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
# 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
# Demonstration board description

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

![Demonstration board schematic diagram](image)

## Table 1. Bill of materials

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

IO voltage = 1.8 V (or 2.8 V, 3.3 V...)

I2C master

10 K

SDA

SCL

10 K
5 Conclusion

To order the board online, go to http://www.st.com/stonline/domains/buy/buy_dev.htm and use the order code STEVAL-ISB009V1.
6 Revision history

Table 2. Document revision history

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>Changes</th>
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<tbody>
<tr>
<td>08-Oct-2009</td>
<td>1</td>
<td>Initial release.</td>
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