

# 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 I<sup>2</sup>C communication. All power blocks have over current circuit protection and the start-up timing can be controlled through the I<sup>2</sup>C 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.

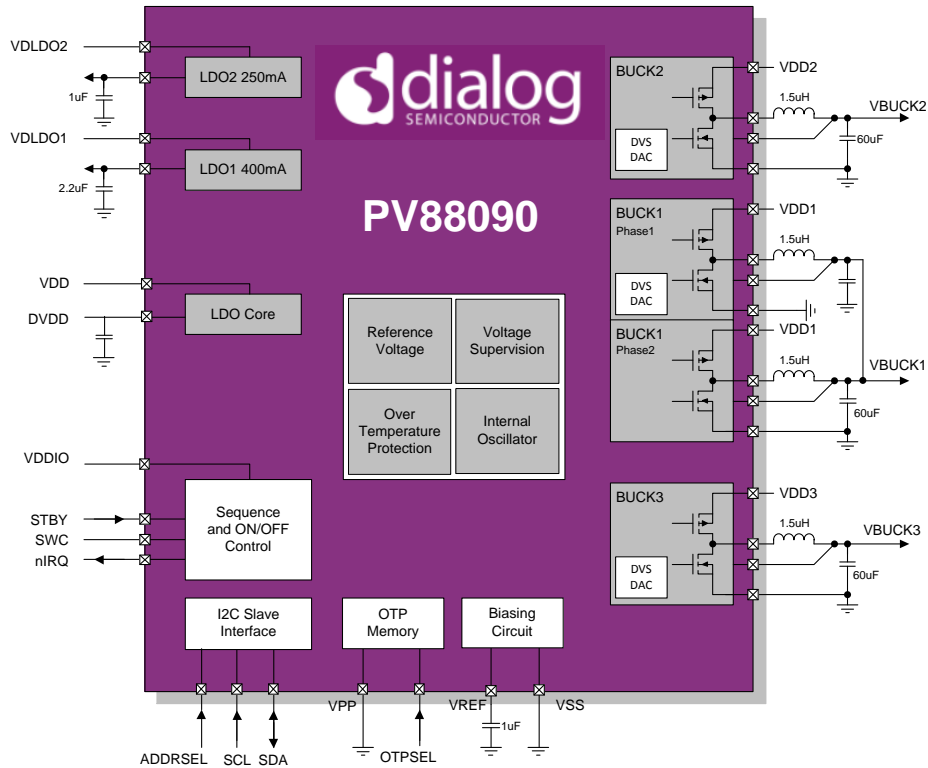
### Features

- 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
- I<sup>2</sup>C 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 <sup>2</sup> C alternate address select
7	OTPSEL	OTP page select (high end / low end)
8	VLDLDO1	Supply voltage for LDO1
9	VLDLDO1	Supply voltage for LDO1

**Dialog Semiconductor Worldwide Sales Offices - [www.dialog-semiconductor.com](http://www.dialog-semiconductor.com) email: [info@diasemi.com](mailto:info@diasemi.com)**

**United Kingdom**  
Phone: +44 1793 757700

**The Netherlands**  
Phone: +31 73 640 88 22

**Japan**  
Phone: +81 3 5425 4567

**Hong Kong**  
Phone +852 3769 5200

**China (Shanghai)**  
Phone +86 21 5424 9058

**Germany**  
Phone: +49 7021 805-0

**North America**  
Phone: +1 408 845 8500

**Taiwan**  
Phone: +886 281 786 222

**Korea**  
Phone +82 2 3469 8200

**China (Shenzhen)**  
Phone: +86 755 2981 3669

This publication is issued to provide outline information only, which unless agreed by Dialog Semiconductor may not be used, applied, or reproduced for any purpose or be regarded as a representation relating to products. All use of Dialog Semiconductor products, software and applications referred to in this document are subject to Dialog Semiconductor's [Standard Terms and Conditions of Sale](#), available on the company website ([www.dialog-semiconductor.com](http://www.dialog-semiconductor.com)) unless otherwise stated.

Dialog and the Dialog logo are trademarks of Dialog Semiconductor plc or its subsidiaries. All other product or service names are the property of their respective owners.

© Copyright 2016 Dialog Semiconductor. All rights reserved.

Pin No.	Pin Name	Description
10	LDO1	LDO1 output
11	VLDLDO2	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

**Dialog Semiconductor Worldwide Sales Offices - [www.dialog-semiconductor.com](http://www.dialog-semiconductor.com) email: [info@diasemi.com](mailto:info@diasemi.com)**

**United Kingdom**  
Phone: +44 1793 757700

**The Netherlands**  
Phone: +31 73 640 88 22

**Japan**  
Phone: +81 3 5425 4567

**Hong Kong**  
Phone +852 3769 5200

**China (Shanghai)**  
Phone +86 21 5424 9058

**Germany**  
Phone: +49 7021 805-0

**North America**  
Phone: +1 408 845 8500

**Taiwan**  
Phone: +886 281 786 222

**Korea**  
Phone +82 2 3469 8200

**China (Shenzhen)**  
Phone: +86 755 2981 3669

This publication is issued to provide outline information only, which unless agreed by Dialog Semiconductor may not be used, applied, or reproduced for any purpose or be regarded as a representation relating to products. All use of Dialog Semiconductor products, software and applications referred to in this document are subject to Dialog Semiconductor's [Standard Terms and Conditions of Sale](#), available on the company website ([www.dialog-semiconductor.com](http://www.dialog-semiconductor.com)) unless otherwise stated.

Dialog and the Dialog logo are trademarks of Dialog Semiconductor plc or its subsidiaries. All other product or service names are the property of their respective owners.