

Bias Power Supply for TFT LCD Panels

Features

- 2.5V to 5.5V Input Supply Range
- Active-High Enable Control
- 1.2MHz Current-Mode Boost Regulator
 - ◆ Fast Transient Response to Pulse Load
 - ◆ $\pm 1\%$ Accurate Output Voltage
 - ◆ Built-In 20V/1.8A, 0.7 Ω N-Channel MOSFET
 - ◆ High Efficiency up to 90%
 - ◆ Over-Current Protection
 - ◆ Output Under-Voltage Protection
- High-Performance Operational Amplifier
 - ◆ $\pm 150\text{mA}$ Output Short-Circuit Current
 - ◆ 12V/ μs Slew Rate
 - ◆ 12MHz, -3dB Bandwidth
 - ◆ Rail-to-Rail Input and Output
- 600kHz Negative Charge Pump Driver for V_{GL}
- 600kHz Positive Charge Pump Driver for V_{GH}
- Power-On Sequence Control
- Thermal-Overload Protection
- TQFN3X3-16 Package

Applications

- Photo Frame
- GPS
- UMPC

General Description

The G5520A includes a high-performance boost regulator, a V_{COM} buffer (unity gain OPA), a V_{GH} charge pump driver, and a V_{GL} charge pump driver for active-matrix thin-film transistor (TFT) liquid-crystal displays (LCDs).

The boost converter provides the regulated supply voltage for the panel source driver ICs. The converter is a high switching frequency (1.2MHz) current mode

regulator with an integrated 20V N-Channel 0.7 Ω MOSFET that allows the use of ultra-small inductors and ceramic capacitors. It provides fast transient response to pulsed loading while achieving efficiency over 90%. The device can produce output voltage as high as 18V from an input as low as 2.8V.

The V_{COM} buffer can drive the LCD V_{COM} voltage that features high short-circuit current (150mA), fast slew rate (12V/ μs), wide bandwidth (12MHz) and rail-to-rail input/output.

A positive and a negative charge-pump driver provide adjustable regulated output voltages V_{GH} and V_{GL} to bias the TFT. Both the charge-pump driver operate with 600kHz switching frequency.

The G5520A includes internal power-up sequencing, over/under voltage protections of the boost converter, and over temperature protection to ensure in safe operating.

The G5520A are available in a 16-pin 3X3TQFN packages.

Ordering Information

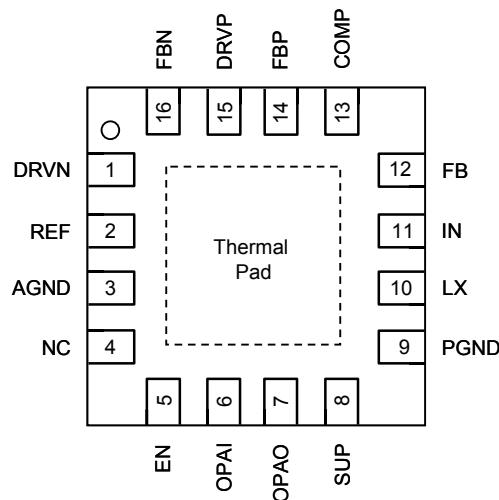
ORDER NUMBER	MARKING	TEMP. RANGE	PACKAGE (Green)
G5520AR41U	5520A	-40°C to +85°C	TQFN3X3-16

Note: R4:TQFN3X3-16

1: Bonding Code

U: Tape & Reel

Pin Configuration



G5520A TQFN3X3-16

Note: Recommend connecting the Thermal Pad to the Ground for excellent power dissipation.