

Five-Channel Digitally Programmable White-LED and TFT/LCD Power Manager

FEATURES & APPLICATIONS

- Digital programming of all major parameters via I²C interface and non-volatile memory
 - Output voltage set-point
 - Individual dimming
 - Output power-up/down sequencing
 - Digital soft-start and output slew rate
 - Input/Battery voltage monitoring
 - UV/OV monitoring of all outputs
 - Enable/Disable outputs independently
- Five output channels
 - One synchronous step-down (buck) channel
 - Two step-up (boost) channels
 - One inverting (buck-boost) channel
 - One fixed output +3.3V LDO
- +2.7V to +6.0V Input Range
- Highly accurate reference and output voltage (<0.5%) with Active DC Output Control (ADOC™) technology
- Supports multiple strings of up to 12 white LEDs in series
- Undervoltage Lockout (UVLO) with hysteresis
- 800 kHz operating frequency
- 96 bytes of user configurable nonvolatile memory

Applications

- White LED backlighting
- High-power LED driving
- TFT/LCD Displays/Monitors/TV's
- Digital camcorders/still cameras
- Portable DVD/MP3/GPS
- Camera/smart phones
- Mobile Computing/PDA's

INTRODUCTION

The SMB112 is a highly integrated and flexible five-channel power manager designed for powering TFT/LCD display panels and for driving low- and high-power white-LEDs. 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 SMB112 integrates all the essential blocks required to implement a complete five-channel power subsystem for TFT/LCD panels including a synchronous step-down "buck" controller, two step-up "boost" controllers, one inverting "buck-boost" controller and one fixed output +3.3V LDO. Additionally sophisticated power control/monitoring functions required by complex systems are built-in. These include digitally programmable output voltage set point, individual dimming, 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 SMB112 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 SMB112 this facilitates rapid design cycles and proliferation from a base design to future generations of product.

The SMB112 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 operating temperature range is 0C to +70C and the available package is a lead-free, Green, RoHS compliant, 32-pad QFN-32.

SIMPLIFIED APPLICATIONS DRAWING

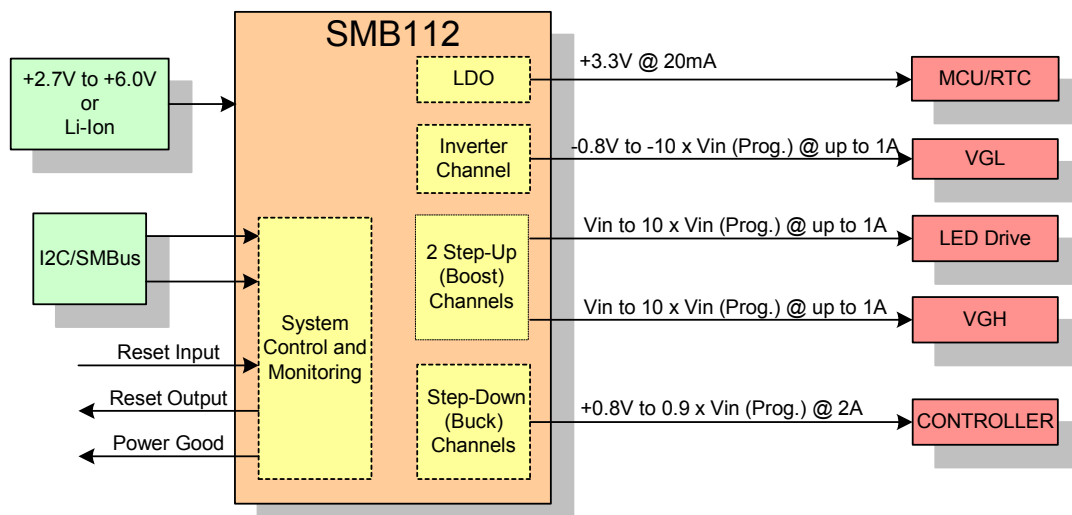


Figure 1: Applications schematic featuring the SMB112 Five-channel, programmable DC-DC controller

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