AN3075
Application note

Demonstration board user guidelines for the STC3100 battery monitor for gas gauge applications

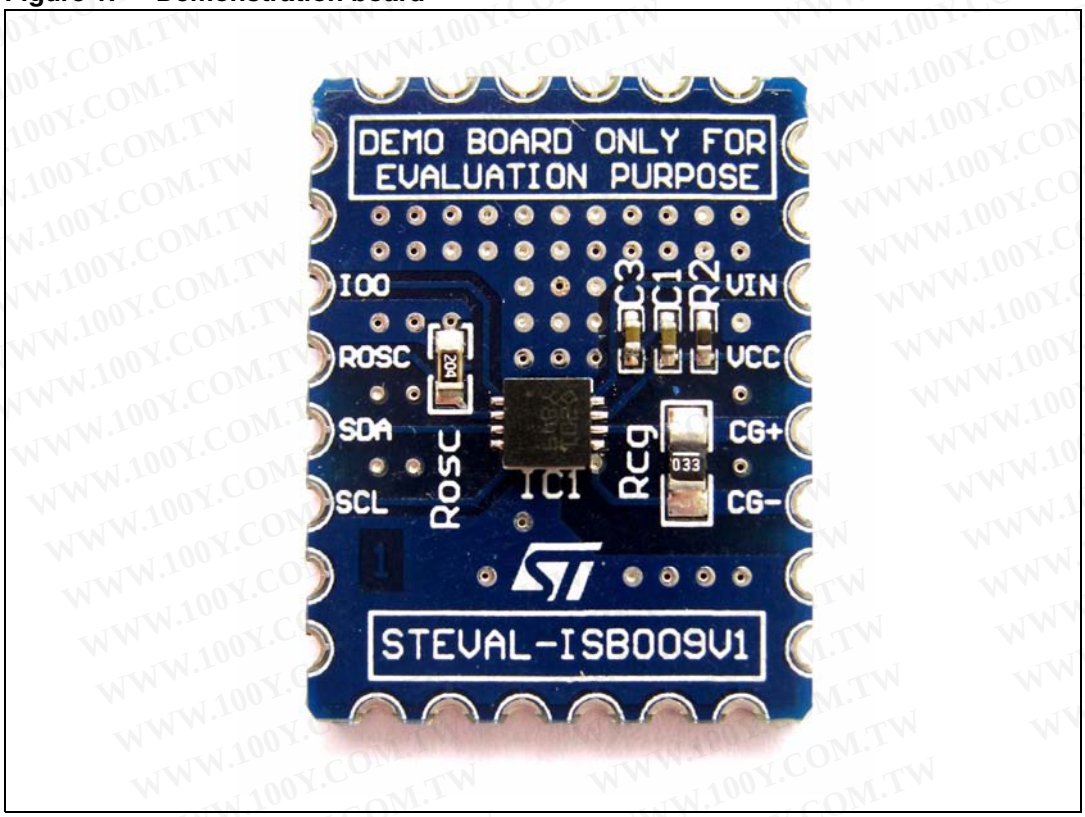
Introduction

This application note describes the STEVAL-ISB009V1, a demonstration board specifically designed for the STC3100 integrated circuit.

The document provides:

- a brief description of the STC3100 device.
- a description of the demonstration board.
- a detailed bill of materials for the demonstration board.
- the layout of the demonstration board.

Figure 1. Demonstration board



1 About the STC3100

The STC3100 monitors the three main battery parameters: voltage, current and temperature, and includes a Coulomb counter to keep track of the charge/discharge status.

1.1 Features

- Accurate battery voltage measurement
- Coulomb counter to keep track of the battery's state-of-charge
- Internal temperature sensor
- Internal or external 32 kHz timebase
- I2C interface for battery monitoring and device control

