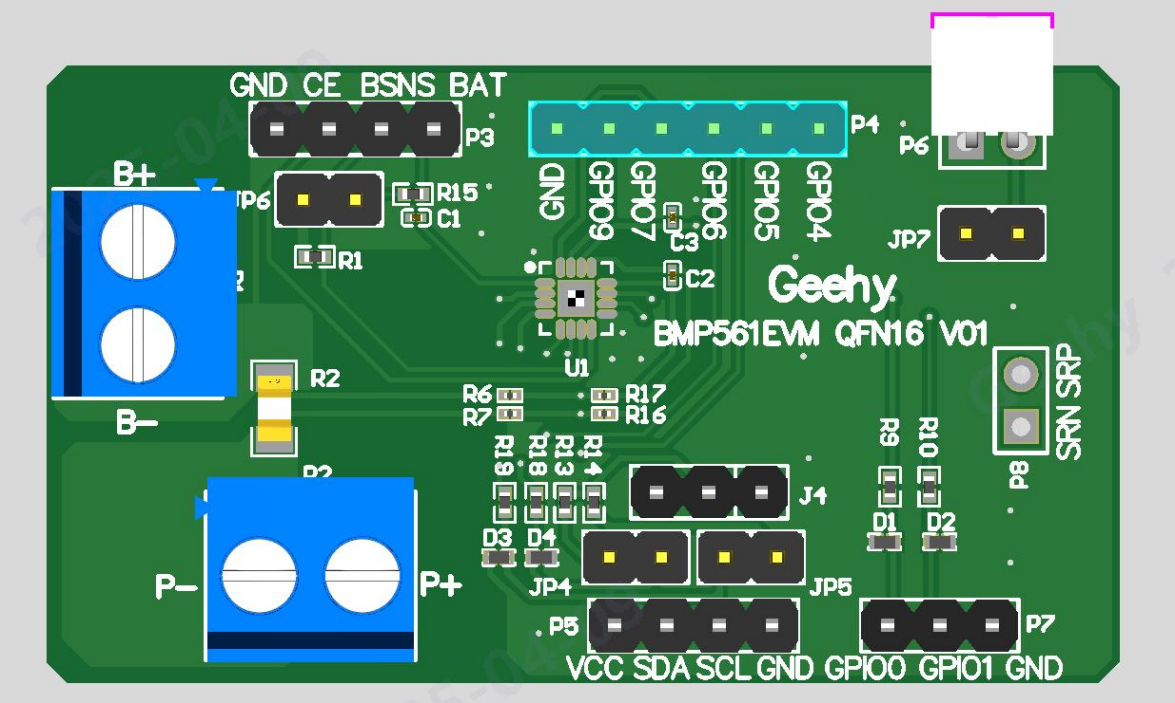
Pin Name	Description
B+	Battery positive terminal
B-	Battery negative terminal
P+	System positive terminal
P-	System negative terminal
SDA	I2C data line
SCL	I2C clock line
GND	System ground
GPIO0,GPIO1,GPIO4~GPIO7,GPIO9	GPIO ports

