ABRIDGED DATA SHEET

*Click **here** for production status of specific part numbers.*

MAX20049

Flexible, Compact Quad Power Supply with 2.2MHz, 500mA Buck Converters and Dual LDOs for Automotive Camera Modules

General Description

The MAX20049 is a dual step-down converter IC with two low-dropout regulators (LDOs), providing a single-chip solution for automotive cameras. The two step-down converters are designed for fixed-frequency PWM operation with input voltages from 5V to 17V for MAX20049 and 4V to 17V for MAX20049C. The dedicated high-voltage inputs allow for a flexible solution.

The IC provides voltage monitoring on all four output rails. Once an overvoltage or undervoltage is detected, power good goes high impedance. To accommodate long and inexpensive coax cables, the device has a 500mV SUP1 hysteresis. Both bucks offer very low on-time and allow operation from 17V input to 0.9V output. High-frequency operation allows for an all-ceramic capacitor design and small-size external components. The low-resistance on-chip switches ensure high efficiency while minimizing critical inductances.

Output voltages are factory set and cover various sensor imagers needing 3.3V, 3.0V, 2.9V, 2.8V, or 2.7V. The secondary supplies cover the typical 1.8V, 1.2V, 1.1V, and < 1.0V rails for the serializer and memory. The *Output-Voltage Selection* section covers all the voltage options for flexibility in the camera design.

Protection features include cycle-by-cycle current limit, and thermal shutdown with automatic recovery. The buck converters operate 180° out-of-phase from each other to minimize input current ripple.

Applications

- Camera Module—Surround, Rear, Front
- Point of Load

Benefits and Features

- Small Solution Size
  - 16-Pin Side-Wettable (3mm x 3mm) TQFN with an Exposed Pad
  - Low On-Time Architecture Eliminates the Need for Cascading Bucks
  - Wide 4V to 17V Input Voltage Range for Power-Over-Coax Cables
  - Fixed Output-Voltage Options
- EMI Solutions
  - Optional Spread-Spectrum Frequency Modulation
  - Pinout Placement Allows for Tight PCB Layout of Switching Nodes
- Self-Protected and Robust
  - Overvoltage and Undervoltage Monitoring, Overvoltage Protection, Thermal Shutdown, and Short-Circuit Protection
  - 500mV Input Hysteresis Allows for Long, Low-Cost Cables During Slow Starts
- Automotive Ready
  - Automotive Temperature Range
  - AEC-Q100 Qualified

