

# ABRIDGED DATA SHEET

## MAX20310

# Ultra-Low Quiescent Current PMIC with SIMO Buck-Boost for Wearable Applications

## General Description

The MAX20310 is a compact power management integrated circuit (PMIC) for space-constrained, battery-powered applications where size and efficiency are critical. The device combines two single inductor, multiple output (SIMO) buck-boosted outputs with two LDOs and other system power management features like a push-button monitor and sequencing controller.

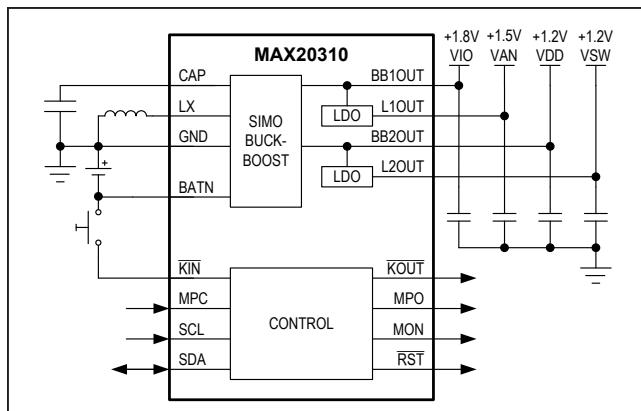
The device includes a SIMO buck-boost switching regulator that provides two programmable voltage rails using a single inductor, minimizing solution footprint. The MAX20310 operates with battery voltages down to 0.7V for use with Zinc Air, Silver Oxide, or Alkaline batteries. The architecture allows for output voltages above or below the battery voltage.

Additionally, the MAX20310 has two programmable low-dropout (LDO) linear regulators. The linear regulators can also operate as power switches that can disconnect the quiescent load of system peripherals.

The MAX20310 includes a programmable power controller that allows the device to be configured for use in applications that require a true off state or for always-on applications. This controller provides a delayed reset signal, voltage sequencing, and customized button timing for on/off control and recovery hard reset.

The device also features a multiplexer for monitoring the power inputs and outputs of each function. The MAX20310 is available in a 16-bump 0.4mm pitch 1.63mm x 1.63mm wafer-level package (WLP) and operates over the -40°C to +85°C extended temperature range.

## Typical Operating Circuit



## Benefits and Features

- Extend System Battery Use Time
  - Single Inductor, Multiple Output (SIMO) Ultra-Low  $I_Q$  Buck-Boost Regulator
    - Battery Input Voltage from 0.7V to 2.0V
    - Output Voltage Programmable From 0.9V to 4.05V
    - 250mW Maximum Total Input Power
    - Incremental CAP Quiescent Current 1 $\mu$ A per channel
    - 84% Efficiency for 1.8V, 10mA Output
    - Input Current Limited
  - Dual Ultra-Low  $I_Q$  50mA LDO
    - Inputs Supplied by Dual Buck-Boost Outputs
    - Output Programmable from 0.5V to 3.65V
    - Quiescent Current 1.1 $\mu$ A per LDO / 600nA per Load Switch
    - Configurable as Load Switch
- Extend Product Shelf-Life
  - Battery Seal Mode
    - 10nA Battery Current (typ)
- Minimize Board Area
  - 1.63mm x 1.63mm WLP
- Easy-to-Implement System Control
  - Voltage Monitor Multiplexer
    - 1% Accurate Battery Inverter ( $\pm 10mV$  at 1.0V)
  - Power Button Monitor
    - Buffered Output
  - Power Sequencing
  - Reset Output
  - I<sup>2</sup>C Control Interface

