



TFT-LCD DC-DC Converter with **Operational Amplifiers**

General Description

The MAX1518B includes a high-performance step-up regulator, two linear-regulator controllers, and high-current operational amplifiers for active-matrix, thin-film transistor (TFT), liquid-crystal displays (LCDs). Also included is a logic-controlled, high-voltage switch with adjustable

The step-up DC-DC converter provides the regulated supply voltage for the panel source driver ICs. The converter is a high-frequency (1.2MHz) current-mode regulator with an integrated 14V n-channel MOSFET that allows the use of ultra-small inductors and ceramic capacitors. It provides fast transient response to pulsed loads while achieving efficiencies over 85%.

The gate-on and gate-off linear-regulator controllers provide regulated TFT gate-on and gate-off supplies using external charge pumps attached to the switching node. The MAX1518B includes five high-performance operational amplifiers. These amplifiers are designed to drive the LCD backplane (VCOM) and/or the gammacorrection divider string. The device featureS high output current (±150mA), fast slew rate (13V/µs), wide bandwidth (12MHz), and rail-to-rail inputs and outputs.

The MAX1518B is available in a 32-pin thin QFN package with a maximum thickness of 0.8mm for ultra-thin LCD panels.

Applications

Notebook Computer Displays LCD Monitor Panels Automotive Displays

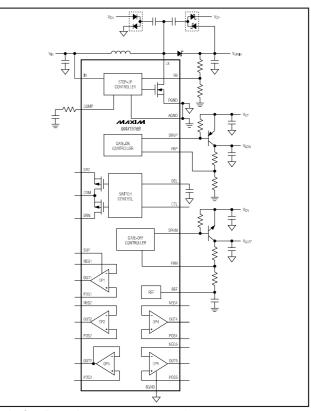
Ordering Information

PART	TEMP RANGE	PIN-PACKAGE	PKG CODE
MAX1518BETJ	-40°C to +100°C	32 Thin QFN 5mm x 5mm	T3255-4

Features

- ♦ 2.6V to 6.5V Input Supply Range
- ♦ 1.2MHz Current-Mode Step-Up Regulator **Fast Transient Response to Pulsed Load** High-Accuracy Output Voltage (1.5%) Built-In 14V, 2.4A, 0.16 Ω n-Channel MOSFET High Efficiency (90%)
- **♦ Linear-Regulator Controllers for VGON and VGOFF**
- **♦ High-Performance Operational Amplifiers** ±150mA Output Short-Circuit Current 13V/us Slew Rate 12MHz, -3dB Bandwidth Rail-to-Rail Inputs/Outputs
- ♦ Logic-Controlled, High-Voltage Switch with **Adjustable Delay**
- ♦ Timer-Delay Fault Latch for All Regulator Outputs
- **♦ Thermal-Overload Protection**
- ♦ 0.6mA Quiescent Current

Minimal Operating Circuit



Pin Configuration appears at end of data sheet.

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Maxim Integrated Products 1

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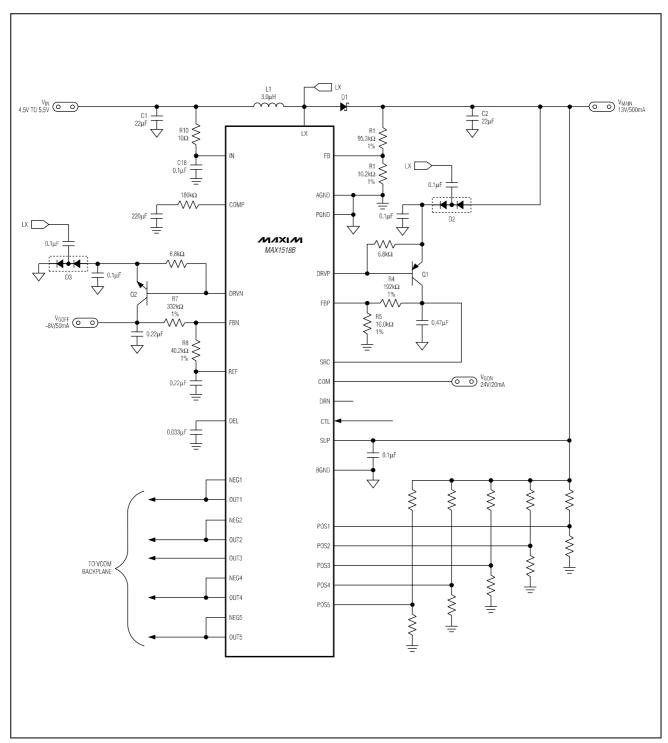


Figure 1. Typical Operating Circuit