

## Wearable Power Management Solution for Multiple Battery Types

### FEATURES

- ▶ Wide input supply voltage range: 1.8 V to 5.5 V
- ▶ Low quiescent current: 5.1  $\mu$ A standby mode, including UVLO
- ▶ 16-bit coulomb counter fuel gauge with integrated high-side current sensing resistor
- ▶ 12-bit ADC to monitor battery voltage, output voltages, and junction temperature
- ▶ Channels 1 and Channel 2: 150 mA low power buck-boost regulator
  - ▶ Selective buck, boost, or buck-boost operation
  - ▶ Selective hysteresis or pulse-width modulation (PWM) mode
  - ▶ Selective PWM frequency: 50 kHz to 225 kHz
  - ▶ 2 $\times$  programmable GPIOs for clock synchronization or fast stop switching input
- ▶ Channel 3: 150 mA low power buck regulator
- ▶ Channel 4 Through Channel 6, and Channel 8: 50 mA low noise LDO, 1.65 V to 5.5 V input supply voltage range
- ▶ Channel 7: 50 mA sink current LDO
- ▶ Channel 9: 50 mA, low noise LDO, 1.0 V to 1.9 V input supply voltage range
- ▶ I<sup>2</sup>C interface with interrupt warning
- ▶ 2 kb OTP memory
- ▶ Power-good monitor and watchdog power hard reset
- ▶ UVLO, peak current-limit protection, and TSD protection
- ▶ Integrated anticounterfeit logic module
- ▶ 42-ball, 0.40 mm pitch, 2.880 mm  $\times$  2.980 mm WLCSP
- ▶ -10°C to +70°C operating junction temperature range

### APPLICATIONS

- ▶ Wearable medical applications
- ▶ Internet of Things (IoT) applications
- ▶ Disposable sensor devices
- ▶ Battery-powered devices

For more information about the ADP5320, contact your local Analog Devices, Inc., sales office at [ADP5320@analog.com](mailto:ADP5320@analog.com).

### GENERAL DESCRIPTION

The ADP5320 highly integrated power management unit (PMU) combines nine digitally adjustable regulators, a fuel gauge, a 12-bit analog-to-digital converter (ADC), 2 kb of one time programmable (OTP) memory, anticounterfeit logic in a 42-ball, 2.880 mm  $\times$  2.980 mm WLCSP. The regulators include: 2 $\times$  buck-boost, 1 $\times$  buck regulator, 5 $\times$  low dropout (LDO) regulators, and one low input LDO. The ADP5320 meets demanding performance and board space requirements for wearable applications.

The ADP5320 operates from a 1.8 V to 5.5 V input supply voltage range, enabling the device for use with multiple types of battery inputs including: 2S/3S Zinc-air coin-cells or Li-poly/Li-ion batteries, as well as other types of dc power sources.

The ADP5320 PMU fuel gauge includes a precision 16-bit coulomb counter that integrates battery current flowing through the device. A 12-bit ADC is included to monitor battery voltage, output supply voltages, and the junction temperature. Other features include a programmable sequencing engine and system fault recovery.

The ADP5320 PMU buck-boost regulators are high efficiency, step up and step down regulators that operate at input voltages greater than, less than, or equal to the regulated output voltage. All regulators, including the six LDOs, are digitally programmable to meet different power requirements for many applications.

The ADP5320 includes a 2-wire, I<sup>2</sup>C-compatible, digital interface and is rated at the -10°C to +70°C operating junction temperature range.

**NOTES**