ADVANCE INFORMATION

All information in this data sheet is preliminary and subject to change. 8/97

DAC-Controlled Boost or Inverter LCD Bias Supply with 28V Internal Switch

General Description

The MAX686 converts a positive input voltage to a positive or negative LCD bias voltage. The output can be boosted to any voltage up to +27.5V (or inverted down to -27.5V) that is higher than the input. The device features an internal N-channel MOSFET switch, programmable current limiting, and an internal 6-bit digital-to-analog converter (DAC) for digital adjustment of the output voltage. It comes in a small, 16-pin QSOP package (same size as an 8-pin SO).

The MAX686 uses a current-limited pulse-frequencymodulation (PFM) control scheme to provide high efficiency over a wide range of load conditions. Its high switching frequency (up to 300kHz) allows the use of small external components.

The LCDON pin option allows the LCD bias voltage to be automatically disabled when the display logic voltage is removed, protecting the display. The MAX686 has a 2.7V to 5.5V input voltage range for the IC, and a 0.8V to 27.5V input voltage range for the inductor. Shutdown current is 1.5μ A.

The MAX686 offers integration in a small package to save space, and low power consumption and high efficiency to increase battery life, making it an excellent choice for battery-powered portable equipment. The MAX629 is similar to the MAX686, except that it does not contain a built-in DAC. Both devices have evaluation kits to facilitate designs.

Applications

Positive or Negative LCD Bias

Personal Digital Assistants

Notebook Computers

Portable Data-Collection Terminals

Palmtop Computers

Varactor-Tuning Diode Bias

_Features

- Internal 500mA, 28V N-Channel Switch (no external FET required)
- Small 16-Pin QSOP Package
- Adjustable Output Voltage to +27.5V or -27.5V
- 6-Bit DAC-Controlled Output Voltage
- ♦ 90% Efficiency
- Power-OK Indicator
- Low Quiescent Supply Current
- 1.5µA Shutdown Current
- Up to 300kHz Switching Frequency

Ordering Information

| PART | TEMP. RANGE | PIN-PACKAGE |
|-----------|----------------|-------------|
| MAX686C/D | 0°C to +70°C | Dice* |
| MAX686EEE | -40°C to +85°C | 16 QSOP |
| | | |

*Dice are specified at $T_A = +25^{\circ}C$, DC parameters only.

Typical Operating Circuit



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