Notebook and Tablet LCD Panel PMIC with AVDD Boost, 1-Ch. LED Driver, 8-Ch. Level-Shifter, LDO, VCOM Calibrator and OP-Amp

Features

- 2 V to 6 V Input Supply Voltage Range
- High-Efficiency Boost Converter
  . Peak-current Mode Control – Fast Transient
  . 330 kHz to 1.2 MHz Adjustable Switching Frequency
  . Built-in 20 V, 1.5 A, 0.25 Ω MOSFET
  . High Performance Load / Line Regulation
- High Brightness 1-Channel LED Driver
  . Peak-current Mode Boost Converter
  . 330 kHz to 1.2 MHz Adjustable Switching Frequency
  . Built-in 49 V, 1.2 A, 0.5 Ω MOSFET
  . Brightness Control
  . High Contrast Ratio
- High-Voltage Level Shifter
  . Logic Level Inputs
  . -15 V to 35 V Output Rails
- 250 mA Adjustable LDO
- VCOM Calibrator
  . 128-Step Adjustable Sink Current Output
  . I^2C Interface
- High-Speed OP-Amp
  . 20 MHz, -3 dB Bandwidth
  . 35 V / μs Slew Rate
  . 200 mA Output Current
- Protections
  . Thermal Shutdown
  . Short Circuit / Over-Voltage Protection (by V_{AVDD})
  . Open / Short LED Protection (by VLED)

Applications

- LCD Notebook and Tablet Panels

Description

The SM4012 consists of a high performance step-up switching regulator (boost converter with built-in switch), switching LED driver (boost converter with built-in switch), a high-voltage level-shifting scan driver (level-shifter), a low dropout voltage regulator (LDO), a VCOM calibrator and a high-speed operational amplifier (op-amp).

The step-up DC-DC converter provides the regulated supply voltage for the panel source driver ICs. The high switching frequency of the converter makes it possible to use ultra-small inductors and ceramic capacitors. The LED driver is a boost converter that drives up to 13 LEDs in series for LCD backlight unit. The high-voltage level-shifting scan drivers are fitted for capacitive loads and work well with panels that contain row drivers on the panel glass. The LDO with adjustable output voltage provides the logic voltage for the system. The VCOM calibrator replaces mechanical potentiometers so that it significantly reduces labor costs, increases reliability and enables automation. The high-speed op-amp is designed to drive the LCD backplane (VCOM) with the capability of high current and wide bandwidth.

Device Information

Part	Package	Size
SM4012	48 QFN	6 mm x 6 mm