

## DA9313

**High current, inductor-less power converter at incredible power efficiency above 98%, powering greater than 50 W from a 10mm<sup>2</sup> package**

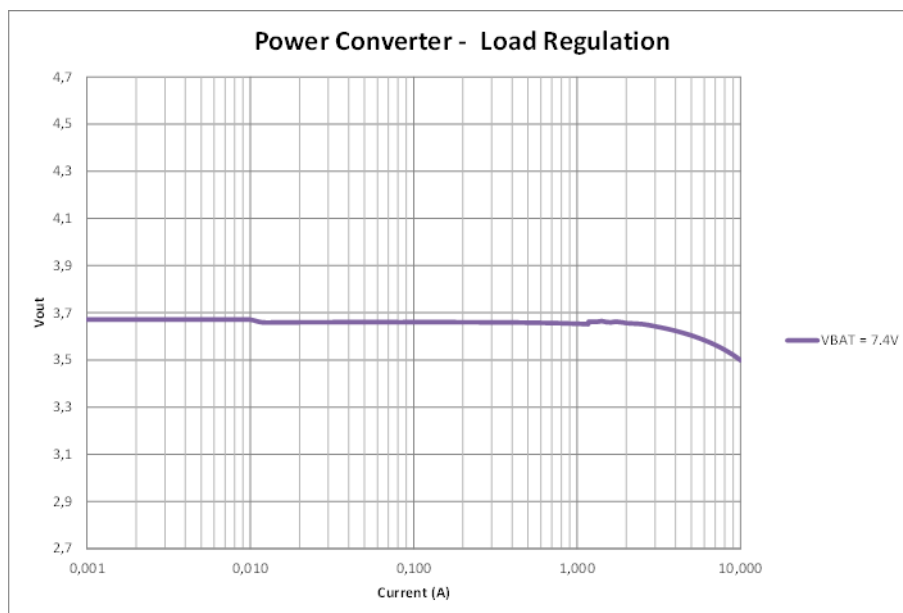
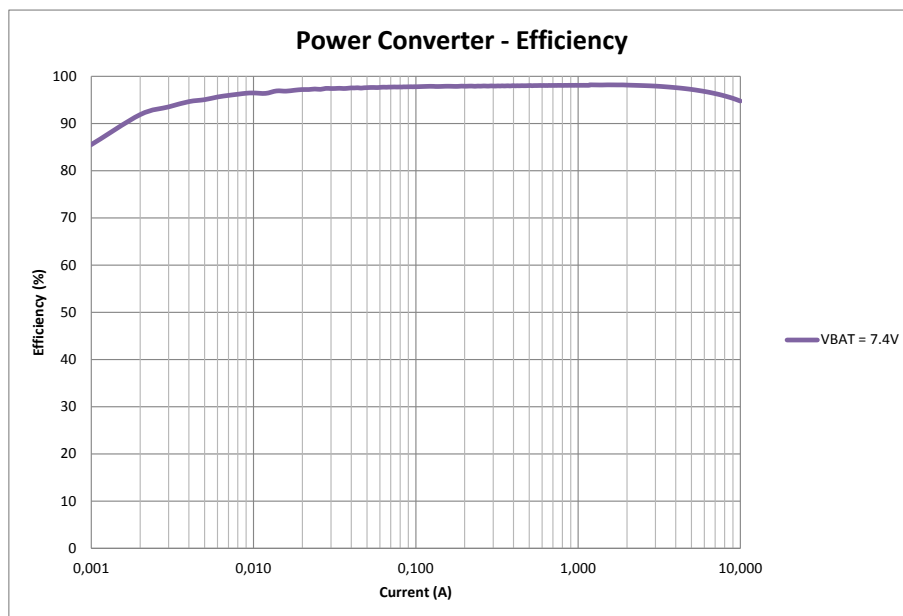
**DA9313 is a standalone Power Management IC suitable for applications supplied by voltages from 5.0V up to 10.5V. It integrates industry's first inductor-less 10A Power Converter for best-in-class efficiency and offers master/slave operation for up to 20A output current.**

DA9313 enables applications to be powered with improved efficiencies and requiring less volume compared to conventional high voltage direct conversion solutions. The fully integrated Power Converter halves the input voltage without the requirement for inductors and provides flat efficiency over a very wide range of output current.