## Applications

- Wearable Medical Devices
- Wearable Fitness Devices
- Portable Medical Devices

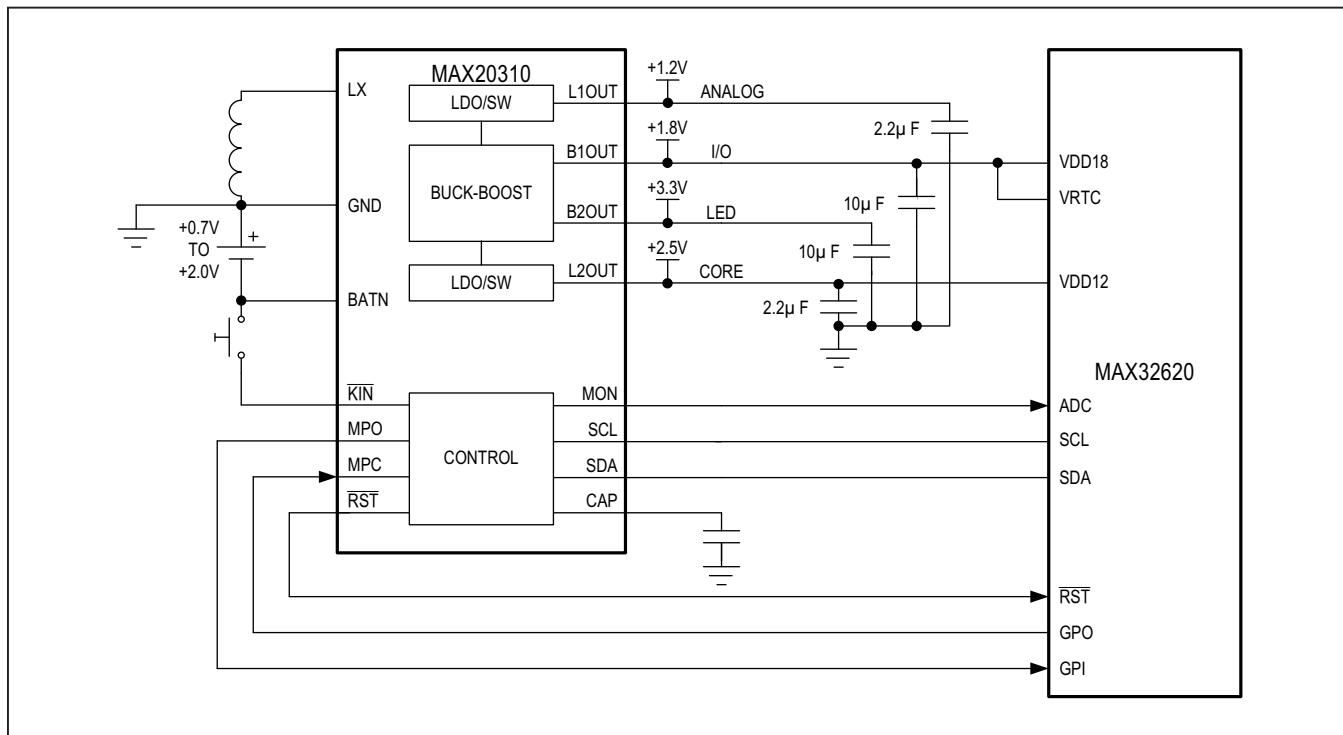
**Ordering Information** appears at end of data sheet.

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## \*Typical Application Circuit



**Note:** The capacitor values shown reflect an effective capacitance. Derate capacitors appropriately according to specific application requirements.

## Ordering Information

PART	TEMP RANGE	PIN-PACKAGE	TOP MARK
MAX20310AEWE+	-40°C to +85°C	16 WLP	AAK
MAX20310AEWE+T	-40°C to +85°C	16 WLP	AAK
MAX20310BEWE+*	-40°C to +85°C	16 WLP	AAK
MAX20310BEWE+T*	-40°C to +85°C	16 WLP	AAK
MAX20310CEWE+*	-40°C to +85°C	16 WLP	AAK
MAX20310CEWE+T*	-40°C to +85°C	16 WLP	AAK
MAX20310DEWE+*	-40°C to +85°C	16 WLP	AAK
MAX20310DEWE+T*	-40°C to +85°C	16 WLP	AAK
MAX20310EEWE+*	-40°C to +85°C	16 WLP	AAK
MAX20310EEWE+T*	-40°C to +85°C	16 WLP	AAK

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

T = Tape and reel.

\*Future Product—Contact factory for availability.

## Chip Information

PROCESS: BiCMOS

# Mouser Electronics

Authorized Distributor

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[Maxim Integrated](#):

[MAX20310AEWE+](#) [MAX20310AEWE+T](#)