

### Automotive Single 8A/12A Step-Down Converter Family

#### General Description

The MAX20011 is a family of high-efficiency, synchronous step-down converters that operate with a 3.0V to 5.5V input voltage range and supply a 0.5V to 1.275V output voltage range. The wide input/output voltage range and the ability to provide up to 12A peak output current make this device family ideal for on-board point-of-load and post-regulation applications. The MAX20011 achieves  $\pm 1.5\%$  output error over load, line, and temperature ranges.

The MAX20011 features a 2.2MHz fixed-frequency PWM mode for better noise immunity and load-transient response. The 2.2MHz frequency operation allows for the use of all ceramic capacitors and minimizes external components. The spread-spectrum frequency modulation option minimizes radiated electromagnetic emissions. Integrated low  $R_{DS(ON)}$  switches improve efficiency at heavy loads and make layout simpler than discrete solutions.

The MAX20011 is offered with factory-preset output voltage. See the *Ordering Information* table for options. The I<sup>2</sup>C interface supports dynamic voltage adjustment with programmable slew rates. Other features include programmable soft-start, overcurrent, and overtemperature protections.

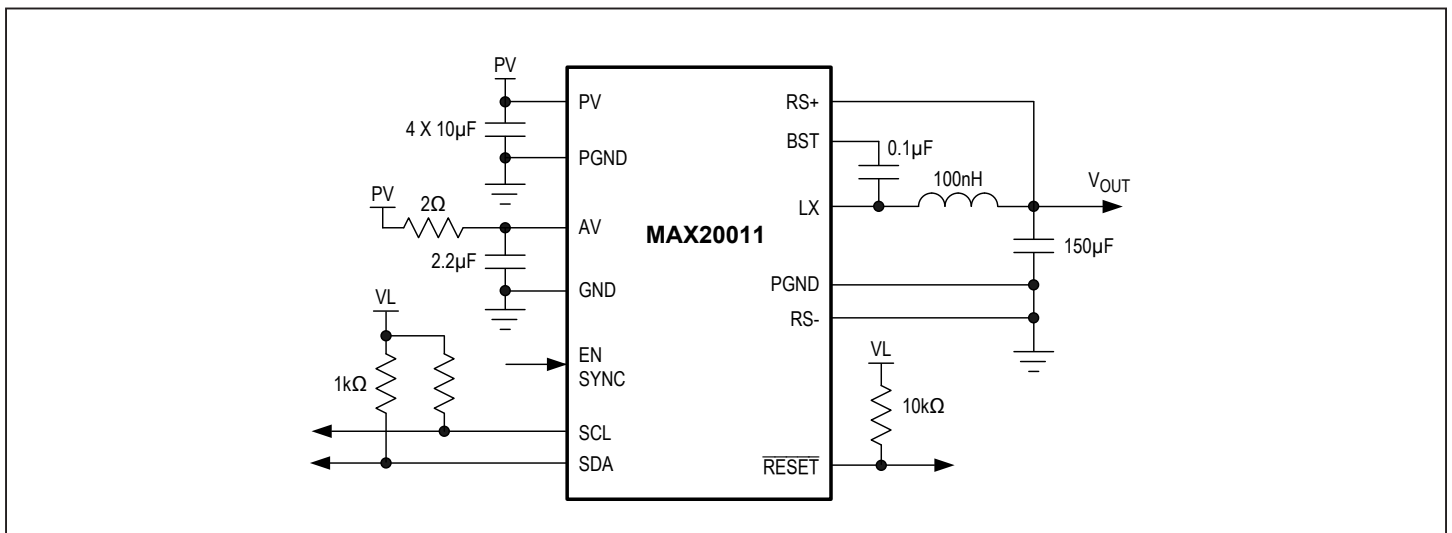
#### Applications

- Automotive ADAS Systems
- SoC Core Power

#### Benefits and Features

- High-Efficiency DC-DC Converter
- Up to 12A Peak Output Current
  - MAX20011A: 8A
  - MAX20011B: 12A
- Differential Remote Voltage Sensing
- 3.0V to 5.5V Operating Supply Voltage
- I<sup>2</sup>C-Controlled Output Voltage: 0.5V to 1.275V in 6.25mV Steps
- Excellent Load-Transient Performance
- Programmable Compensation
- 2.2MHz or 1.1MHz Operation
- $\pm 1.5\%$  Output-Voltage Accuracy
- $\overline{\text{RESET}}$  Output
- Current-Mode, Forced-PWM Operation
- ASIL C Compliant
  - Redundant Reference
  - BIST Diagnostics
  - PEC on I<sup>2</sup>C
  - Programmable OV/UV with  $\pm 1\%$  Accuracy
- Overtemperature and Short-Circuit Protection
- 3.5mm x 3.75mm, 17-Pin Side-Wettable FC2QFN
- -40°C to +125°C Grade 1 Automotive Temperature Range

#### Simplified Block Diagram



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Rev. 8

DOCUMENT FEEDBACK

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