

Seven-Channel Programmable DC-DC Power Manager with Battery Charger

FEATURES & APPLICATIONS

- Digital programming of all major parameters via I²C interface and non-volatile memory
 - Output voltage setpoint/margining
 - Sequencing & digital soft start
 - Enable/Disable outputs independently
 - Input/Output UV/OV voltage thresholds
 - PWM/PFM mode, switching frequency
- Six programmable regulator channels with 1.5% accuracy
 - Three synchronous step-down (buck) with internal PFETs
 - One configurable step-up (boost) or synchronous step-down (buck)
 - One step-up (boost)
 - One adjustable output voltage LDO
- Programmable Linear Li-Ion Battery Charger
 - Precharge/fast charge/termination current
 - Fast Charge voltage threshold
 - Float Voltage (<1% accuracy)
- +2.7V to +6.0V Input Range (Higher system voltages supported)
- Built-in current limiting, UV/OV, and thermal protection
- Highly accurate reference and output voltage (<1.5%)
- 500 to 1000kHz PWM frequency and power saving automatic PFM mode
- 96 bytes of user configurable nonvolatile memory

Applications

- Portable Media Players
- Digital camcorders/still cameras
- Smart PDA/Camera phones
- Handheld GPS/PDA's
- TFT-LCD Displays/Monitors/TV's

INTRODUCTION

The SMB118 is a highly integrated and flexible seven-channel power manager designed for use in a wide range of portable applications. The built-in digital programmability allows system designers to custom tailor the device to suit almost any multi-channel power supply application from digital camcorders to mobile phones.

The SMB118 integrates all the essential blocks required to implement a complete seven-channel power subsystem including three synchronous step-down “buck” converters, one configurable step-up “boost” or step-down synchronous “buck” converter, one step-up “boost” converter, one linear regulator (LDO) and a fully programmable Li-Ion battery charger. Additionally sophisticated power control/monitoring functions required by complex systems are built-in. These include digitally programmable output voltage setpoint, power-up/down sequencing, enable/disable, margining and UV/OV input/output monitoring on all channels.

The integration of features and built-in flexibility of the SMB118 allows the system designer to create a “platform solution” that can be easily modified via software without major hardware changes. Combined with the re-programmability of the SMB118 this facilitates rapid design cycles and proliferation from a base design to futures generations of product.

The SMB118 is suited to battery-powered applications with an input range of +2.7V to +6.0V and provides a very accurate voltage regulation (<1.5%). Communication is via the industry standard I²C bus. All user-programmed settings are stored in non-volatile EEPROM of which 96 bytes may be used for general-purpose memory applications. The commercial operating temperature range is 0C to +70C, the industrial operating range is -40C to +85C, and the available package is a 48-pad 7mm x 7mm QFN.

SIMPLIFIED APPLICATIONS DRAWING

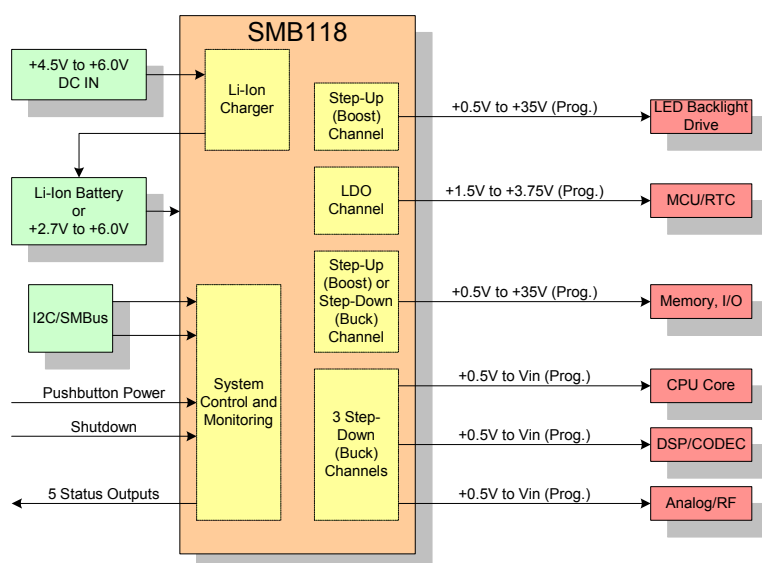


Figure 1 – Applications block diagram featuring the SMB118 six-channel, programmable DC/DC converter. This integrated power supply and battery manager provides precision regulation, monitoring, cascade sequencing, output margining and battery charging.