DA9121 / DA9122

High-Performance DC-DC up to 10 A (DA9121) / 5 A (DA9122)

The DA9121 / DA9122 family of DC-DC Buck Converters is optimized for the supply of CPUs, GPUs, and DDR memory rails smartphones, tablets, and other portable applications. The fast load transient response and load regulation are optimized for the latest generation of multicore application processors.

Features

- 2.5 V to 5.5 V input voltage
- 0.3 V to 1.9 V output voltage
- 4 MHz nominal switching frequency
- ±1 % accuracy (static)
- ±5 % accuracy (dynamic)
- I^2C compatible interface (FM+)
- Programmable GPIOs
- Adjustable soft-start
- Voltage, current, and temperature supervision
- -40 °C to +85 ºC temperature range
- Package: 24WLCSP 2.5 mm x 1.7 mm (0.4 mm pitch)

Benefits

- Integrated power switches
- Dynamic voltage control (DVC)
- Provision of power directly at the point of load (granular power)
- High efficiency over a wide output range
- Differential remote sensing
- Small height components

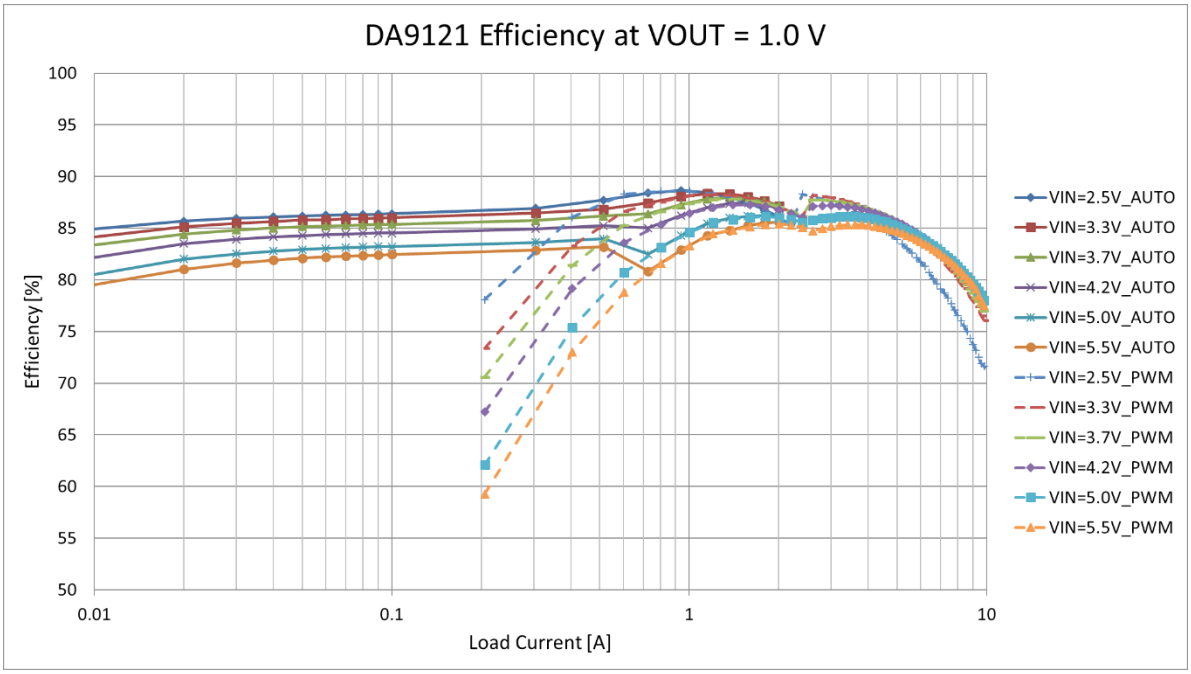
Applications

- Smartphones
- Tablet PCs
- Infotainment
- Ultrabooks™
- WiFi-modules
- Game consoles

Device Information

Part	Phases	Rails	Current	Package
DA9121	2	1	10A	24WLCSP
DA9122	1	2	2x 5 A	24WLCSP