3. Evaluation Module Details

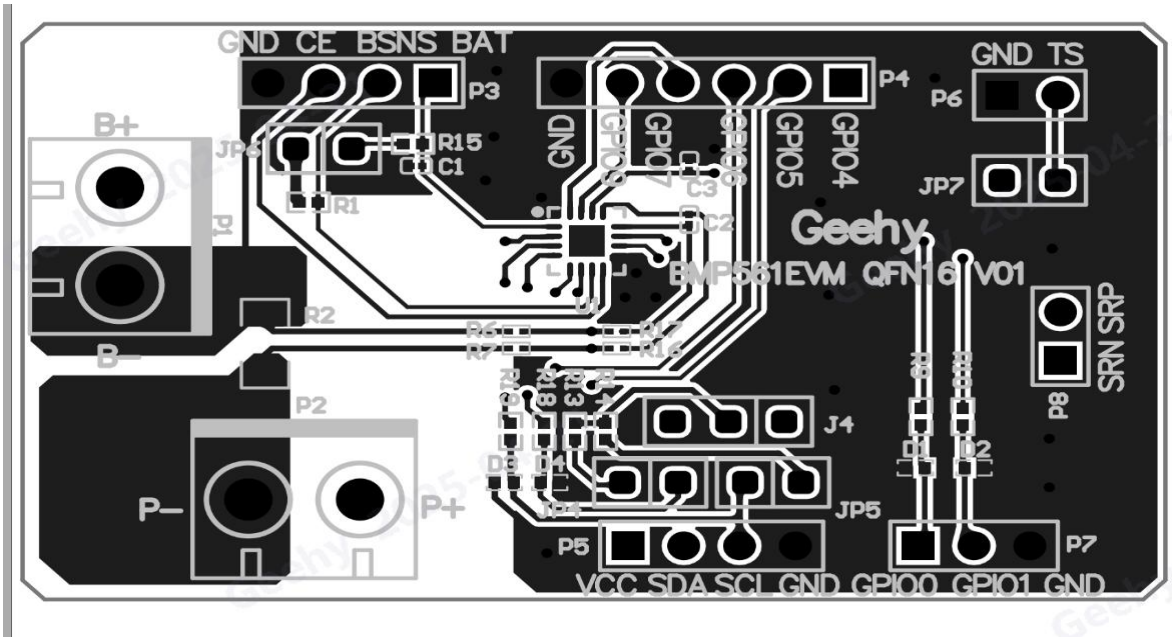
This section includes the PCB layout, bill of materials (BOM), and schematic of the BMP561 circuit module.

3.1 PCB Layout

Includes top and bottom layers and assembly details (Figures 3-1, 3-2).



Figures 3-1



Figures 3-2

3.2 **Schematic**

Partial circuit diagram provided. (Figure 3-3).

