

Boost Regulator with GPM, LDO, VCOM Calibrator and OP Amp

Description

The SM6751Q consists of a high performance step-up switching regulator (boost converter), a low-dropout voltage regulator (LDO), a low voltage detector, a gate pulse modulator (GPM), a VCOM calibrator, and a high-speed operational amplifier (op-amp). The device is optimized for thin-film transistor (TFT) liquid-crystal display (LCD) applications.

The step-up DC-DC 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 LDO provides the adjustable regulated supply for the system and can supply current up to 300 mA.

The low voltage detector monitors the supply voltage to produce a reset signal when the supply voltage is too low.

The gate pulse modulator modulates the supply voltage of a level shifter.

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

The high-speed op-amp is designed to drive the LCD backplane (VCOM) with the capability of high current and wide bandwidth.

Applications

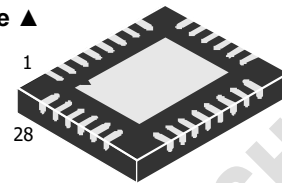
- Automotive Display

Ordering Information

Part	Temp. Range	Pb-Free	Package
SM6751Q	-40°C to +105°C	Yes	28 QFN 4mm x 5mm

Package View

Bottom side ▲



Features

- AEC-Q100 Test Guidance with the Following Results:
 - Device Temperature Grade 2: -40°C to 105°C
- 2.4V to 6V Input Supply Voltage Range
- High-Efficiency Step-up Regulator for Source Driver
 - Peak-Current Mode Control – Fast Transient
 - 310kHz~1.18MHz Adjustable Switching Frequency
 - Built-In 20V, 2A, 0.17Ω MOSFET
- 300mA Adjustable LDO
- Low Voltage Detector
 - Programmable Detecting Voltage and Delay Time
- Gate Pulse Modulator
 - Power On Sequence Control
 - Flicker Compensator
- VCOM Calibrator
 - 128-Step Adjustable Sink Current Output
 - I²C Interface – Address : 0101000
- High-Speed OP-Amp
 - 20MHz -3dB Bandwidth
 - 35V/μs Slew Rate
 - 150mA Short Circuit Current
- Protections
 - Thermal Shutdown
 - Short Circuit Protection (by V_{AVDD})
 - Over-Voltage Protection (by V_{AVDD})

Evaluation Board Request

Available

Operational Diagram