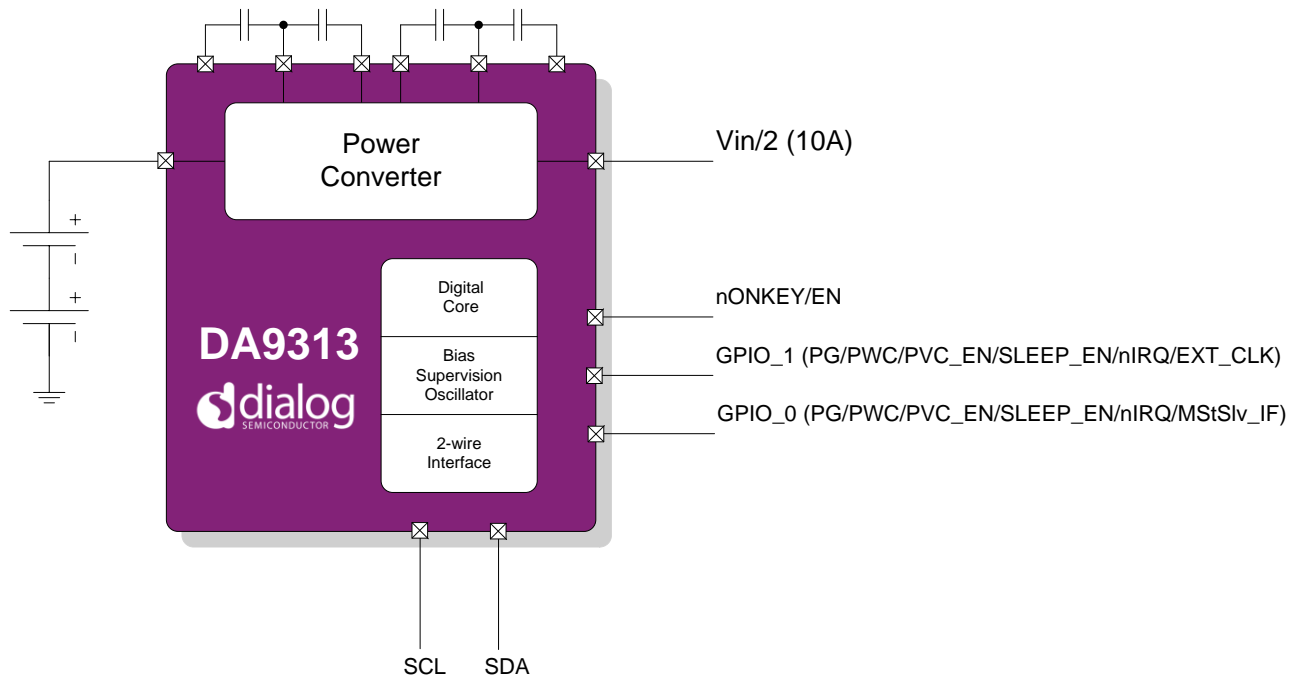
Today's competitor devices using charge pump technology to generate a regulated output voltage have very limited output current capabilities. DA9313 has the capability to provide 50W of power in a Standalone operation and 100W in master/slave operation.



The unregulated output of the Power Converter supplies low voltage sub- and system-PMICs as well as any discrete regulator. With the ability to provide best in class efficiency of greater than 98%, this helps to provide extended operational run times for 2S battery operated applications. Existing designs can later be re-used, allowing fast time to market.



## Block Diagram



Suitable for high power electronics, the DA9313 includes an integrated over-temperature and over-current protection with no requirement for external sensing components. Inrush current is limited and power rail slopes can be controlled during start-up. It includes a programmable nONKEY/Enable input port to switch-on/off the Power Converter. The GPIOs can be programmed as a power good indicator to signal that the output voltage is within the expected range, used as master/-slave synchronization, and can be configured as an I<sup>2</sup>C interrupt signal or as an external clock input.

The DA9313 comes in an ultra-small 43-pin, 3.545 x 2.815 mm WLCSP package and operates over a -40°C to +125°C die temperature range.

