

TV LCD Panel PMIC with AVDD Boost, HAVDD Buck, Three Bucks, VGH Boost, VGL Buck-boost, GPM, 4-Ch. Gamma Buffer, Dual VCOM OP-Amps and I2C Interface

Features

- 10.2 V to 14.7 V Input Supply Voltage Range
- Programmable Switching Frequency
- Asynchronous Boost Converter for AVDD
 - . Programmable Output Voltage: 12.8 V to 19 V
 - . Programmable Current Sense Threshold Voltage
- Forced Synchronous Buck Converter for HAVDD
 - . Programmable Output Voltage: 6.4 V to 9.5 V
 - . 1.5 A Switch Current Limit
- 3-Channel Asynchronous Buck Converter for DVDD1, 2, 3
 - . Output Voltage: 0.8 V to 3.5 V
 - . 2.5 A Switch Current Limit
- Asynchronous Boost Converter for VGH
 - . Programmable Output Voltage: 25 V to 43 V
 - . 2 A Switch Current Limit
 - . Temperature-compensated Output
- Asynchronous Buck-Boost Converter for VGL
 - . Programmable Output Voltage: -16 V to -4 V
 - . 1.5 A Switch Current Limit
- Negative Linear Regulator for VGL2
 - . Programmable Output Voltage: -9 V to -3 V
 - . Internal Transistors for Sinking/Sourcing Output Current
- Positive Gate Pulse Modulation for VGPM
- Programmable Four Channel Gamma Reference Voltage Outputs with 9-bit Resolution
- Programmable VCOM Calibrator with EEPROM
 - . 7-bit Adjustable Output Voltage
- Dual Channel Operational Amplifiers
 - . 8-bit Programmable DACs for VCOM 1, 2
- PG Function for Reliable Power Sequence
- Programmable Output Voltages and Power-up Sequence

Applications

- LCD TV and Monitor Panels

Description

The SM4805 consists of seven switching regulators (AVDD boost converter, HAVDD buck converter, DVDD1 to 3 buck converters, VGH boost converter and VGL buck-boost converter), VGL2 negative linear regulator, 4-channel gamma buffers, dual operational amplifiers and a programmable 7-bit VCOM calibrator with EEPROM for VCOM voltage calibration.

The AVDD boost converter and the HAVDD buck converter provide the regulated supply voltage for the panel source driver ICs. The DVDD1 to 3 buck converters provide the supply voltage for the I/O interface, the core of the T-CON and the other logic circuits. The PG function is included for reliable power sequence. Dual high-speed op-amps are designed to drive the LCD backplane with the capability of high current and wide bandwidth. The VGH boost converter provides the regulated voltage for the positive gate driving supply, and the VGL buck-boost converter provides the regulated voltage for the negative gate driving supply. VGH voltage can vary according to the temperature sensed by an external NTC thermistor.

All regulators except AVDD boost converter are compensated internally, and all switching converters feature high-efficiency and programmable frequency operation. The high switching frequency of these converters makes it possible to use ultra-small inductors and ceramic capacitors. Other features include the true shutdown function of the AVDD boost converter and the GPM function which reduces image sticking and improves the quality of the display. The device is optimized for thin-film transistor (TFT) liquid crystal display (LCD) applications.

Device Information

Part	Package	Size
SM4805	56 QFN	7mm x 7mm

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