

## Integrated LCD Bias Power Supply

### Features

- 2.6V~5.5V Supply Range
- Current Mode Boost Regulator for AVDD
  - 0.15Ω/20V/3A Embedded NMOS switch
  - Fixed 1.2MHz Switching Frequency
  - Up to 85% Efficiency
  - 1% Output Regulation
- Voltage Mode Buck-Boost Regulator for VGL
  - Fixed 600kHz Switching Frequency
  - Up to 85% Efficiency
  - 1% Output Regulation
- Charge Pump Regulator for VGH
- 3-Channel Rail-to-Rail Unity-Gain Operational Amplifier
  - ±200mA Output Short Circuit Current
  - 20V/μs Slew Rate
  - 18MHz, -3dB Bandwidth
- Built-In Power On Sequence and Soft Start Function
- Protections:
  - Input Under Voltage Lockout (UVLO)
  - Over Current Protection for AVDD (OCP)
  - Output Under Voltage Protection for AVDD, VGH and VGL (UVP)
  - Output Over Voltage Protection for AVDD, VGL (OVP)
  - Operational Amplifier Short Circuit Protection (SCP)
  - Over Temperature Protection (OTP)
- QFN5X5-32 Package
- RoHS Compliant

### Applications

- LCD TV Panel
- LCD Monitor Panel

### General Description

The G2523 includes a high-performance boost regulator, a buck-boost controller, a high voltage charge pump regulator, 3 VCOM buffers (unity-gain OPA) for active-matrix thin-film transistor (TFT) liquid-crystal displays (LCDs).

The boost regulator provides the regulated supply voltage for the panel source driver ICs. It is a high switching frequency (1.2MHz) current-mode regulator with an integrated 20V/0.15Ω NMOS switch that allows the use of ultra small inductors and ceramic capacitors. It provides fast transient response to pulsed loading while achieving efficiency over 85%. The device can produce output voltage as high as 18V from an input as low as 2.8V.

A voltage mode buck-boost controller cooperates with external temperature sensor provide compensated gate-off voltage supply to the level shifters. While the charge pump controller regulates the external charge pump voltage source to supply for other devices.

The VCOM buffer can drive the LCD VCOM voltage that features high short-circuit current (200mA), fast slew rate (20V/μs), wide bandwidth (8MHz) and rail-to-rail input/output.

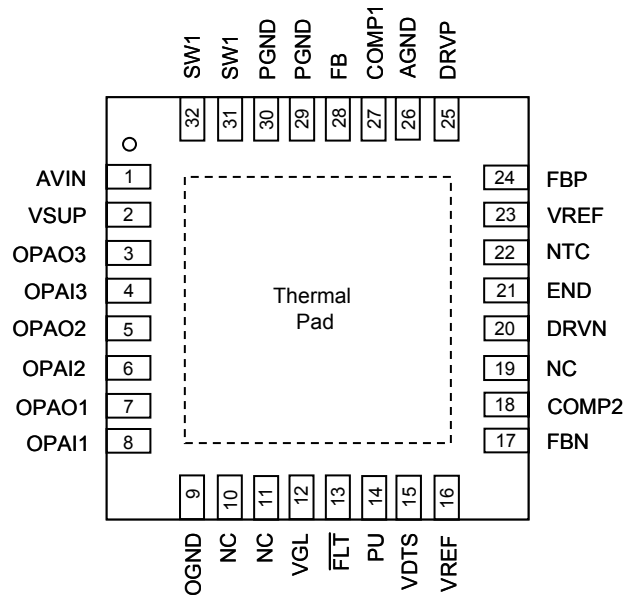
The G2523 features extensive protection functions that include UVLO, OCP, UVP, OVP, and OTP. It is available in a QFN5X5-32 package.

### Ordering Information

ORDER NUMBER	MARKING	TEMP. RANGE	PACKAGE (Green)
G2523QA1U	2523	-40°C to +85°C	QFN5X5-32

Note: QA: QFN5X5-32  
 1: Bonding Code  
 U: Tape & Reel

## Pin Configuration



**G2523 QFN5X5-32**

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

## Typical Application Circuit