***Ordering Information** appears at end of data sheet.*

19-100341; Rev 5; 2/19

maxim integrated™

Typical Application Circuits

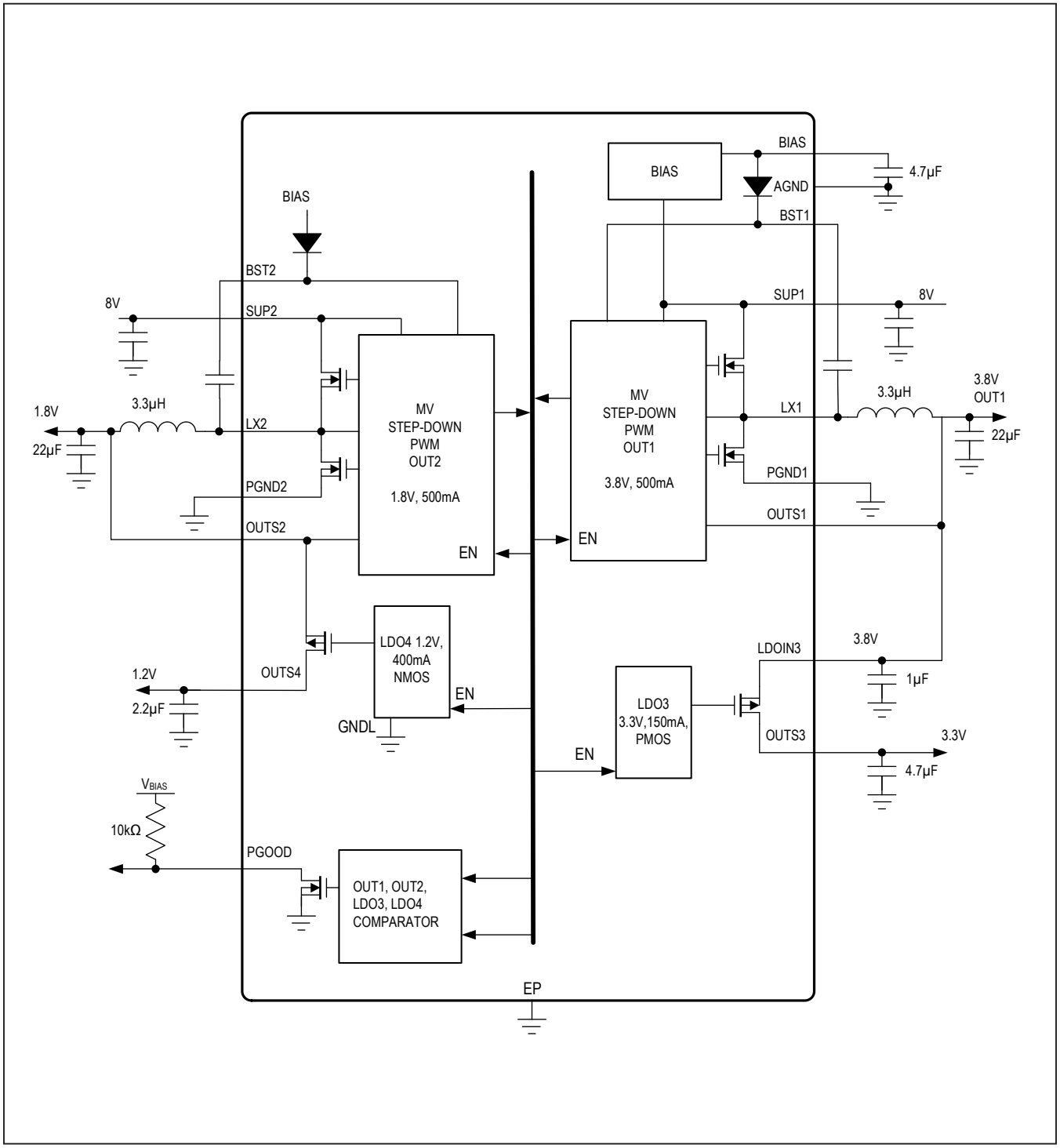

Figure 3. Cascade Buck and LDO for Low-Noise Supply

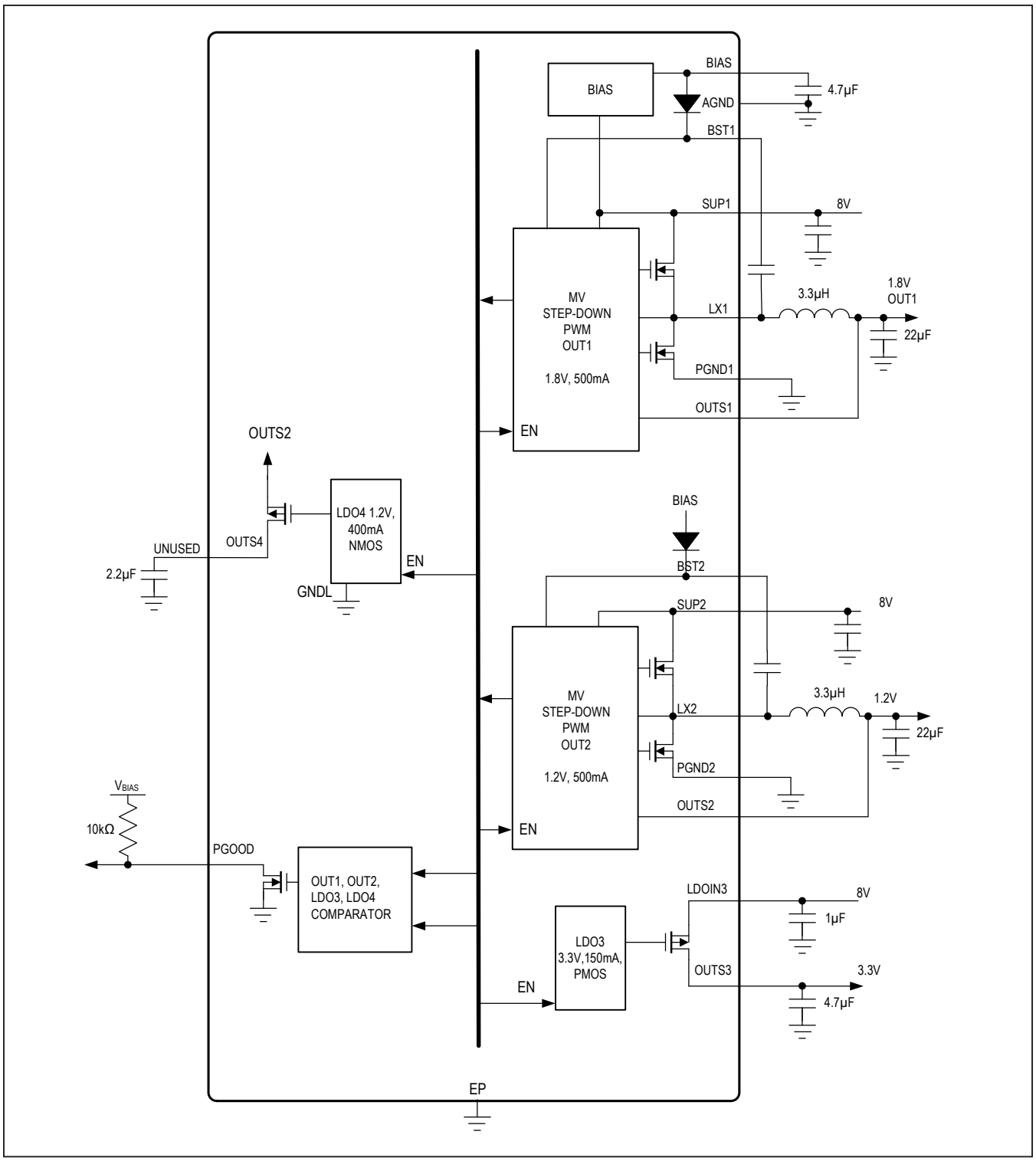

Figure 4. Power-over-Coax Cable Direct to LDO for Improved System Efficiency