Nine-Channel DC/DC Digitally Programmable System Power Manager

FEATURES & APPLICATIONS

- **Digital programming of all major parameters via I²C interface and non-volatile memory**
  - **Output voltage set point**
  - **Output power-up/down sequencing**
  - **Digital soft-start and output slew rate**
  - **Input/battery voltage monitoring**
  - **Dynamic Voltage Management**
  - **UV/OV monitoring of all outputs**
  - **Enable/disable outputs independently**
- **Nine output channels**
  - **Four synchronous step-down (buck) channels**
  - **Three step-up (boost) channels**
  - **One inverting (buck-boost) channel**
  - **One 3.3V fixed LDO channel**
- **User friendly Graphical User Interface (GUI)**
- **2.7V to 6.0V Input Range**
- **Highly accurate reference and output voltage (<0.5%) with Active DC Output Control (ADOC™) technology**
- **Undervoltage Lockout (UVLO) with hysteresis**
- **800 kHz operating frequency (trimmable)**
- **96 bytes of user configurable nonvolatile memory**
- **Eight Phase PWM with Phase Locked Loop (PLL)**
- **100% Maximum Duty Cycle for Buck channels**
- **0% Duty Cycle option for boost and buck-boost channels**

Applications

- **Digital camcorders/still cameras**
- **Portable DVD/MP3/GPS**
- **Camera phones**
- **TFT/LCD Displays/Monitors/TV's**
- **Mobile Computing**
- **Consumer battery-operated equipment**
- **Intel X-Scale™ -based consumer devices**

INTRODUCTION

The SMB120 is a highly integrated and flexible nine-channel programmable 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. Complete with a user friendly GUI, all programmable settings including output voltages and input/output voltage monitoring can be customized with ease.

The SMB120 integrates all the essential blocks required to implement a complete nine-channel power subsystem including four synchronous step-down "buck" controllers, three step-up "boost" controllers, one inverting "buck-boost" controller, and one linear regulator (LDO). Additionally sophisticated power control/monitoring functions required by complex systems are built-in. These include digitally programmable output voltage set point, power-up/down sequencing, enable/disable, dynamic voltage management and UV/OV/input monitoring on all channels.

The integration of features and built-in flexibility of the SMB120 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 SMB120 this facilitates rapid design cycles and proliferation from a base design to future generations of product.

The SMB120 is suited to battery-powered applications with an input range of 2.7V to 6.0V. Output voltages are extremely accurate (<0.5%) employing proprietary ADOC™ technology. 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 0°C to +70°C and the industrial temperature range is –40°C to +85°C The SMB120 is available in a lead-free, RoHS compliant 9mm x 9mm 64 pin QFN package.

SIMPLIFIED APPLICATIONS DRAWING

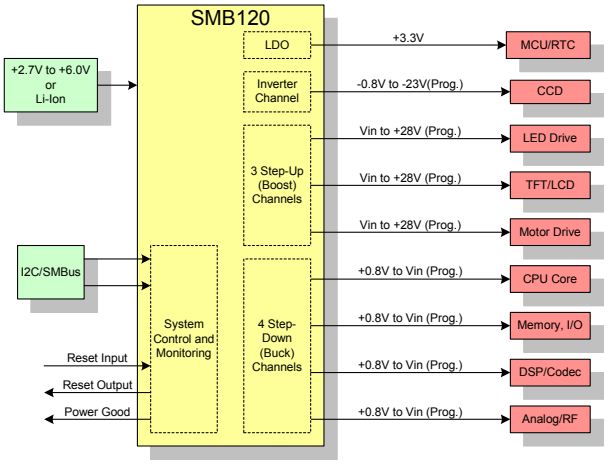

Figure 1 – Applications schematic featuring the SMB120 Nine-Channel DC-DC Digitally Programmable Power Manager. This DC/DC controller provides power-on/off control, sequencing, fault monitoring, and Dynamic Voltage Management.

Note: This is an applications example only. Some pins, components and values are not shown.