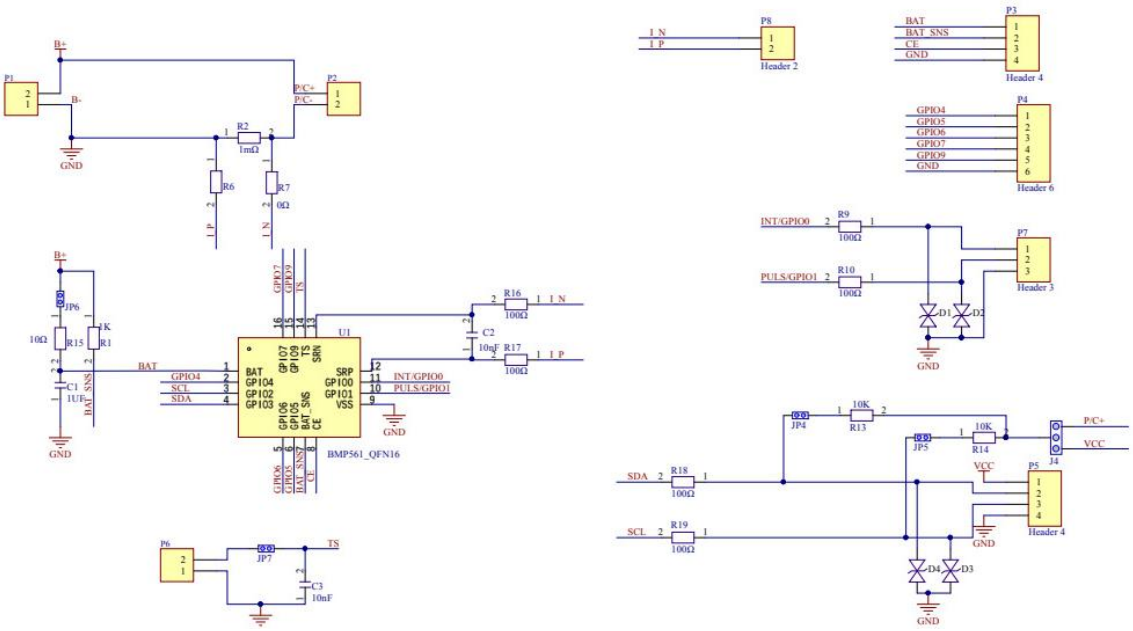


Figure 3-3

3.3 Bill of Materials (BOM)

Designator	Comment	Quantity	Description	Footprint
C1	1uF/±10%/50V /X7R	1	Surface-Mount Capacitors	C0201
C2, C3	10nF/±10%/50V /X7R	2	Surface-Mount Capacitors	C0201
D1, D2, D3, D4	TPD1E10B06DPYR	4	ESD	DFN1006-2L-BI
J4	1x 3-Pin Header (Pins 2-1)	1	3PIN	SP3-2.54
JP4, JP5, JP6, JP7	2x Jumper Caps	4	2PIN	SP2-2.54
P1, P2	KF301/5.08/2P	2	Header, 2-Pin	sp2-5.08
P3, P5	Header 4	2	1x 4-Pin Header	
P4	Header 6	1	1x 6-Pin Header	
P6	XH-2A	1	Wire-To-Board Connectors	
P7	Header 3	1	1x 6-Pin Header	
P8	Header 2	1	NC	
R1	1K/±1% /50mW	1	Surface-Mount Resistors	0402
R2	1mΩ/±1% /3W	1	Surface-Mount Resistors	1206
R6, R7	0Ω/±1% /50mW	2	Surface-Mount Resistors	0201
R9, R10, R18, R19	100Ω/±1% /50mW	4	Surface-Mount Resistors	0402
R13, R14	10K/±1% /50mW	2	Surface-Mount Resistors	0402
R15	10Ω/±1% /50mW	1	Surface-Mount Resistors	0402
R16, R17	100Ω/±1% /50mW	2	Surface-Mount Resistors	0201
U1	BMP561_QFN16	1		QFN16

4. EVM Hardware and Software Setup

This section explains how to connect the BMP561EVM to a PC and how to set up its components.

4.1 System Requirements

The BMP-TOOL software supports Windows XP or later. Earlier versions may not support the USB driver.

