

TV LCD Panel PMIC with AVDD Boost, HAVDD Regulator, Two Bucks, VGH Boost, VGL Buck-boost, Negative Linear Regulator

Features

- 9 V to 14.7 V Input Supply Voltage Range
- 750 kHz Switching Frequency
- Step-up Regulator for Source Driver
 - . Peak-current Mode Control
 - . Built-in 24 V, 5 A, 0.12 Ω MOSFET
- Step-down Regulator for Logic (3.3 V)
 - . Peak-current Mode Control
 - . Built-in 20 V, 3.5 A, 0.2 Ω MOSFET
- Step-down Regulator for Logic (1.2 V)
 - . Peak-current Mode Control
 - . Built-in 20 V, 3.5 A, 0.2 Ω MOSFET
- High-voltage Linear Regulator for Source Driver
 - . Internal Transistors for Sinking/Sourcing Output Current
- Step-up Regulator Controller for VON
 - . Temperature-compensated Output
 - . Peak-current Mode Control
- Buck-boost Regulator for VOFF
 - . Built-in 50 V, 2.5 A, 0.65 Ω MOSFET
 - . Peak-current Mode Control
- Negative Linear Regulator
 - . Internal Transistors for Sinking/Sourcing Output Current
- Protections
 - . Thermal Shutdown
 - . Boost Converter True Shutdown by External P-MOS
 - . Over Load or Short Circuit/Over Voltage Protection

Applications

- LCD TV and Monitor Panels

Description

The SM4802 consists of four internal-switch regulators (AVDD boost converter, buck1 converter, buck2 converter and VOFF buck-boost converter), an external-switch regulator (VON boost converter), an internal high-voltage linear regulator (HAVDD regulator) and an internal negative linear regulator. The AVDD boost converter and the HAVDD regulator provide the regulated supply voltage for the panel source driver ICs. The buck1 (1.2 VDD) converter provides the supply voltage for the core of the T-CON while the buck2 (3.3 VDD) converter provides the supply voltage for I/O interface of the T-CON and other logic circuits. The VON boost converter provides the regulated voltage (V_{ON}) for the panel gate driver ICs, and the VOFF buck-boost converter provides the regulated voltage (V_{OFF}) for the panel gate driver ICs. V_{ON} can vary according to the temperature sensed by an external NTC thermistor.

All regulators except the AVDD boost converter are compensated internally, and the outputs of all regulators except buck1 and buck2 converter are programmed by I²C interface. All the converters feature high-efficiency and fixed frequency 750 kHz operation. The high switching frequency of these converters makes it possible to use ultra-small inductors and ceramic capacitors. The serial-in shift register supply is derived linearly between the buck-boost converter's output and ground by the internal negative linear regulator. Other features include external P-MOS gate driver for true shutdown of boost converters, AVDD boost converter output control and the start-up sequence control.

Device Information

Part	Package	Size
SM4802	48 QFN	7 mm x 7 mm

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