Because Energy is Everywhere

SiliconReef is a fabless company that designs high efficiency power converters and power management circuits for handling the energy-harvesting process.

Our Range of Energy Harvesting & Power Management IC's are designed to work alongside future energy technologies such as Solar, Piezo and the Internet of Things.

Solar	Piezo	IoT
Solar Power Banks	Wearables	Smart Cities
Solar Lights	Pressure Sensors	Smart Cars
Solar Sensors	Human Motion	Smart Homes
Power Banks	Battery Charging	Battery Charging

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EH01

Solar Energy Harvesting IC with 5V output power port and Li-Ion Battery Charger Circuit

Description

The EH01 is a complete power management solution for a variety of energy-harvesting Applications, providing a small and simple solution combining power from different sources: a DC wall adapter, photovoltaic cells and a Li-Ion battery. This device enables a simple implementation of a 5V supply, like a USB charger compatible with the ITU standard for the Universal Charging Solution (L.1000). Using a high efficiency DC/DC converter the EH01converts the voltage from the panel to a stable 5V output. In addition a Li-Ion Battery Charger (with numerous protection features) stores the excess energy from the panel in an external battery. This battery then complements the energy to the DC/DC converter when needed. The EH01 also provides an interface for battery status monitoring. This can be done via a simple button making a LED pulse or via a microcontroller based serial communication.

Features

» Complete all-in-one management of energy-harvesting process
» Works with both solar panels or conventional wall adapters
» Regulated 5V output power port withstanding currents up to 1.2A (see 1.2A Solar/Wall USB Charger application);
» Operation mode consumption below 5mW
» Total conversion efficiency above 90%
» Stand-by consumption less than 500µW
» Battery Monitoring via Led or Serial Interface

Applications

Solar Power Banks – Solar Lights – Remote Sensors – Power Banks – Battery Charging – Sensor Nodes – Solar Mobile Device

EH02 – launch date Q3 2016

Vibration Energy Harvesting IC with 3.3V output regulation and Maximum Power Point Tracking System

Description

EH02 is a complete power management solution for a variety of kinetic energy harvesting applications. It has a low loss AC-DC Voltage Doubler Rectifier and a high efficiency Buck converter. It is fit for energy harvesting solutions enabled by piezoelectric or electric-mechanical transducers. The EH02 has an analog controller that uses the transducer voltage as a feedback and regulates the rectified voltage to adaptively improve the extracted power.

Features

» Input operation range 3.7V to 18V
» Output current up to 100mA
» Integrated AC-DC voltage doubler rectifier
» Integrated DC-DC Buck converter
» Adaptive energy harvesting circuit to set piezo at maximum power point
» Output regulated voltage 3.3V
» Suitable for low power applications (<5mW)

Applications

» Piezoelectric energy harvesting
» Low power battery charging
» Tire pressure sensors
» Industrial monitoring network sensors
» Wearable applications

EH01HV – launch date 2017

Solar Energy Harvesting IC for 12V/24V Applications with Integrated Battery Charger

Description

The EH01HV simplifies the process of introducing solar energy to a design. Using a CC-CV profile it charges Lead-Acid or Lithium-Ion batteries from either a PV cell or some other VDC power source. The device comes ready to charge either 12V or 24V batteries or can be adjusted to any other voltage between 5V and 34V. In addition the EH01HV also monitors the batteries to improve the durability. Two inputs are provided: one for a solar panel and the other for a stable VDC power source. The PV cell input uses a MPPT algorithm to search for the maximum power operation level every second achieving a 95% tracking efficiency. The other input can be connected to an inexpensive VDC 12V wall adapter, a poorly regulated automotive cigarette lighter sockets (typically vary between 12.5-14.5V), or any other DC sources up to 34V. The provided SPI interface can be used to reconfigure the EH01HV in factory or to allow an external controller to define a new charging profile.

Features

» Dual Power Input: PV Solar cell and VDC source. Voltage range: 5V to 34V.
» Dynamic MPPT algorithm for increasing solar panel efficiency to 95% of MPP
» Automatic sleep mode in low light
» Can charge a 12V, 24V or other custom voltage battery. Output Voltage up to 34V.
» Implements charging profiles for Li-Ion, Li-FePO4, Li-Ion Polymer, Lead-Acid, and VRLA (AGM or gel) Batteries.
» 2A output current and can be connected in parallel for higher current.
» Battery protection over-discharge, overheating, over-voltage and over-current.
» Programmable Configuration
» SPI interface

Applications

» Remote sensor, monitor systems
» Portable hand-held instruments, and small battery backed power tools.
» Solar battery chargers
» 12V and 24V automotive systems
» Solar Powered LED Street Illumination

Company Details

- Founded in 2008
- Based in the ICT cluster of Porto Digital in Recife Brazil
- Originally funded by the current CEO & CTO
- Design House heritage
- Transition to Fabless Semiconductor model 2012
- First Product Released 2015

Headquarters

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Sales Channels

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China - SunyTech - www.sunytech.com

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TechLink Sales - www.techlinksales.com

UK - APC Hero - www.apchero.co.uk
France - Isotope Electronics - www.isotope.com
Europe -Texim Europe - www.teximeurope.com

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