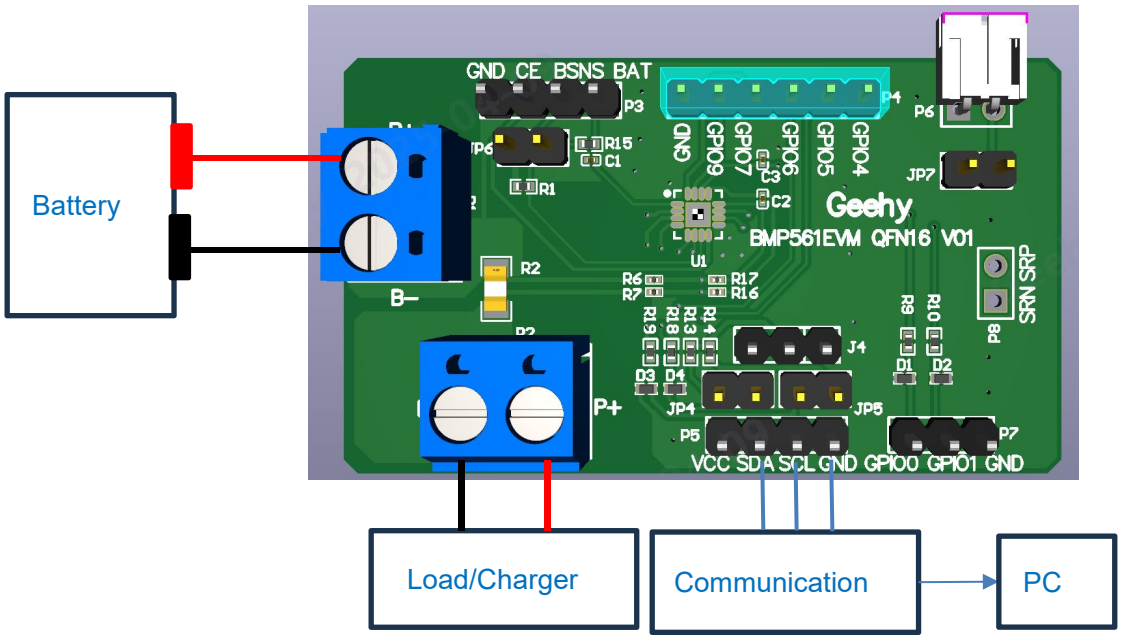
4.2 Software Installation

Follow the BMP-TOOL installation guide to install the host software.

4.3 Hardware Connections

The BMP561 evaluation system needs two main connections: a battery cell and an I2C communication box. To test charging and discharging, you can also connect a system load or charger.

The diagram below shows how to connect the BMP561 module to the battery and load/charger.

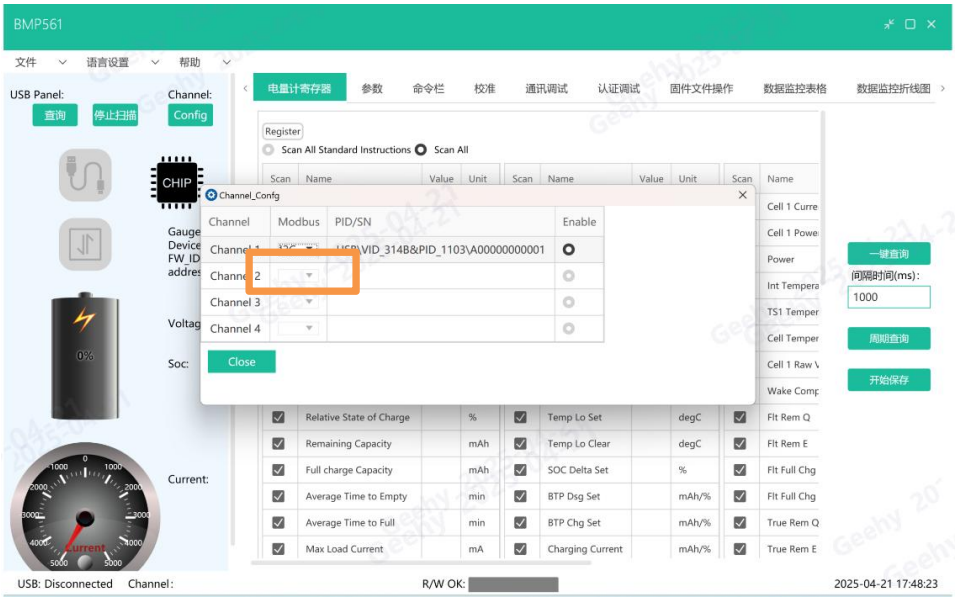


- **Jumper Settings：**
  - **P3:** Chip Enable (CE).
  - **JP6:** Connects chip BAT to B+.
  - **JP4/JP5:** I2C clock and data pull-up.
  - **J4:** Select external VCC or P/C+ for I2C pull-up.
  - **JP7:** TS chip, enabling the external NTC sensor by connecting this jumper.

5. Startup

1) When powering the board via a power supply or a battery connected to P1, make sure P3 (CE and BSNS pins shorted) and the JP6 jumper are connected.

2) After powering on, connect the communication box and open the BMP_Tool software.



3) In the software, click Config, select I2C for Modbus communication. Once connected, the communication box LED turns green, and the software will display battery capacity, current, voltage, and other data.