High Efficiency Scalable 3-phase 1V/90A PoL for ASIC Processors Reference Design

(ACTIVE) PMP10962

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Key Document

- PMP10962 Test Results (PDF 1825 KB)
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PMP10962 High Efficiency Scalable 3-phase 1V/90A PoL for ASIC Processors Reference Design Front of Board

Fully assembled board (shown above) developed for testing and performance validation only, not available for sale.

Description

The PMP10962 reference design is a 3-phase PMBus converter for high current ASIC core rail regulation. It employs DCAP+ control for fast transient response and TI's proprietary AutoBalance for tight steady and dynamic phase-to-phase current balance. It drives three TI NexFET smart power stages for high power density and efficiency. It easily scales-up/scales-down to meet a wide load range. PMBus capability and on-board NVM enable easy design, configuration, and customization, with telemetry of output voltage, current, temperature, and power.

Features

- Modular 1V/90A PoL in 1.8" by 1.1" size (45.7mm x28.6mm)
- High efficiency 90% at 1V/90A, 500kHz, 10Vin
- Accurate current reporting with CSD95372B (3% at 90A)
- Combined ripple and transient response within +/-2%
- Scalable 1, 2, 3 or 4 phase operation
- Full PMBus telemetry of output voltage, current, power and temperature

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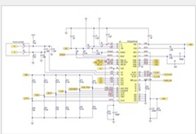
Schematic/Block Diagram

Quickly understand overall system functionality.



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Design Guide

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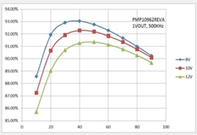

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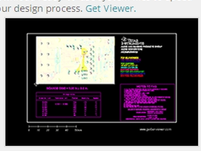
Design Files

Download ready-to-use system files to speed your design process. Get Viewer.



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Bill of Materials (BOM)

Find the complete list of components in this reference design.

Download BOM

Parametrics

	PMP10962
Vin (Min) (V)	7
Vin (Max) (V)	13.2
Vout (Nom) (V)	1
Iout (Max) (A)	90
Output Power (W)	90
Isolated/Non-isolated	Non-isolated
Input Type	DC
Topology	Buck- Multiphase Buck- Synchronous

TI Devices (2)

Order samples, get tools and find more information on the TI products in this reference design.

Part Number	Name	Product Family	Sample & Buy	Design Kits & Evaluation Modules
CSD95372BQ5M	60A Synchronous Buck NexFET™ Smart Power Stage	Power MOSFET	Sample & Buy	Not Available
TPS53647	4-Phase, D-CAP+TM Step-Down Buck Controller with NVM and PMBus Interface for ASIC	Controller (External Switch)	Sample & Buy	View Design Kits & Evaluation Modules

CAD/CAE symbols

Part #	Package | Pins	CAD File (.bxl)	STEP Model (.stp)
CSD95372BQ5M	LSON-CLIP (DQP)| 12	Download	-
TPS53647	WQFN (RTA) | 40	Download	-

Texas Instruments and Accelerated Designs Inc. have collaborated together to provide TI customers with schematic symbols and PCB layout footprints for TI products.

Step 1: Download and install the Ultra Librarian software ZIP: 62MB

Step 2: Download the Symbol and Footprint .bxl file.

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Technical Documents

User guides (1)

Title	Abstract	Type	Size (KB)	Date	Views	TI Recommends
PMP10962 Test Results		PDF	1825	26 Aug 2015	49	✓

Design files (4)

Title	Abstract	Type	Size (KB)	Date	Views
PMP10962 Gerber		ZIP	191	26 Aug 2015	18
PMP10962 PCB		PDF	864	26 Aug 2015	32
PMP10962 BOM		PDF	116	26 Aug 2015	35
PMP10962 Schematic		PDF	195	26 Aug 2015	69

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