



## MAX20067

# Automotive 3-Channel Display Bias IC with VCOM Buffer, Level Shifter, and I<sup>2</sup>C Interface

Industry's First Integrated Power Solution for TFT-LCD with Synchronous Boost, Gate-Shading and I<sup>2</sup>C

### *Description*

The MAX20067 IC is a complete TFT bias solution for automotive applications. It includes a current-mode boost converter and two push-pull charge-pump drivers.

The IC also includes a gate-shading push-pull level shifter that can be used to improve display uniformity (when needed), and a DAC and VCOM buffer. All blocks on the IC can be used in stand-alone mode or through the I<sup>2</sup>C interface.

Comprehensive control functions are included using the built-in I<sup>2</sup>C interface, as well as diagnostics and monitoring.

The IC is intended to operate with 2.7V to 5.5V supplies.

The MAX20067 is available in a 32-pin TQFN package and operates in the -40°C to +105°C temperature range.

### *Key Features*

- Versatile TFT Display Power Section
  - Integrated Synchronous Boost Converter with Output Voltages Up to 18V
  - Integrated Charge-Pump Drivers for the VGON (+36V, max) and VGOFF (-24V, min) Outputs
- Low EMI Operation
  - Programmable Switching Frequencies of 440kHz or 2.2MHz
  - Programmable Spread Spectrum
- Full Sequencing Flexibility Through I<sup>2</sup>C, Along with Preset Sequences Using SEQ Pin
- Extended Diagnostics Using I<sup>2</sup>C Interface
  - Undervoltage/Overvoltage on HVINP, VGON, and VGOFF
  - Overcurrent on AVDD
  - Temperature Warning
- Built-In Gate-Shading Circuit Controlled by CTL Input

- 8-Bit DAC-Controlled VCOM Buffer
- Robust
  - -40°C to +105°C Operating Temperature Range
  - Internal Temperature Shutdown
  - AEC-Q100 Qualified
- Compact 32-Pin (5mm × 5mm) TQFN Package

## Applications/Uses

- Central Information Displays
- Infotainment Displays
- Instrument Clusters

| Part Number | Monitor/Control Features       | DC-DC/Power Features      | LCD/LED/Flash/CCD Features | Interface Type   | V <sub>IN</sub> | V <sub>IN</sub> | V <sub>OUT</sub> | V <sub>OUT</sub> | Max. I <sub>OUT</sub> | Max. I <sub>OUT</sub> | Oper. Freq. (kHz) | Inverting Outputs | Package/Pins |
|-------------|--------------------------------|---------------------------|----------------------------|------------------|-----------------|-----------------|------------------|------------------|-----------------------|-----------------------|-------------------|-------------------|--------------|
|             |                                |                           |                            |                  | (V)             | (V)             | (V)              | (V)              | (A)                   | (A)                   |                   |                   |              |
| MAX20067    | Output OVP                     | Adj. Frequency            | TFT Bias                   | I <sup>2</sup> C | 2.7             | 5.5             | -14              | 36               | 2                     | 2                     | 400               | 2                 | TQFN-CU/32   |
|             | Output UVP                     | Avg. Current Mode Control |                            |                  |                 |                 |                  |                  |                       | 2000                  |                   |                   |              |
|             | Serial Interface               | Fixed Freq./PWM           |                            |                  |                 |                 |                  |                  |                       |                       |                   |                   |              |
|             | Shutdown                       | Internal Switch           |                            |                  |                 |                 |                  |                  |                       |                       |                   |                   |              |
|             | Volt. or PWM Controlled Output | Soft Start                |                            |                  |                 |                 |                  |                  |                       |                       |                   |                   |              |