

CYPRESS

S6AE102A AND S6AE103A EVALUATION KIT

EASY-TO-USE PLATFORM TO DEVELOP BATTERY-FREE APPLICATIONS WITH ENERGY HARVESTING TECHNOLOGY

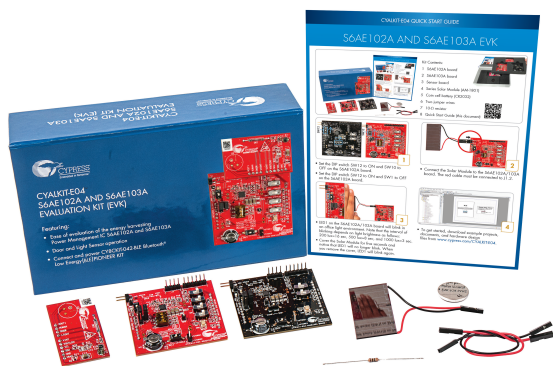


PRODUCT OVERVIEW

INTRODUCTION

There is no need to worry about costly electrical wiring and battery maintenance for wireless sensors. Cypress' Energy Harvesting PMIC enables the industry's smallest, solar-powered Wireless Sensor Nodes (WSN).

The CYALKIT-E04 S6AE102A and S6AE103A EVK is an easy-to-use energy harvesting evaluation kit used to develop applications that require battery-free operation or battery-life extension. This kit consists of an S6AE102A board, S6AE103A board, and a sensor board, along with a solar module, wires, and a coin battery for testing different configurations. The S6AE102A and S6AE103A boards have pin headers compatible with Arduino.



FLEXIBLE ENERGY HARVESTING POWER BOARD

This kit can be used standalone as an energy harvesting power board, or it can be used in conjunction with the CY8CKIT-042-BLE Bluetooth® Low Energy Pioneer Kit that has compatible pin headers with Arduino to develop BLE-based battery-free wireless sensor applications.

THE ULTRA-LOW-POWER OPERATION

The CYALKIT-E04 S6AE102A and S6AE103A EVK is based on ultra-low-power, energy harvesting S6AE102A and S6AE103A PMICs. These PMICs enable ultra-low power operation with quiescent currents of only 280 nA and startup power of only 1.2 μ W. This enables the boards to store slight amounts of power generation from a 1cm²-series solar cell under dark environments of approximately 100 lux, and provide power to the systems.

EFFICIENT POWER DELIVERY OPERATION

Power delivery is managed efficiently by a power-gating switch and multiplexer that ensure the connection between input source (solar cell or primary battery) and output load (system or storage capacitor) is flexible and automatically controlled. Also, an interrupt signal and CR timers provide additional control for effective system operation.

FEATURES

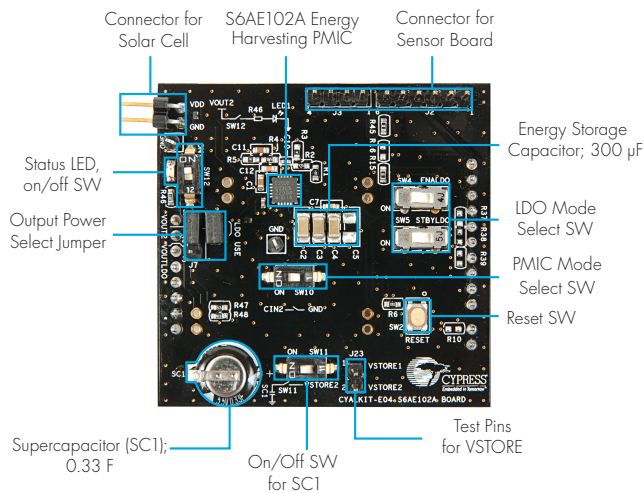
- **INPUT CHANNEL**
 - Two inputs for series solar cell and primary battery (option)
- **INPUT VOLTAGE RANGE**
 - 2.0 - 5.5 V
- **INPUT OVER VOLTAGE PROTECTION**
 - 5.4 V
- **STARTUP POWER**
 - 1.2 μ W
- **OUTPUT CHANNEL**
 - Up to two outputs for different system loads
- **OUTPUT VOLTAGE RANGE**
 - 1.1- 5.2 V
- **QUIESCENT CURRENT**
 - Down to 280 nA
- **POWER-GATING SWITCH**
 - Up to two output power control circuits that control power provided to the system load
- **MULTIPLEXER**
 - Select the power source from series solar-cell and primary battery
- **STORAGE CONTROL**
 - Store energy in up to two external capacitors
- **PERIPHERALS**
 - Low power (400 nA) LDO
 - Low power (30 nA) CR Timer (S6AE103A only)
 - Low power (20 nA) Comparator (S6AE103A only)
- **CONNECTED SENSORS**
 - Magnetic switch for door open/close detection
 - Light sensor for light on/off detection