1.2 Performances:

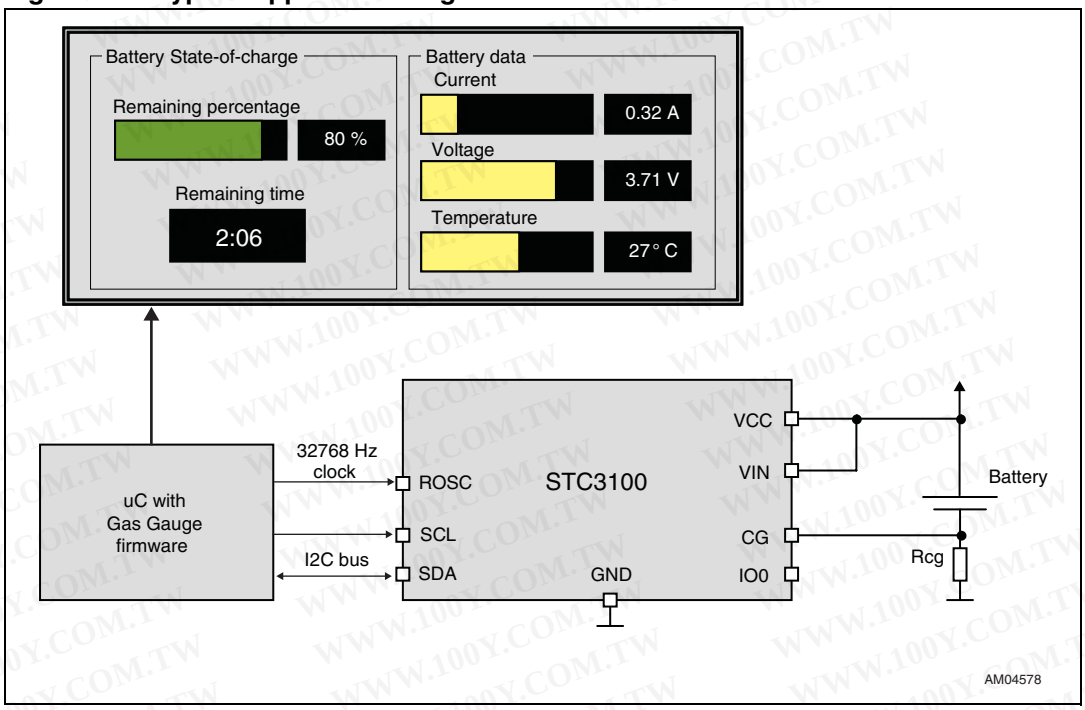
- 0.5% battery voltage accuracy
- 1% Coulomb counter accuracy using an external RTC signal (3.5% using the internal timebase).
- Low power consumption: 100 µA in operating conditions, 2 µA in standby mode.

1.3 Packages

- DFN8 3 x 3 (as used in the demonstration board)
- MiniSO-8

Refer to the STC3100 datasheet for more detailed information on the device.

Figure 2. Typical application diagram for the STC3100



2 Demonstration board description

The STEVAL-ISB009V1 is a demonstration board designed to help you evaluate the performance of the STC3100.

Figure 3. Demonstration board schematic diagram

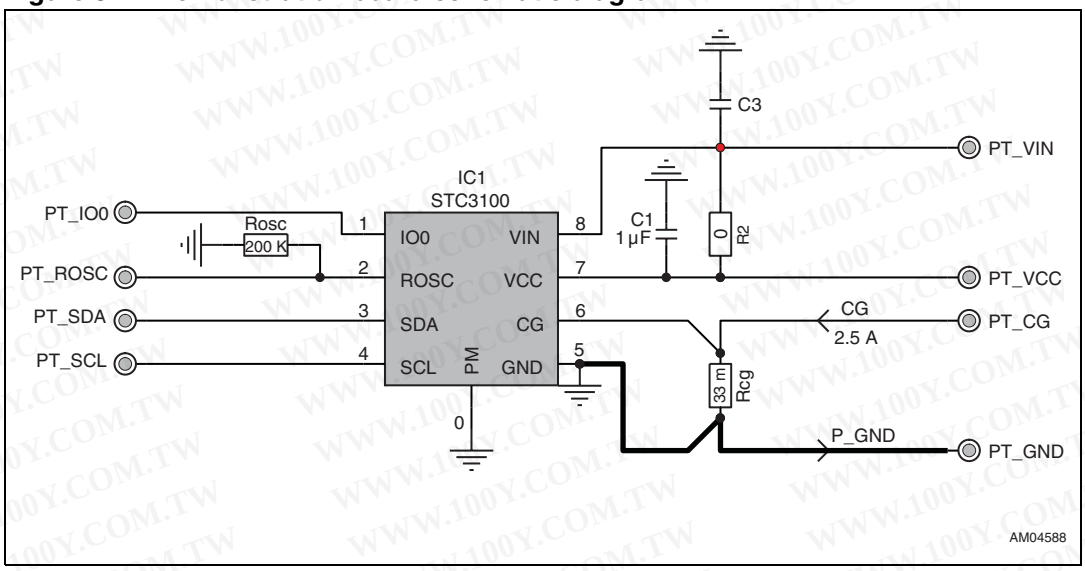


Table 1. Bill of materials

Part	Part type	Footprint	Description
IC1	STC3100IQT	DFN8 3x3	Battery monitoring integrated circuit from STMicroelectronics
Rosc	200 kΩ/0.1%	0603	Oscillator resistor
Rcg	33 mΩ/1%	0805	Shunt resistor
R2	0 Ω	0402	Strap
C1	1 µF/10 V/X7R	0402	Decoupling capacitor
C3	1 µF/10 V/X7R	0402	Optional filtering capacitor

3 Demonstration board layout

The printed circuit board of the demonstration board has the following characteristics.

