

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

## MAX20019/MAX20020

## 3.2MHz, 500mA Dual Step-Down Converters for Automotive Cameras

### General Description

MAX20019/MAX20020 are 2.2MHz and 3.2MHz dual step-down converters with integrated high-side and low-side MOSFETs. The high-voltage step-down converter is designed for continuous operation up to 17V input voltages. The output voltage is factory preset. Buck 1 is preset to 3.3V, 3.0V, or 2.8V. Buck 2 is preset to 1.8V, 1.5V, 1.2V, or 1V. Another option is Buck 1 preset to 5V and Buck 2 preset to 3.3V.

The low-voltage buck features fixed-frequency PWM-mode operation with a switching frequency of 2.2MHz or 3.2MHz. 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 inductance. A 500mV enable hysteresis on the MAX20019 allows the use of long, low-cost coax cables, even during slow start-up situations. The MAX20020's Buck 1 starts after  $V_{SUP}$  is greater than 5.5V and Buck 1 is driven by the EN input.

Protection features include overvoltage (OV) protection, 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

- Surround-View Camera Power Supplies
- Automotive Point-of-Load

### Benefits and Features

- Small Solution Size
  - 2mm x 3mm x 0.75mm 10-pin TDFN with an Exposed Pad
  - 2.2MHz and 3.2MHz Operation Allows Smaller System Size
  - No External Components Needed for Soft-Start
- Cable Flexibility
  - 500mV Enable Hysteresis Allows for Long, Low-Cost Cables During Slow Starts
- EMI Solutions
  - Optional Spread-Spectrum Frequency Modulation
  - Pinout Placement Allows for Tight PCB Layout of Switching Nodes
- Self-Protected
  - Overvoltage Protection, Thermal Shutdown, Short-Circuit Protection
- Automotive Ready
  - Wide 3.5V to 17V Input Voltage Range for Power-Over-Coax
  - Automotive Temperature Range -40°C to +125°C
  - AEC-Q100 Qualified

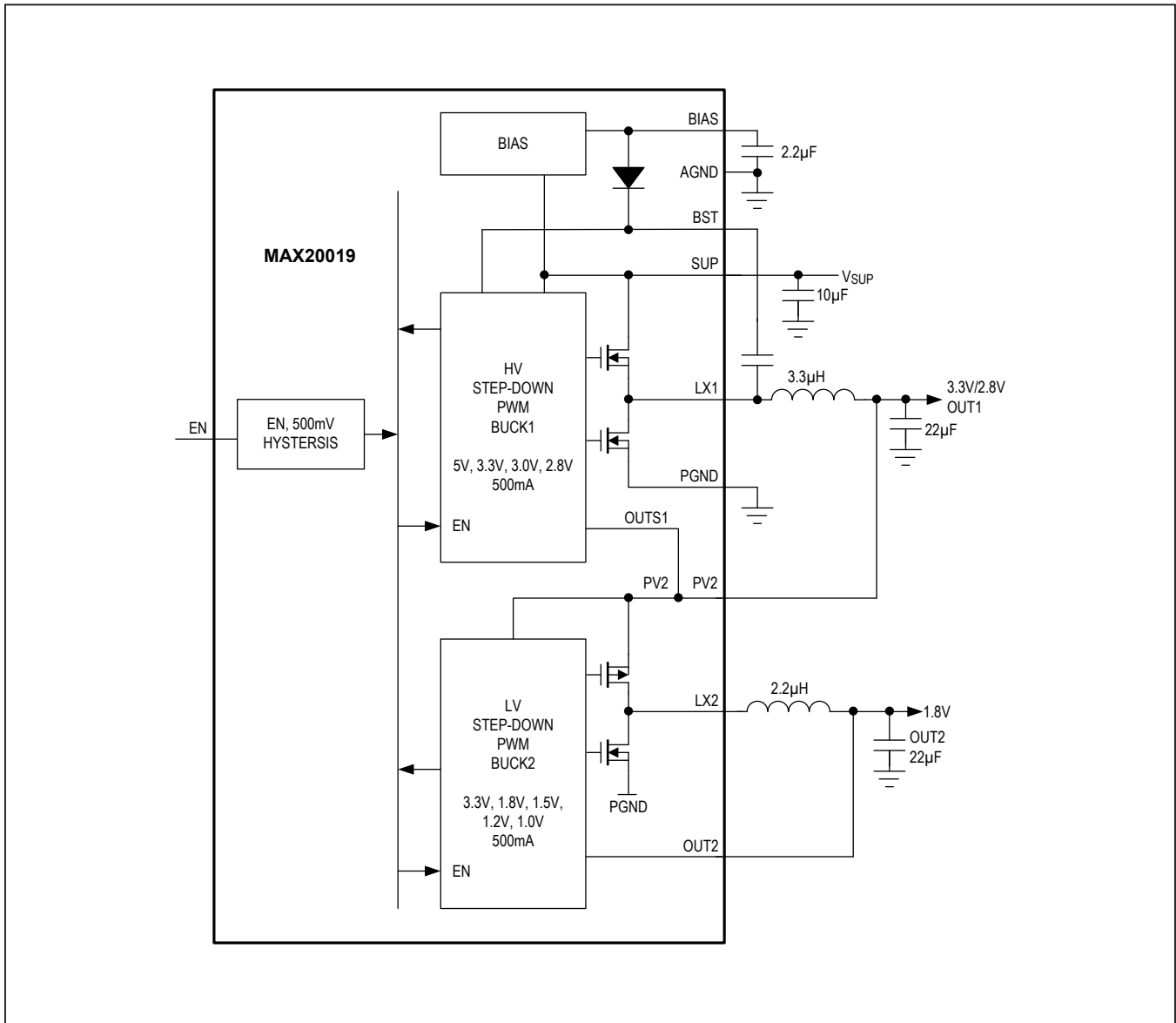
[Ordering Information](#) and [Typical Operating Circuits](#) appear at end of data sheet.

