



MAX20070, MAX20070B

Integrated TFT Power Supply and LED Backlight Drivers

Integrated TFT Power Supplies and LED Backlight Driver Reduce System Component Count

Description

The MAX20070/MAX20070B are highly integrated power supplies and LED backlight drivers for automotive TFT-LCD applications. The devices integrate one buck-boost converter, one boost converter, two gate-driver supplies, and a boost/SEPIC converter that can power one to two strings of LEDs in the display backlight.

The source-driver power supplies consist of a boost converter and an inverting buck-boost converter that can generate voltages up to +15V and -15V. Both source-driver power supplies can deliver up to 100mA. The positive source-driver supply regulation voltage (V_{POS}) is set by connecting an external resistor-divider on FBP. Connecting the FBP pin to ground sets the regulation voltage (V_{POS}) to +6.5V. The negative source-driver supply voltage (V_{NEG}) is always tightly regulated to $-V_{POS}$ within $\pm 50\text{mV}$. The source-driver supplies use an input voltage from 2.7V to 5.5V to generate the output voltages.

The gate-driver power supplies consist of regulated charge pumps that generate up to +22V and -22V and can deliver up to 3mA each. The regulation voltage (V_{GVDD}) on the positive charge pump is set by a resistor-divider on FBPG; the regulation voltage (V_{GVEE}) on the negative charge pump is set by a resistor-divider on FBNG.

The ICs feature a dual-string LED driver that operates off a separate input voltage (V_{BATT}) and can power up to two strings of LEDs with 160mA (max) of current per string.

The startup and shutdown sequences for all power domains is controlled using one of the seven preset modes that are selectable through a resistor on SEQ.

The MAX20070/MAX20070B are available in a 32-pin, 5mm x 5mm TQFN package with an exposed pad, and operates over the -40°C to $+105^{\circ}\text{C}$ ambient temperature range.

Key Features

- Integrates Both TFT Power Supplies and LED Backlight Driver in One IC, Reducing Component Count
- Alleviates EMI Due to Spread Spectrum on Both Source Driver Supplies and LED Driver
- 10000:1 Dimming Ratio at 200Hz Dimming Frequency
- Available in a 32-Pin (5mm × 5mm) TQFN with an Exposed Pad for Heat Dissipation and Operates Over the -40°C to +105°C Ambient Temperature Range

Applications/Uses

- Automotive Central Information Displays
- Automotive Dashboards
- Automotive Head-Up Displays
- Automotive Navigation System