## Benefits

- ▶ 10A total output current in Standalone Configuration
- ▶ Master/slave configuration for up to 20A output current
- ▶ High efficiency above 98%
- ▶ Compatible with Type 3 PCB
- ▶ Enabling low profile externals (z-height  $\leq$  1mm) for high current application

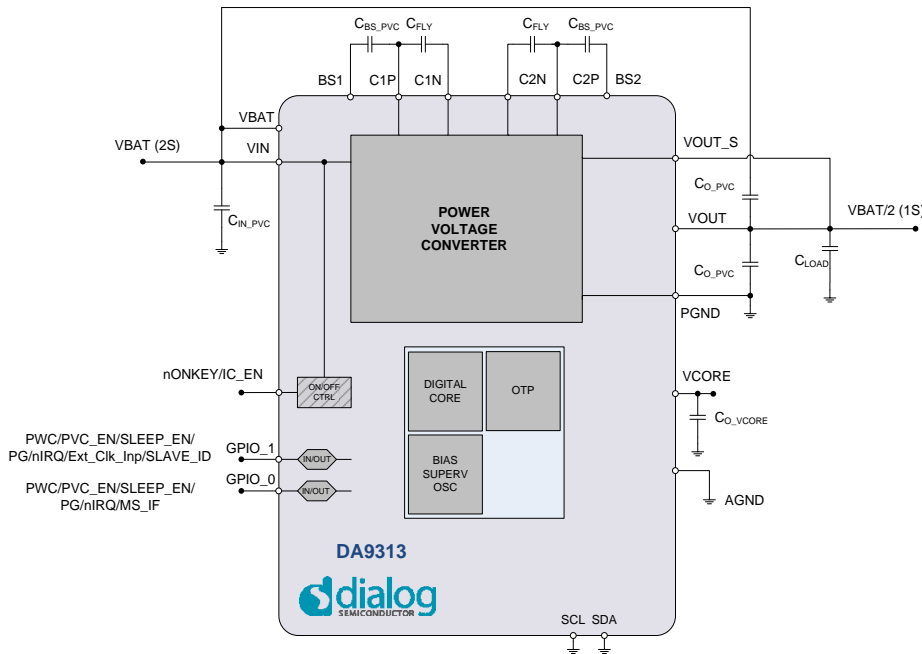
## Features

- ▶ 2 to 1 Power Converter stage
  - Integrated power switches
  - $V_{in} = 5V$  to  $10.5V$
  - $V_{out} = \frac{1}{2} V_{in}$
  - High and flat efficiency, above 98%
  - 10 A output current
  - Typical  $55 \mu A$  quiescent current standalone
  - Up to 20A output current in master/slave mode
  - Typical  $60\mu A + 10\mu A$  quiescent current in master/slave configuration
- ▶ nONKEY function
- ▶ Enable/disable function
- ▶ Power good indication
- ▶ Master/slave synchronization
- ▶ Power Cycling input
- ▶ External clock input
- ▶ I2C interface including interrupt signal (optional)
- ▶ 43-pin, 3.545x2.815 mm WLCSP Package

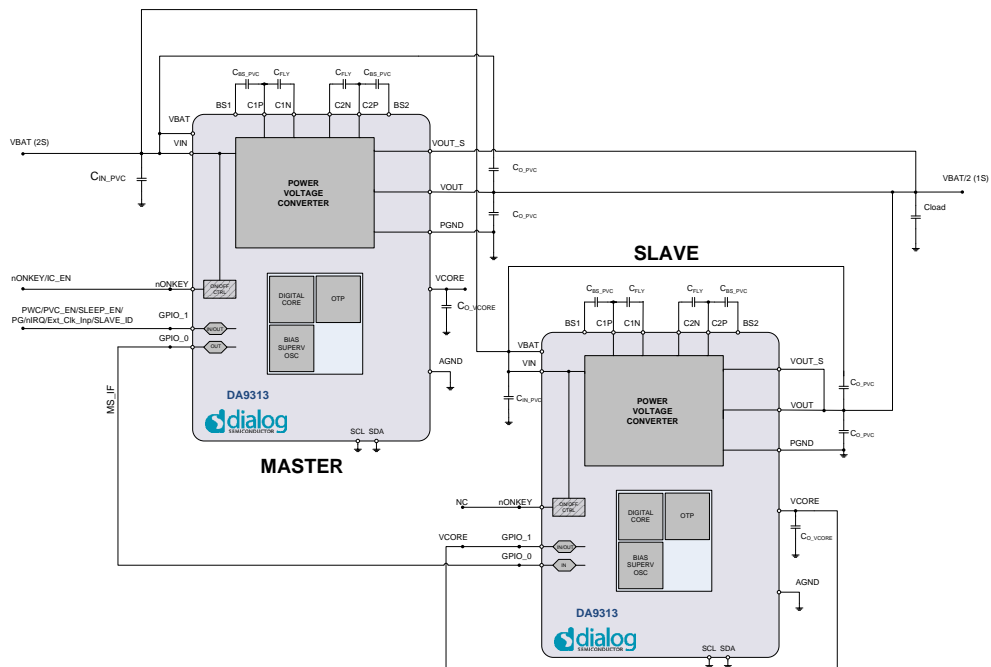
## Target Applications

- ▶ Ultrabooks
- ▶ Notebook Computers
- ▶ Chromebooks
- ▶ Tablets
- ▶ Smartphone Direct Charging
- ▶ DSLR and Mirrorless Cameras
- ▶ Camcorders
- ▶ Power banks
- ▶ 2S Battery Applications