# ABRIDGED DATA SHEET

MAX20019/MAX20020

3.2MHz, 500mA Dual Step-Down Converters  
for Automotive Cameras

## Functional Diagrams

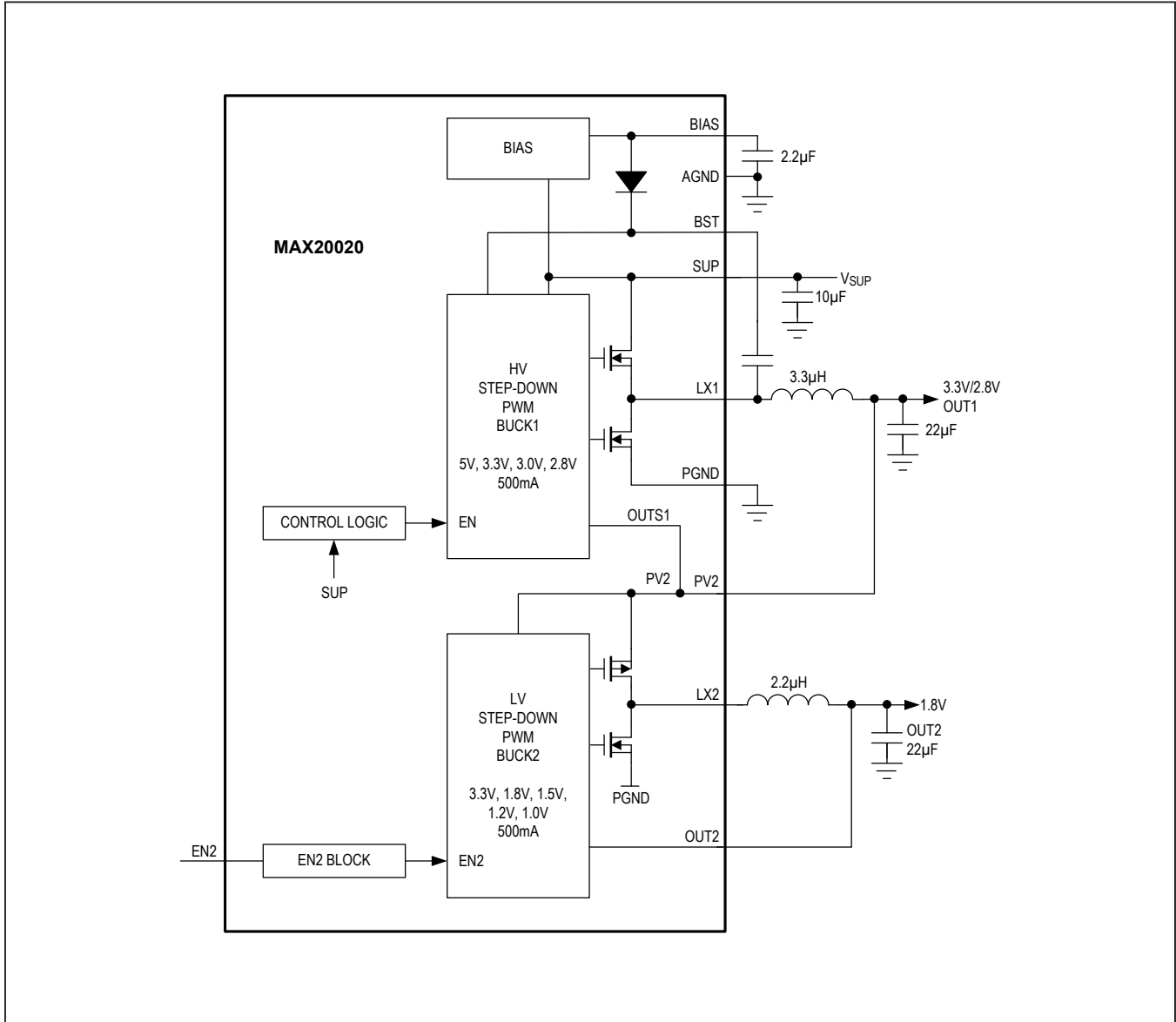


# ABRIDGED DATA SHEET

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## Functional Diagrams (continued)



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## Ordering Information

PART	SEQUENCING	PIN-PACKAGE	OUT1 (V)	OUT2 (V)	f <sub>sw</sub> (MHz)	SPREAD SPECTRUM
<b>MAX20019</b> ATBA/V+	Off	10 TDFN-EP*	3.3	1.8	3.2	On
MAX20019ATBA/VY+	Off	10 SWTDFN-EP*	3.3	1.8	3.2	On
MAX20019ATBB/V+	Off	10 TDFN-EP*	2.8	1.8	3.2	On
MAX20019ATBC/V+	Off	10 TDFN-EP*	3.3	1.2	3.2	On
MAX20019ATBD/V+	Off	10 TDFN-EP*	2.8	1.2	3.2	On
MAX20019ATBE/V+**	Off	10 TDFN-EP*	3.3	1.8	3.2	Off
MAX20019ATBF/V+**	Off	10 TDFN-EP*	2.8	1.8	3.2	Off
MAX20019ATBG/V+	Off	10 TDFN-EP*	3.3	1.2	3.2	Off
