220W Synchronous 4 Switch Buck-Boost Converter

(ACTIVE) PMP9490

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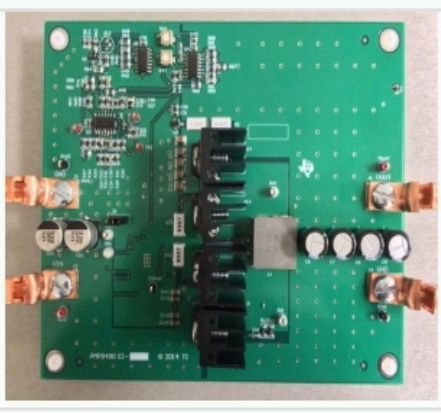

220W Synchronous 4 Switch Buck-Boost Converter Reference Design

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

Description

PMP9490 is a 225W four Switch Buck -Boost Design utilizing best in Class Synchronous Buck Boost Converter LM5175. The design accepts an input voltage of 9.5Vin to 20Vin and provides the outputs of 15V@15 A for Constant Voltage Output Application such as Voltage stabilizer or as Power amplifier SMPS, 10.8V to 15V@12.5A for CC/CV Battery Charger application, and 12.5 A for Constant Current LED Drive application. It features an inexpensive and more efficient solution to using discrete Buck and boost converters. The average current regulation loop of the IC at the output is used for Battery Charging profiling with no external circuit being involved.

Features

- Four Switch Buck Boost for Efficient operation
- Higher Efficiency Buck-Boost Transition
- Very Low Cost Solution for CC/CV Charger or LED Driver.
- No Extra Components needed .
- Low Vin Support for Automotive application
- Optional Frequency Sync and Dithering
- Cycle-by-Cycle Current Limit and Optional Hiccup

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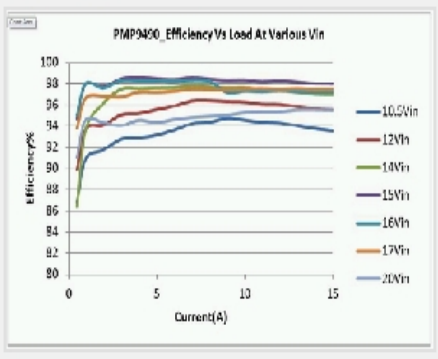
Schematic/Block Diagram

Quickly understand overall system functionality.

Download Schematic

Test Data

Get results faster with test and simulation data that's been verified.



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Design Files

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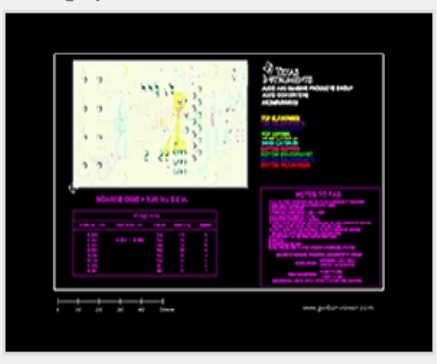

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Bill of Materials (BOM)

Find the complete list of components in this reference design.

Download BOM

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
CSD18502KCS	40-V, N-Channel NexFET™ Power MOSFETs	Power MOSFET	Sample & Buy	Not Available
LM5175	LM5175 42V Wide VIN 4-Switch Synchronous Buck-Boost Controller	Controller (External Switch)	Sample & Buy	View Design Kits & Evaluation Modules

CAD/CAE symbols

Part #	Package | Pins	CAD File (.bxl)	STEP Model (.stp)
CSD18502KCS	TO-220 (KCS) | 3	Download	-
LM5175	HTSSOP (PWP) | 28	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
PMP9490 Test Results		PDF	4978	12 Mar 2015	0

Design files (3)

Title	Abstract	Type	Size (KB)	Date	Views
PMP9490 Gerber		ZIP	312	12 Mar 2015	0
PMP9490 BOM		PDF	26	12 Mar 2015	0
PMP9490 Schematic		PDF	198	12 Mar 2015	0

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