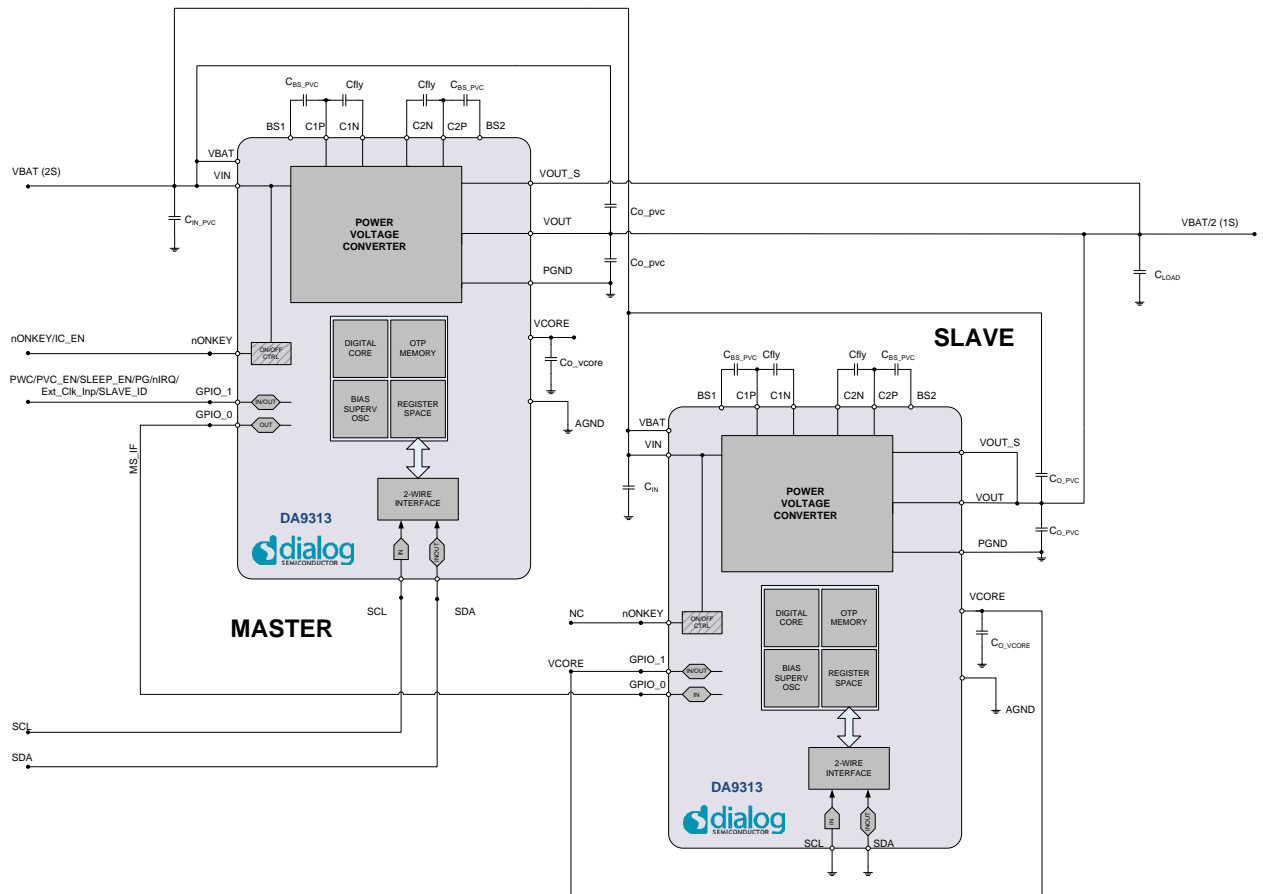
## Functional Block Diagram



## Functional Block Diagram in Master/Slave Configuration (no I<sup>2</sup>C interface)



## Functional Block Diagram in Master/Slave Configuration (with I<sup>2</sup>C interface)



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