

**Notebook and Tablet LCD Panel PMIC
with AVDD Boost, Positive / Negative Charge Pumps,
Buck, LDO, VCOM Calibrator, OP Amp,
4-Ch. Gamma Buffers and GPM**

Features

- 2.5 V to 6 V Input Supply Voltage Range
- High-Efficiency Step-Up Regulator
 - . Peak-Current Mode Control – Fast Transient
 - . Built-in 20 V, 1.5 A, 350 mΩ MOSFET
 - . High Performance Load / Line Regulation
- Positive Charge-Pump Regulator
- Negative Charge-Pump Regulator
- High-Efficiency Buck Converter for Logic
 - . Voltage Mode Control
 - . Built-in 7 V, 1 A, 360 mΩ / 330 mΩ MOSFETS
- Low Dropout Voltage Regulator for Logic
 - . Maximum 250 mA Output Current
- Programmable VCOM Calibrator (0x9E)
 - . 128-Step Adjustable Sink Current Output
 - . I2C Interface
- Gate Pulse Modulator
 - . Flicker Compensator
- Programmable 4-Channel Gamma Buffers
 - . 9-bit Resolution
 - . 6-bit (VGP1 & VGN1) Programmable Output Voltage
 - . 7-bit (VGP2 & VGN2) Programmable Output Voltage
- High-Speed OP-Amp
 - . 15 MHz, - 3 dB Bandwidth
 - . 150 V / μs Slew Rate
 - . 150 mA Output Current
- Protections
 - . Thermal Shutdown
 - . Overvoltage Protection. Over Current Protection
 - . Diode Open Protection. Undervoltage Protection

Applications

- LCD Notebook and Tablet Panels

Description

The SM41NE consists of a high performance step-up regulator (AVDD boost converter), a positive charge pump regulator, a negative charge pump regulator, a high performance step-down regulator, a low-dropout voltage regulator (LDO), a VCOM calibrator, a high speed operational amplifier (OP Amp), 4 channel gamma buffers and a gate pulse modulator. All output voltages are programmable using I2C serial interface. The AVDD boost converter provides the regulated supply voltage for the panel source driver ICs. The positive charge-pump regulator provides the regulated voltage for the positive supply of gate driver ICs. The negative charge pump regulator provides the regulated voltage for the negative supply of gate driver ICs. The step-down DC-DC converter and the LDO provide digital logic supply voltages for the system. The VCOM calibrator replaces mechanical potentiometers so that it significantly reduces labor costs, increases reliability and enables automation. The highspeed op amp is designed to drive the LCD backplane (VCOM) with the capability of high current and wide bandwidth. Four channel gamma buffers are also programmable using I2C serial interface. The gate pulse modulator modulates the supply voltage of gate driver ICs. The device is optimized for thin-film transistor (TFT) liquid-crystal display (LCD) applications.

Device Information

Part	Package	Size
SM41NE	36 QFN	5 mm x 4 mm

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