# **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
  - ±1% Accurate Output Voltage
  - + Built-In 20V/1.8A, 0.7Ω N-Channel MOSFET
  - High Efficiency up to 90%
  - Over-Current Protection
  - Output Under-Voltage Protection
- High-Performance Operational Amplifier
- ±150mA Output Short-Circuit Current
- 12V/µs Slew Rate
- 12MHz, -3dB Bandwidth
- Rail-to-Rail Input and Output
- 600kHz Negative Charge Pump Driver for V<sub>GL</sub>
- 600kHz Positive Charge Pump Driver for V<sub>GH</sub>
- 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  $V_{\text{COM}}$  buffer (unity gain OPA), a  $V_{\text{GH}}$  charge pump driver, and a VGL 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  $0.7\Omega$  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  $V_{\text{COM}}$  buffer can drive the LCD  $V_{\text{COM}}$  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  $V_{\text{GH}}$  and  $V_{\text{GL}}$  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.

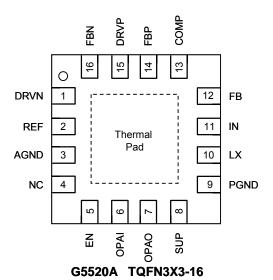
The G5520A are available in a 16-pin 3X3TQFN packages.

### **Ordering Information**

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

Note: R4:TQFN3X3-16 1: Bonding Code U: Tape & Reel

## **Pin Configuration**



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