- Board dimensions: 23 mm x 18 mm
- 2-layer PCB
- Thickness of PCB: 0.8 mm
- FR4 material
- Thickness of copper: 18 µm

Figure 4. Top view of demonstration board

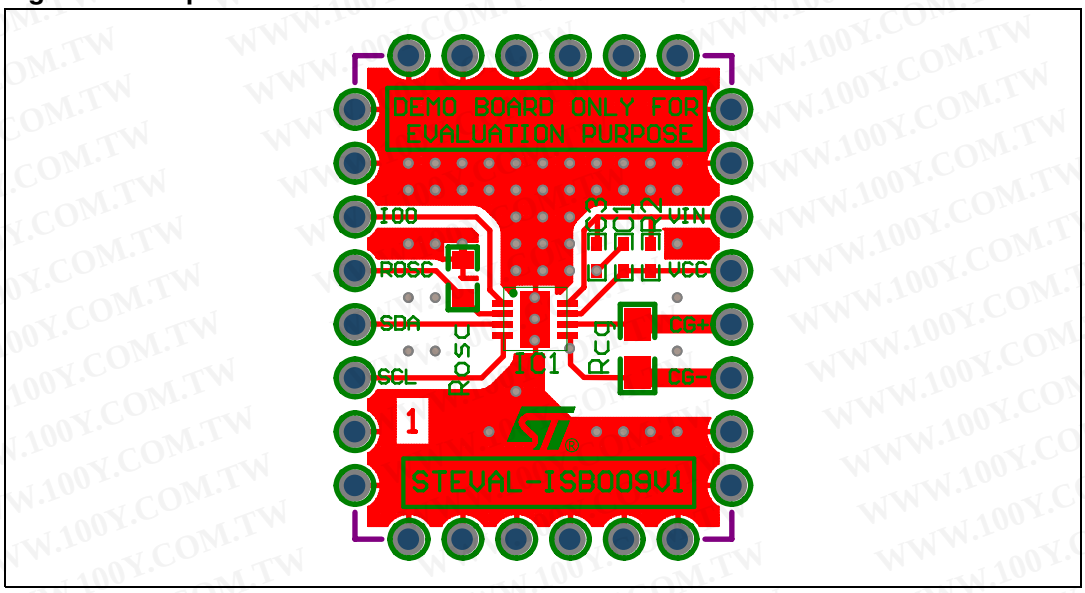
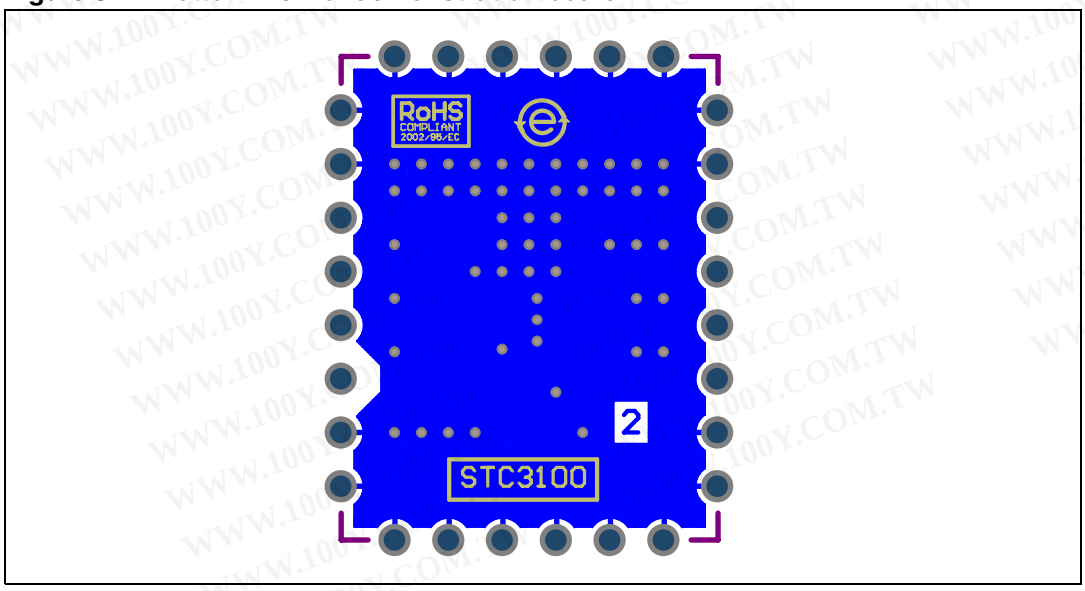


Figure 5. Bottom view of demonstration board



4 Demonstration board connections

The STC3100 demonstration board can be simply connected to a battery and interfaced with a digital controller as shown in *Figure 6*.

Figure 6. Demonstration board connections with battery and microcontroller