

PV88090

High Efficiency 3-Channel Buck Converter with dual LDO

General Description

PV88090 features a dual-phases buck converter providing a total of 9.5A current supplies for the CPUs (1.0/1.2V). PV88090 contains 2x single-phase buck converters generating DDR memory (1.5V) and Auxilliary supply. The 2x LDO regulators to generate the EMMC (1.8V) supply from an intermediate 3.6V supply and the analog core supply (1.05V/1.2V) from the 1.5V output of the memory buck during normal mode and from 3.6V during standby mode.

The passive devices of the buck converters are fully integrated. There are three buck converters generating 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 optimized power efficiency and a reduced external component count.

PV88090 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 PV88090 is available in a 30-pin QFN package and is specified from -40 °C to 85 °C ambient temperature.

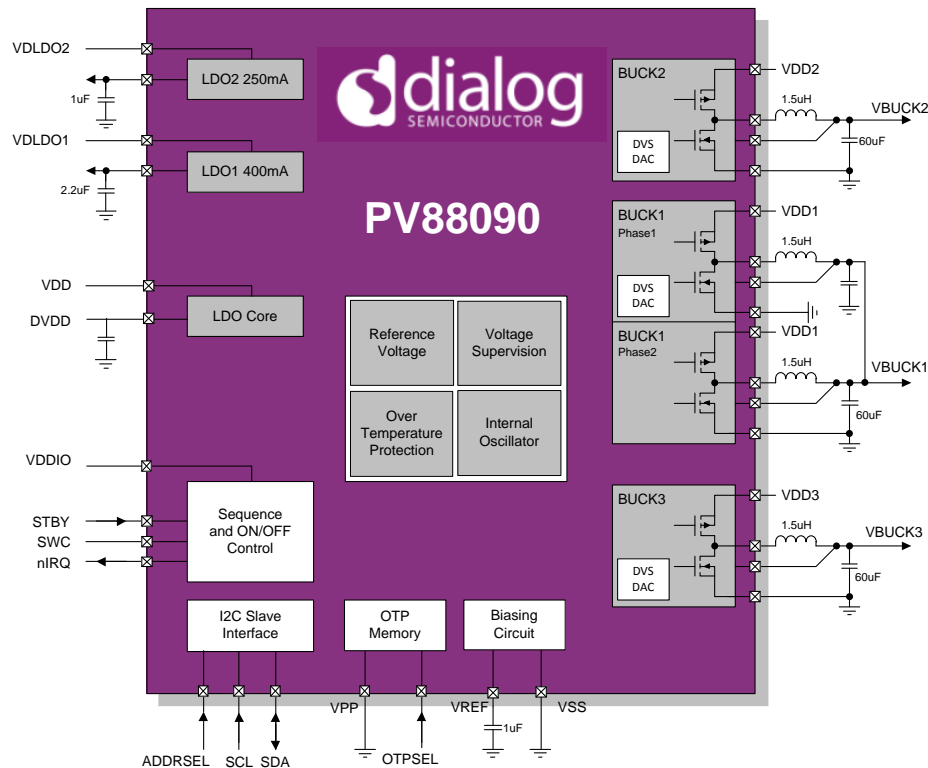
Features

- 3 DCDC Buck Converters with programmable output voltage
 - 9.5A Dual-Phase Buck1 with Dynamic Voltage Control
 - 2.0A Single-Phase Buck2
 - 2.4A Single-Phase Buck3
- 2 Programmable LDO Regulators with High PSRR
 - 400mA LDO1
 - 250mA LDO2
- Vin 4.75V-5.25V
- Power sequence setting by inter programmer
- Power Manager with programmable sequencing and Adjustable Soft Start
- I²C compatible Interface
- -40 to +85 °C Ambient Temperature Range
- QFN30, 4.5x7mm, 0.5mm pin pitch, package with thermal pad

Target Applications

- Supply for Digital Television Processor
- Power Supply for Digital Set Top Box (STB)
- Home Networking Products

Block Diagram



Pinout List

| Pin No. | Pin Name | Description |
|---------|----------|--|
| 1 | VDD2 | Supply voltage for Buck2 To be connected to VDD after input capacitor |
| 2 | VSS12 | Ground voltage for Buck2 and Buck1 phase1 |
| 3 | VDD1 | Supply voltage Buck1 To be connected to VDD after input capacitor |
| 4 | VSS13 | Ground voltage for Buck3 and Buck1 phase2 |
| 5 | VDD3 | Supply voltage for Buck3 To be connected to VDD after input capacitor |
| 6 | ADDRSEL | I ² C alternate address select |
| 7 | OTPSEL | OTP page select (high end / low end) |
| 8 | VDLDO1 | Supply voltage for LDO1 |
| 9 | VDLDO1 | Supply voltage for LDO1 |

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| Pin No. | Pin Name | Description |
|---------|----------|--|
| 10 | LDO1 | LDO1 output |
| 11 | VLDLO2 | Supply voltage for LDO2 |
| 12 | LDO2 | LDO2 output |
| 13 | FB3 | Feedback node Buck3 |
| 14 | VPP | OTP programming voltage input Connect to VSS in application |
| 15 | nIRQ | Interrupt line towards the host |
| 16 | VDDIO | Supply voltage for I/O rail |
| 17 | STBY | System standby signal |
| 18 | SWC | Connect to VSS for normal application |
| 19 | LX3 | Switching node for Buck3 |
| 20 | LX1B | Switching node for Buck1 phase 2 |
| 21 | LX1A | Switching node for Buck1 phase 1 |
| 22 | LX2 | Switching node for Buck2 |
| 23 | DVDD | Core digital supply voltage |
| 24 | FB2 | Feedback node Buck2 |
| 25 | VDD | Supply voltage |
| 26 | FB1 | Feedback node Buck1 |
| 27 | VREF | Voltage reference decouple |
| 28 | VSS | Quiet ground |
| 29 | SDA | I2C data |
| 30 | SCL | I2C clock |

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