

## NEWS RELEASE

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## **Summit SMB137: I<sup>2</sup>C Programmable 1.5A USB/AC Li-Ion Charger and Input/Output Power Manager Solves Tough Portable Power Challenges**

***Supports USB 2.0 and USB “On-The-Go”, Eliminates “Dead Battery Trap”,  
Cuts Charge Time, Heat and Size by 50%-80% with TurboCharge™***

**San Jose, Calif. – October 3, 2007 – Summit Microelectronics** expands its family of Programmable Battery Charger integrated circuits (ICs) with the introduction of the SMB137. Specifically designed for feature-packed mobile consumer electronics, the SMB137 delivers unprecedented levels of functionality and flexibility while solving the most challenging power and battery management problems. Dual (USB or AC/DC) inputs and outputs (System or Battery) with CurrentPath™ automatic arbitration allow system operation with any input source, any battery charge state or even missing battery. Proprietary TurboCharge™ technology yields dramatic reductions in charge time, power dissipation and solution size compared to conventional charger solutions. The ultra-small solution size, combined with Micro-USB data/power support, enables ultra-thin devices with the convenience of USB battery charging.

Integrated features such as USB On-The-Go (USB-OTG) power and Low-Battery-Recovery™ (LBR) bring new levels of mobility and convenience to consumers. The I<sup>2</sup>C interface enables sophisticated software programmability, while the embedded non-volatile configuration provides a tremendous degree of design flexibility without the need for software development. The result is the most complete and flexible battery management solution for any portable or handheld device.

“The SMB137 extends Summit’s leadership in battery charging for mobile devices with unmatched functional integration, flexibility and solution size. Exclusive features such as TurboCharge™, USB-OTG, Micro-USB support, and Low-Battery-Recovery™ enable sleek and stylish, yet feature-rich, gadgets delivering real value to consumers and marketable benefits to OEMs,” stated Abid Hussain, Summit vice-president of marketing.

## **Features**

The SMB137’s CurrentPath™ input/output controller intelligently arbitrates between dual inputs and applies the appropriate current limit (100mA/500mA or 700-1400mA) depending on the source – USB or AC/DC. At the output the current is steered between the system output and the battery charger with the system taking priority over the charger. When operating from battery power, the “active diode” function automatically connects a low impedance path from the battery to the system output for high efficiency operation, extending battery life. All the input/output control functions are governed by programmable parameters held in non-volatile configuration memory.

The fully integrated switch-mode charger outputs up to 1.5A with over 90% typical efficiency, maximizing charge current while minimizing power dissipation – up to 50% to 80% improvement over typical linear charging solutions. Patent-pending TurboCharge™ technology automatically boosts output current while precisely limiting input current for USB 2.0 compliance – up to 750/150mA charger output from a 500/100mA USB 2.0 port or 1.5A from a 1000mA AC/DC adapter. USB 2.0 enumeration support and I<sup>2</sup>C programmability facilitate emerging standards such as the Micro-USB connector and facilitate a new generation of compact industrial designs. Additionally, USB standardization significantly reduces BOM cost versus proprietary multi-pin connectors and frees consumers from the bulky AC/DC wall adapter.

USB functionality is enhanced with proprietary technology that supports USB On-the-Go and Low-Battery-Recovery™ (LBR). The SMB137’s step-down converter, that normally operates in “forward mode” to charge the battery, can operate in reverse to boost the battery voltage to +5V for USB-OTG or +3.9V to +5.0V for LBR™. USB-OTG power allows two USB devices to connect to each other without the presence of a PC. This feature greatly enhances the mobility of USB devices by allowing truly mobile data exchange. LBR™ mode is another exclusive Summit technology that eliminates what is commonly known as “dead battery trap” – a condition where a battery is so discharged (typically below 3.3V) that it

cannot power-up the system. Unlike competing solutions no additional external boost circuit components are required for either USB-OTG or LBR™ modes.

An I<sup>2</sup>C digital interface and volatile/non-volatile programmability allow for a high degree of flexibility in power management parameters. The SMB137 can be “custom” programmed in manufacturing and used “standalone” without the need for system interaction. Alternatively, with the I<sup>2</sup>C interface, virtually all parameters can be adjusted “on-the-fly” to optimize battery charging with software depending on system needs. Parameters that are programmable include: input and output current limiting, pre-charge/fast-charge/termination current settings, float voltage, pre-charge voltage threshold and OTG/LBR current limit. The SMB137 operates with an input range from +4.35 V to +5.5V input and tolerates input over-voltage up to +16V (non-operating). The operating temperature range is –30C to +85C.

The SMB137 is compliant with existing and emerging safety and standards for portable devices including a host of safety features: input current limit, dual independent output current limits, input and battery over-voltage protection, battery and chip thermal protection, charge safety timeouts, trickle charge, software watchdog timer and status/fault monitors. With these features the SMB137 is compatible with common standards such as USB 2.0, IEEE1725 and the new China USB Charging Specification.

### **Applications**

The SMB137 is ideal for applications in a wide range of devices such as portable media/MP3 players (PMP), portable GPS navigation (PND), smart-phones/PDAs, and digital cameras/camcorders (DSC/DCC), as well as “multi-use” devices that integrate multiple functions. The SMB137 is especially suited for devices that include a USB interface because it allows a tiny Micro-USB connector to be the primary data/power/charging interface.

### **Pricing and Availability**

The SMB137 is offered in a 3.3mm x 3.6mm 30-ball chip-scale (CSP) package which is lead-free and RoHS-standard compliant. Available now in production quantities the SMB137 is priced at \$2.30 each in quantities of 10,000 units.

## **Design Software and Programmer for Prototype Development**

To speed user product development, Summit offers customers the SMB137EV companion evaluation board and a graphical user interface (GUI) software so designers can quickly see the features and benefits and design a prototype power supply with the SMB137.

This is a complete development tool that lets designers easily manipulate the characteristics of their systems. The SMB137EV design kit includes menu-driven Microsoft Windows (R) GUI software to automate programming tasks and also includes all necessary hardware to interface to the USB port of a laptop or PC.

Once a user completes design and prototyping, the SMB137EV automatically generates a HEX data file that can be transmitted to Summit for review and approval. Summit then assigns a unique customer identification code to the HEX file and programs the customer's production devices prior to final electrical test operations. This ensures that the device will operate properly in the end application. The design kit software can be downloaded today from Summit's website ([www.summitmicro.com](http://www.summitmicro.com)).

## **About Summit Microelectronics**

Summit Microelectronics is the leader in flexible, highly integrated power management solutions combining precision power regulation with sophisticated digital control in a single chip. The Company's devices are found in a variety of consumer, communications and computing applications.

Summit's unique programmable, non-volatile mixed-signal IC technology combined with a convenient GUI development environment allows for unparalleled functional and parametric flexibility in power supply design. This flexibility applied to common problems such as dynamic voltage/current control and intelligent battery charging, allows for significant system performance improvement while realizing drastic reductions in design effort.

Digital programmability enables high integration and system flexibility in a single chip - impossible with conventional "hard-wired" analog power ICs. Additionally, this integration reduces the bill-of-materials yielding the lowest total system cost and size. Summit solutions address the biggest challenges facing OEM developers today: increasing system functionality, performance and complexity accompanied by shrinking development time cycles.

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