

Monitor LCD Panel PMIC with AVDD Boost, VGH Boost, Negative Charge-Pump, VCOM Calibrator and Level-shifter

Features

- 2.9V to 6V Input Supply Voltage Range
- High-Efficiency Step-Up Regulator
 - . Peak-Current Mode Control – Fast Transient
 - . 1MHz Switching Frequency
 - . Built-In 20V, 3.5A, 120mΩ MOSFET
 - . High Performance Load / Line Regulation
- VONE Step-Up Regulator
 - . Voltage Mode Control
 - . Temperature-Compensated Output
 - . Built-In 40V, 1.9A, 870mΩ MOSFET
- Negative Charge-Pump Regulator
- Programmable VCOM Calibrator
 - . 128-Step Adjustable Sink Current Output
 - . Single-Wire interface
- Dual High-Voltage Scan Driver
 - . -20V ~ 40V Output Rails
 - . Output Charge Sharing
- Protections
 - . Thermal Shutdown
 - . Over-Load Protection (by AVDD and VSS)
 - . Over-Voltage Protection (by VIN, AVDD and VONE)
 - . Diode Open Protection (by AVDD and VONE)

Applications

- LCD TV and Monitor Panels

Description

The SM4106 consists of two high performance step-up regulators (an AVDD boost converter, a VONE step-up regulator), a negative charge-pump regulator a VCOM calibrator, and a high-voltage level shifting scan driver. The main boost 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 VONE boost converter provides the regulated voltage for the positive scan-driver supply that can vary according to the temperature sensed by an external NTC thermistor. It employs a voltage-mode control with internal compensation circuit. It mostly operates in discontinuous conduction mode which guarantees stability more than continuous conduction mode.

The negative charge pump regulator provides the negative voltage for the negative scan-driver supply.

The VCOM calibrator replaces mechanical potentiometers so that it significantly reduces labor costs, increases reliability, and enables automation.

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. In order to reduce the power loss, the complementary outputs are designed to allow charge sharing during state changes.

The device is optimized for thin-film transistor (TFT) liquid-crystal display (LCD) applications.

Device Information

Part	Package	Size
SM4106	40 QFN	6mm x 6mm

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