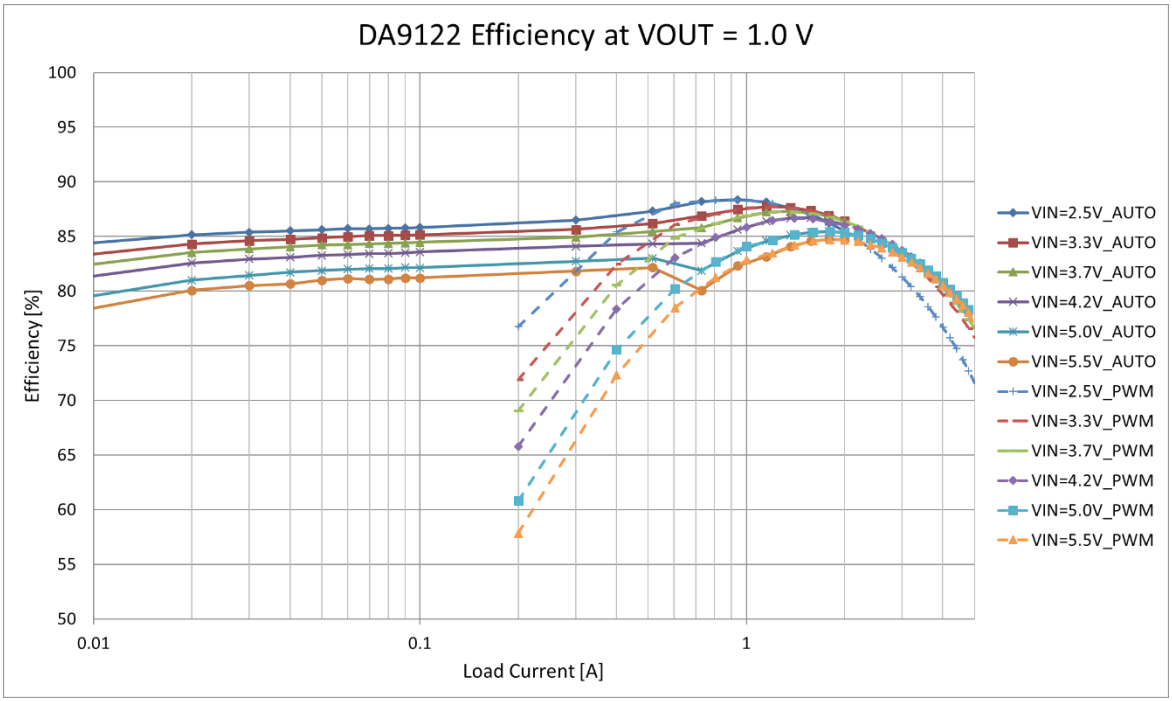
Efficiency Diagram DA9121



DA9121 operates as a dual-phase buck converter, delivering up to 10 A output current. The output voltage is programmable from 0.3 V to 1.9 V in 10 mV increments. The input voltage range of 2.5 V to 5.5 V makes it suitable for a wide variety of low-voltage systems, including all Li-Ion battery powered applications. To guarantee the highest accuracy and to support multiple PCB routing scenarios without loss of performance, a remote differential sensing capability is implemented.

A programmable soft start-up limits the inrush current from the input node and secures a slope controlled activation of the rail. The dynamic voltage control (DVC) supports adaptive adjustment of the supply voltage depending on the processor load through a software communication interface. DA9121 features integrated over-temperature and over-current protection for increased system reliability without the need for external sensing components. For the implementation of multi-rail PMICs the configurable I^2C address of DA9121 enables multiple instances to be placed in the application, each directly located at its point-of-load (granular power). The output voltage can be automatically powered-up with an individual delay from the assertion of IC_EN towards an individual start-up voltage, pre-determined via OTP, and selected via PCB routing. In the same way the output rail is powered-down with an individual delay from the release of the IC_EN signal. A variant of DA9121 offers a dedicated control port for low power operation in combination with a fixed I^2C slave address.

