24Vdc Input (Double Car Battery) Automotive Multiphase Sync-Buck Reference Design

(ACTIVE) PMP10260

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Key Document

- PMP10260 Test Results (PDF 3936 KB)
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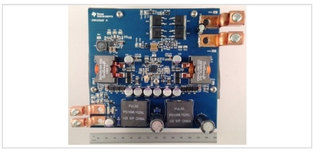

PMP10260 24Vdc Input (Double Car Battery) Automotive Multiphase Sync-Buck Reference Design Board Image

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

Description

This high-efficiency, high-power reference design uses the LM5119 two-phase synchronous-buck controller to regulate 14.4V at 60A. This design can be used to supply single car battery power from a double battery system, often found in trucks. Features include input EMI filtering, output hot swap protection, input/output current monitoring and temperature monitoring.

Features

- Efficiency of 96% at Vin = 24V and 60A output
- Very low output ripple voltage (20mVpp)
- Internal 5V bias supply provides up to 0.5A
- Input and output current monitoring
- Output over-current protection

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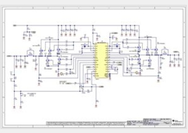
Schematic/Block Diagram

Quickly understand overall system functionality.



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Design Guide

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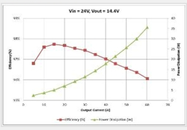

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Design Files

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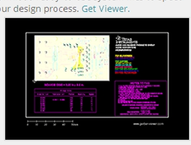

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Bill of Materials (BOM)

Find the complete list of components in this reference design.

Download BOM

Parametrics

	PMP10260
Vin (Min) (V)	18
Vin (Max) (V)	60
Vout (Nom) (V)	14.4
Iout (Max) (A)	60
Output Power (W)	864
Isolated/Non-Isolated	Non-Isolated
Input Type	DC
Topology	Buck- Multiphase

TI Devices (5)

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
INA198	-16V to +80V, Low- or High-side, High-Speed, Voltage Output Current Shunt Monitor	Current Sense Amplifiers	Sample & Buy	Not Available
LM50	±2°C Analog Output Temperature Sensor	Local Temperature Sensors	Sample & Buy	Not Available
LM5060	High-Side Protection Controller with Low Quiescent Current	Hot Swap Control, Protection and Monitoring	Sample & Buy	Not Available

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CAD/CAE symbols

Part #	Package | Pins	CAD File (.bxl)	STEP Model (.stp)
INA198	SOT (DBV) | 5	Download	Download
LM50	SOT (DBZ) | 3	Download	Download
LM5060	VSSOP (DGS) | 10	Download	Download
LM5119	WQFN (RTV) | 32	Download	Download
TPS54060	HVSSOP (DGQ) | 10	Download	-
	VSON (DRC) | 10	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
PMP10260 Test Results		PDF	3936	01 Oct 2015	30	✓

Design files (5)

Title	Abstract	Type	Size (KB)	Date	Views
PMP10260 Gerber		ZIP	296	01 Oct 2015	12
PMP10260 Altium		ZIP	43722	01 Oct 2015	13
PMP10260 Assembly Drawing		PDF	140	01 Oct 2015	13
PMP10260 BOM		PDF	137	01 Oct 2015	23
PMP10260 Schematic		PDF	220	01 Oct 2015	39

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