MAX20019ATBH/V+**	Off	10 TDFN-EP*	2.8	1.2	3.2	Off
MAX20019ATBI/V+**	Off	10 TDFN-EP*	3.3	1.0	3.2	On
MAX20019ATBJ/V+	Off	10 TDFN-EP*	3.3	1.8	2.2	On
<b>MAX20020</b> ATBA/V+	On	10 TDFN-EP*	3.3	1.8	3.2	On
MAX20020ATBB/V+	On	10 TDFN-EP*	2.8	1.8	3.2	On
MAX20020ATBC/V+	On	10 TDFN-EP*	3.3	1.2	3.2	On
MAX20020ATBD/V+	On	10 TDFN-EP*	2.8	1.2	3.2	On
MAX20020ATBK/VY+**	On	10 SWTDFN-EP*	3.3	1.82	3.2	On

**Note:** All devices operate over the -40°C to +125°C automotive temperature range.

/V denotes an automotive qualified part.

+Denotes a lead(Pb)-free/RoHS-compliant package.

SW = Side-wettable TDFN package.

\*EP = Exposed pad.

\*\*Future product—contact factory for availability.

**Contact factory for the following options:**

- 2.2MHz or SS = Off
- OUT2: 1.5V or 1V
- OUT1 and OUT2: 5V and 3.3V

## Chip Information

PROCESS: CMOS