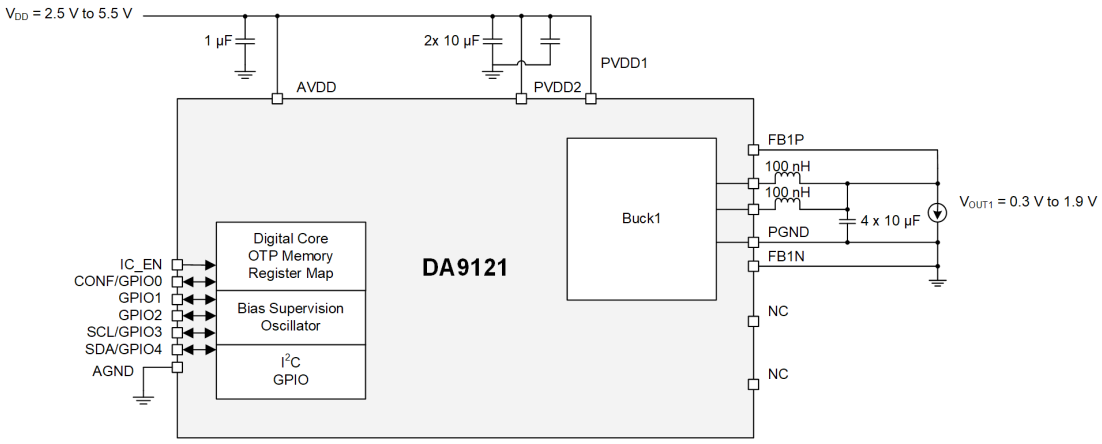
Efficiency Diagram DA9122



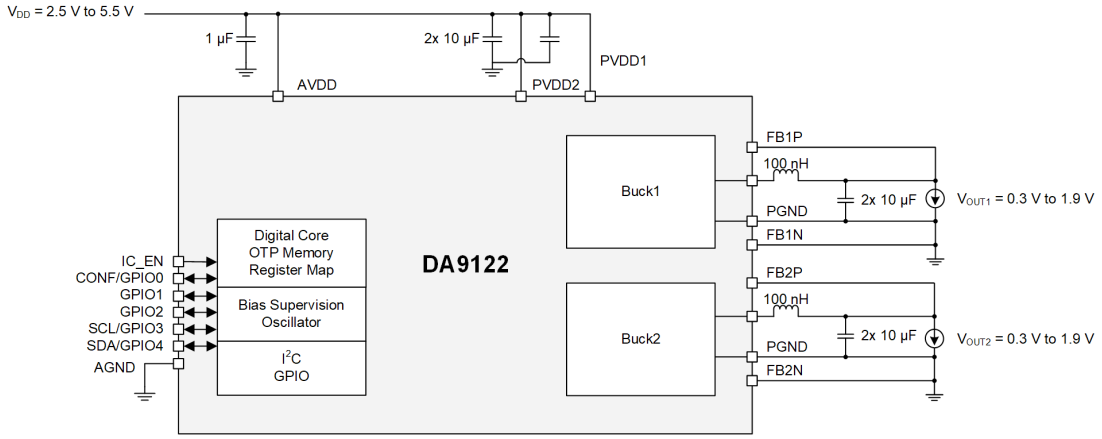
DA9122 integrates two buck converters, each delivering up to 5 A output current. The output voltage is programmable from 0.3 V - 1.9 V in 10 mV increments. The input voltage range of 2.5 V to 5.5 V makes it suitable for a wide variety of low voltage systems, including all Li-Ion battery powered application. To guarantee the highest accuracy and to support multiple PCB routing scenarios without loss of performance, a remote differential sensing capability is implemented for each rail generated by DA9122.

A programmable soft start-up limits the inrush current from the input node and secures a slope controlled activation of the rail. The Dynamic Voltage Control (DVC) supports adaptive adjustment of the supply voltage depending on the processor load through a software communication interface. DA9122 feature integrated over-temperature and over-current protection for increased system reliability without the need for external sensing components. For the implementation of multi-rail PMICs the configurable I^2C address of DA9122 enables up to three instances to be placed in the application, each directly located at its point-of-load (granular power). The output rails of DA9122 can be automatically powered up from the assertion of IC_EN towards configurable start-up voltages, predetermined in OTP and selected via PCB routing of the ADDR port.

Simplified Schematic DA9121



Simplified Schematic DA9122



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