TFT LCD DC-DC Converter with Integrated LDO, OP-AMP and GPM Switch

DESCRIPTION

The EUP2644 generates power supply rails for thin-film transistor (TFT) liquid-crystal display (LCD) panels in monitors and notebooks operation from 3V to 5.5V input supply. The device integrates a step-up converter, a high speed V_{COM} buffer, a 350mA low dropout (LDO) linear regulator, and a Gate Pulse Modulator (GPM).

The external compensated step up converter features an internal power MOSFET and high frequency operation allowing the use of small inductors and capacitors. The step up converter uses fixed-frequency, current mode control architecture which provides fast load-transient response and easy compensation. A 3.3A peak current limit for the internal switch protects power supply fault condition.

The GPM provides a modulated voltage to the gate driver circuitry of a TFT LCD display. It allows shaping of the gate high voltage to improve image quality. It also can delay the gate high voltage while power on. Both the power-on delay time and the falling time of the gate high voltage are programmable by external resistor and capacitor.

The high speed V_{COM} butter features continues output current (±100mA), 20MHz bandwidth, fast slew rate 70V/μs, and rail-to-rail inputs and outputs.

The LDO regulator provides up to 350mA current to the external digital circuitry.

FEATURES

- 3V to 5.5V Input Supply Range
- Current Mode Step Up Converter
  - Selectable Frequency (650kHz/1.2MHz)
  - Built-In 20V, 3.3A, 0.15Ω N-MOSFET
  - High Efficiency Up to 90%
  - Programmable Soft-Start
  - Fast Transient Response to Pulsed Load
- Gate Pulse Modulator Circuit
  - Adjustable Falling Time and Delay
  - Flicker Compensation
- High Speed High Output Current V_{COM} Buffer
  - 20MHz BW
  - 70V/μS Slew Rate
  - 400mA Peak Output Current
- 350mA LDO Regulator for V_{LOGIC}
  - Adjustable Output Voltage：2.5V, 2.85V, 3.3V
- Input Under Voltage Lockout and Thermal Protection
- 24 pin 4mm×4mm TQFN Package
- RoHS Compliant and 100% Lead (Pb)-Free

APPLICATIONS

- LCD Monitors
- Notebook Display