

ABRIDGED DATA SHEET

Click [here](#) for production status of specific part numbers.

MAX20004/MAX20006/ MAX20008

36V, 220kHz to 2.2MHz, 4A/6A/8A Fully Integrated Automotive Step-Down Converters

General Description

The MAX20004/MAX20006/MAX20008 are small, synchronous, automotive buck converter devices with integrated high-side and low-side MOSFETs. The device family can deliver up to 8A with input voltages from 3.5V to 36V, while using only 25 μ A quiescent current at no load. Voltage quality can be monitored by observing the $\overline{\text{RESET}}$ signal. The devices can operate in dropout by running at 98% duty cycle, making them ideal for automotive applications.

The devices offer fixed output voltages of 5V and 3.3V, along with the ability to program the output voltage between 1V and 10V. Frequency is resistor programmable from 220kHz to 2.2MHz. The devices offer a forced fixed-frequency PWM mode (FPWM) and skip mode with ultra-low quiescent current. The devices can be factory programmed to enable spread-spectrum switching to reduce EMI.

The MAX20004/MAX20006/MAX20008 are available in a small, 3.5mm x 3.75mm, 17-pin FC2QFN package and use very few external components.

Applications

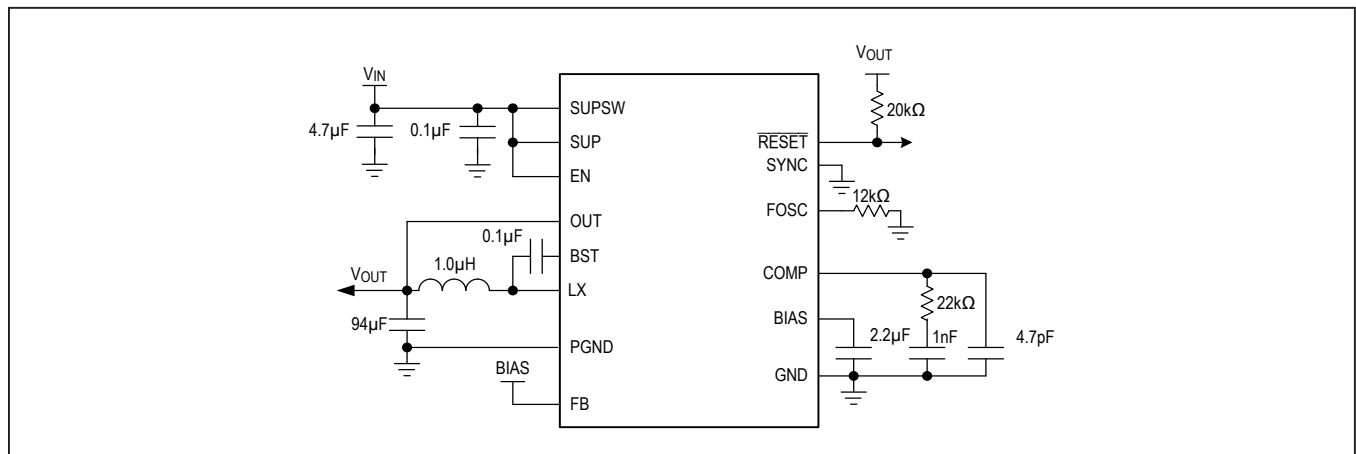
- Point-of-Load (PoL) Applications in Automotive
- Distributed DC Power Systems
- Navigation and Radio Head Units

Benefits and Features

- Multiple Functions for Small Size
 - Operating V_{IN} Range of 3.5V to 36V
 - 25 μ A Quiescent Current in Skip Mode
 - Synchronous DC-DC Converter with Integrated FETs
 - 220kHz to 2.2MHz Adjustable Frequency
 - Fixed 5ms Internal Soft-Start
 - Programmable 1V to 10V Output, or 3.3V and 5.0V Fixed-Output Options Available
 - 98% Duty-Cycle Operation with Low Dropout
 - $\overline{\text{RESET}}$ Output
- High Precision
 - $\pm 2\%$ Output-Voltage Accuracy
 - Good Load-Transient Performance
- Robust for the Automotive Environment
 - Current-Mode, Forced-PWM and Skip Operation
 - Overtemperature and Short-Circuit Protection
 - 3.5mm x 3.75mm 17-Pin FC2QFN
 - -40°C to $+125^{\circ}\text{C}$ Operating Temperature Range
 - 40V Load-Dump Tolerant
 - AEC-Q100 Qualified

Ordering Information appears at end of data sheet.

Typical Application Circuit



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MAX20008

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Fully Integrated Automotive
Step-Down Converters

Ordering Information/Selector Guide

PART	V _{OUT} (FB TIED TO BIAS)	V _{OUT} (EXTERNAL RESISTOR- DIVIDER) (V)	MAXIMUM OPERATING CURRENT (A)	T _{HOLD} (ms)	SPREAD SPECTRUM
MAX20004 AFOA/VY+	5.0	4.5–10	4	0.2	Off
MAX20004AFOB/VY+	3.3	1–10	4	0.2	Off
MAX20004AFOC/VY+	5.0	4.5–10	4	0.2	On
MAX20004AFOD/VY+	3.3	1–10	4	0.2	On
MAX20006 AFOA/VY+	5.0	4.5–10	6	0.2	Off
MAX20006AFOB/VY+	3.3	1–10	6	0.2	Off
MAX20006AFOC/VY+	5.0	4.5–10	6	0.2	On
MAX20006AFOD/VY+	3.3	1–10	6	0.2	On
MAX20008 AFOA/VY+	5.0	4.5–10	8	0.2	Off
MAX20008AFOB/VY+	3.3	1–10	8	0.2	Off
MAX20008AFOC/VY+	5.0	4.5–10	8	0.2	On
MAX20008AFOD/VY+	3.3	1–10	8	0.2	On

*For variants with different options, contact factory.
/V Denotes an automotive-qualified part.
+Denotes a lead(Pb)-free/RoHS-compliant package.*

Chip Information

PROCESS: BiCMOS