Getting started with SPV1050

SPV1050: ultra-low-power energy harvester and battery charger
The SPV1050 takes a very small portion of the otherwise wasted ambient energy and stores it in a tank to make your wireless sensor node fully autonomous.
Making your designs easier

To support SPV1050, a comprehensive set of design tools is available, including:

• evaluation boards

• autonomous wireless multi-sensor nodes (SPIDERs) equipped with a SW GUI for sensor data graphical visualization
## Making your designs easier

<table>
<thead>
<tr>
<th>Order code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>STEVAL-ISV019V1</td>
<td>Evaluation board for SPV1050 ULP energy harvester and battery charger - Boost configuration</td>
</tr>
<tr>
<td>STEVAL-ISV020V1</td>
<td>Evaluation board for SPV1050 ULP energy harvester and battery charger - Buck-Boost configuration</td>
</tr>
<tr>
<td>STEVAL-ISV021V1</td>
<td>Energy harvesting demonstration kit based on SPV1050</td>
</tr>
<tr>
<td>STEVAL-IDS002V1</td>
<td>Autonomous wireless multi-sensor node powered by photovoltaic cells and based on SPV1050 (SPIDEr™)</td>
</tr>
<tr>
<td>STEVAL-IDS003V1</td>
<td>Autonomous wireless multi-sensor node powered by thermoelectric generator and based on SPV1050 (SPIDEr™)</td>
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Boost & Buck-Boost configuration

- Helping to find out the best system configuration to optimize energy conversion and harvesting
- Many testing points to enhance customer evaluation
- Battery End of Charge Voltage @ 4.27V, under voltage threshold @ 3.6V
- Few little HW changes allow to check the device performance in any working condition, with different PV panels or TEG and battery

Boost
STEVAL-ISV019V1

Buck-Boost
STEVAL-ISV020V1
Energy harvesting

- Indoor PV module soldered on the back
- 3.6V Lithium coin cell 120mAh battery
- Ambient light sensor for irradiance measurement
- Interface connector with a sensor board
- Interface to the power monitoring demo board and SW GUI to graph
SPIDER

Self Powered Intelligent Distributed Environment Monitor

SPV1050 based autonomous wireless multi-sensor node

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PV or TEG module

+ Power monitoring board

+ Receiver board
• Photovoltaic module or TEG on board

• SPV1050 ULP energy harvester and battery charger

• On board Lithium coin-cell battery

• Integrated transmitter board with STM32 microcontroller and Spirit1 RF Sub-Giga transmitter

• Power monitoring and Receiver boards powered by USB
SPIDER integrated sensors

- **STTS751**
  - Temperature sensor

- **LPS331AP**
  - Air pressure sensor

- **LIS3DH**
  - 3-axis accelerometer MEMS sensor
• to configure the sensor node

• to show conversion efficiency and all the fundamental electrical parameters measured through the power monitoring demo board
Ordering your SPV1050

Package and packing

Available in a surface-mounting VFQFPN 3 x 3 x 1 mm, 20 leads, in tape and reel and in bumped flip-chip die form

Order codes

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<tr>
<td>SPV1050TTR</td>
<td>VFQFPN 3 x 3 x 1 mm, 20 leads</td>
<td>Tape and reel</td>
</tr>
<tr>
<td>SPV1050-WST</td>
<td>WLCSP, 20 bumps</td>
<td>Tested and unsawn wafer</td>
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</table>

Support

Samples available, full production in Q1 2014

Further information and full design support available at:

www.st.com/SPV1050
Thank you!

ST stands for life.augmented