APPLICATIONS

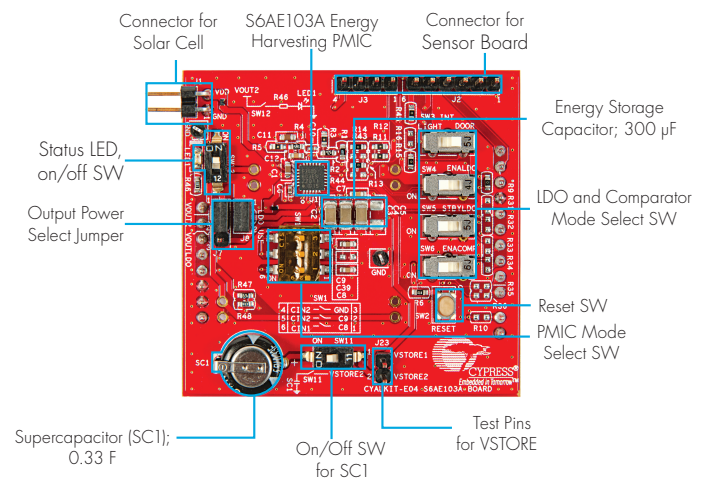
- Light energy harvesting
- Bluetooth Smart sensor
- Wireless door open/close detection sensor
- Wireless light on/off sensor
- Wireless sensors for smart homes , buildings, and industrial environments

BOARDS

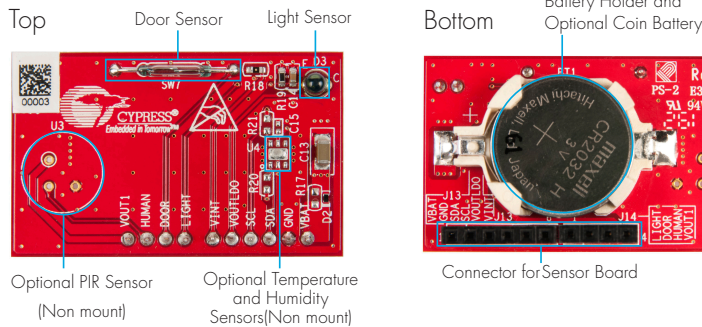
S6AE102A Board



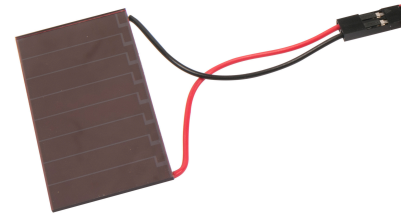
S6AE103A Board



Sensor Board



Solar Cell (Panasonic AM-1801)



S6AE102A/S6AE103A ENERGY HARVESTING PMICs

| MPN | Output Channels No. | Input Voltage Range (V) | Recommended Input Harvesting Power(mW) | Output Voltage Range (V) | Quiescent Current (nA) | Min. Startup Power (µW) | Power-Gating Switch | Storage Control | LDO | IRQ | CR Timer | Comparator | Package |
|----------|---------------------|-------------------------|--|--------------------------|------------------------|-------------------------|---------------------|-----------------|-----|-----|----------|------------|------------|
| S6AE102A | 2 | 2.0-5.5 | <10 | 1.1-5.2 | 280 | 1.2 | Yes | Yes | Yes | Yes | - | - | 20-pin QFN |
| S6AE103A | 2 | 2.0-5.5 | <10 | 1.1-5.2 | 280 | 1.2 | Yes | Yes | Yes | Yes | Yes | Yes | 24-pin QFN |

GET STARTED TODAY!

Buy the \$59 S6AE102A and S6AE103A Evaluation Kit (CYALKIT-E04) – www.cypress.com/CYALKIT-E04

Check S6AE102A and S6AE103A Website – www.cypress.com/S6AE102A, www.cypress.com/S6AE103A

Download S6AE102A and S6AE103A Datasheet – www.cypress.com/DS-S6AE103A (Include S6AE102A)

Download the application manual:

- Basic Concepts for Energy Delivery with S6AE101A, S6AE102A, and S6AE103A – www.cypress.com/AN213948

- Energy Calculation for Energy Harvesting with S6AE101A, S6AE102A, and S6AE103A – www.cypress.com/AN210772

Try with the Bluetooth Low Energy Pioneer Kit (CY8CKIT-042-BLE) – www.cypress.com/go/cy8ckit-042-ble

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