Battery Charging IC Improves Device Efficiency

The small strips of solar cells seen in the front panels of today's small portable consumer, healthcare and security devices are set to become a more valuable source of free energy with help from a new battery charging IC from STMicroelectronics, a global leader serving a spectrum of electronics applications. The new IC will significantly increase charging efficiency either indoor or outdoor, using the sun's radiated energy, enabling longer mobile equipment runtime and avoiding an unexpected lack of power when a mains connection is not available.

ST's SPV1040 is a step-up DC-DC converter tailored to be used as solar battery charger for portable applications to employ Maximum Power Point Tracking (MPPT), an innovative technique for collecting the maximum possible energy from solar cells. It can be connected to strips of even just a few cells, allowing use in products such as portable healthcare devices, watches, calculators, wireless headsets, toys, or mobile phones. The battery charger and MPPT technology can also be used in equipment such as sensors and security cameras.

The MPPT algorithm embedded in the SPV1040 dynamically adjusts the charger's input impedance to ensure perfect matching with the solar cell, thereby maximizing energy transfer to the battery and dramatically improving overall system efficiency. Without MPPT, changes in the solar cells caused by temperature, ageing, dirt or unit-to-unit variation can produce mismatches that significantly reduce the energy harvested...

Major features of SPV1040:
• Input-voltage range: 0.3V to 5.5V
• Integrated low-loss synchronous rectifier and power switch
• Up to 95% efficiency

• Shutdown pin to aid system-level power management
• Thermal shutdown and protection circuitry to improve battery and overall system safety

Available in the TSSOP8 plastic package, the SPV1040 is in full production, priced at approximately $2.00 in quantities of 1000 units. Alternative pricing options are available for larger quantity orders. Evaluation boards and technical documentation are also available.

Further information on ST can be found at www.st.com [1].

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[1] http://www.st.com