

PV88080

High Efficiency Advanced Feature 4-Channel PMIC

PV88080 provides one PWM high-voltage input buck controller and three adjustable synchronous buck regulators. The buck controller generates the supply for the other three buck converters. The two pass devices (NMOS FET) for the high side and low side of the high-voltage buck controller are external such that the majority of the buck controller power dissipation is outside the PV88080. This high-voltage buck controller uses a constant on time (COT) control scheme with integrated bootstrap PMOS switch. In certain applications, multiple PV88080s can be used together to provide additional power rails to support larger system requirements. The three buck converters can be used to generate the supplies for CPUs, DDR memory, and auxiliary functions in typical applications. The pass devices of the buck converters are fully integrated, so no external FETs or Schottky diodes are needed. This results in an optimized power efficiency and a reduced external component count. PV88080 provide Dynamic Voltage Control (DVC) to support adaptive adjustment of the supply voltage dependent on the processor load via direct register write through the I2C communication. All power blocks have over-current circuit protection and the start-up timing can be controlled through the I2C interface. Soft start-up limits the inrush current from the input node and secures a slope controlled activation of the rail. The PV88080 is available in a 32-pin QFN package and is specified from -40 °C to 85 °C ambient temperature.

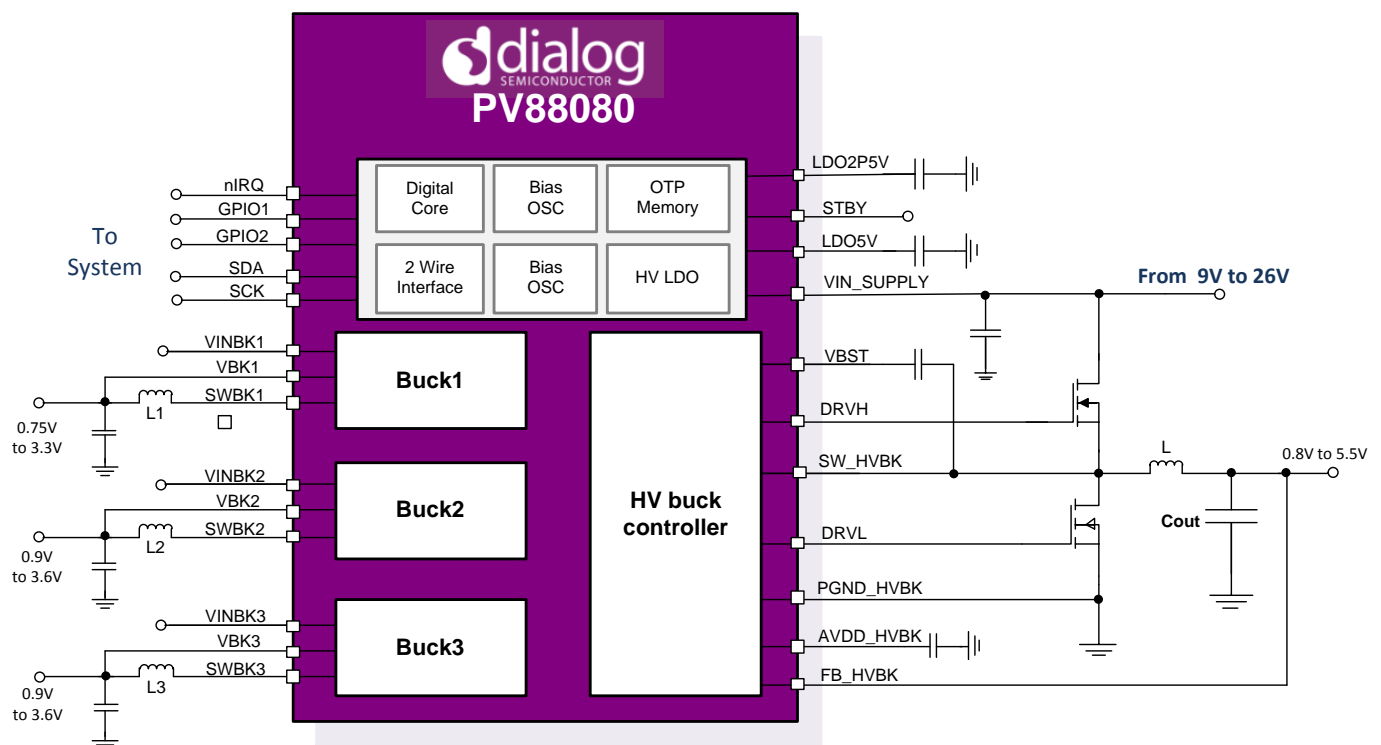
Features

- ▶ One high-voltage synchronous buck controller with:
 - Wide V_{IN} range, 7 V to 26 V
 - Programmable V_{OUT} (0.8 V to 5.25 V when $V_{IN} < 13.2$ V, 1.8 V to 5.25 V when $V_{IN} > 13.2$ V)
 - Up to 20 A I_{OUT} depending on external MOSFET
 - ▶ Three synchronous buck converters with integrated low R_{ON} FET:
 - Buck1: programmable V_{OUT} from 0.75 V to 3.3 V with 5 A continuous output current, and 6 A peak current standalone
 - Buck2: programmable V_{OUT} from 0.9 V to 3.6 V with 2 A continuous output current and 3 A peak current standalone
 - Buck3: programmable V_{OUT} from 0.9 V to 3.6 V with 2 A continuous output current and 3 A peak current standalone
 - ▶ DVC on buck controller and buck converters
 - ▶ Auto mode on all buck converters, adjustable soft-start, and I²C-compatible interface
 - ▶ GPIO to connect/control the other device
 - ▶ Register-selectable multiple function: mute, reset timer, external thermal sense, and lower input voltage alarm
 - ▶ -40 °C to +85 °C ambient temperature
- Custom 32-pin QFN package with thermal pad, 0.5 mm pin pitch

Target Applications

- Networking home terminal
- WiFi EAP/routers
- Supply for digital television processor
- Power supply for digital set top box (STB)

Block Diagram



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