High Light-Load Efficient 120VAC Input, 25W/5VDC Reference Design with 4 POL Outputs

(ACTIVE) PMP11180.5

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Key Document

- PMP11180 Test Results (PDF 5265 KB)
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PMP11180.5 High Light-Load Efficient 120VAC Input, 25W/5VDC Reference Design with 4 POL Outputs Top of Board Image

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

Description

This 25-W design uses the UCC28740 in a flyback topology to minimize no-load standby power and the UCC24636 synchronous rectifier controller to minimize power MOSFET body-diode conduction times. The design also features point-of-load converters from the main 5V rail that implement an energy-saving Ecomode. All of the devices within the design work together to improve light-load efficiency to help meet agency approvals.

Features

- 25-W/5-VDC output power rated at 5 A
- Includes 3.3-V/2-A, 2.5-V/2-A, 1.5-V/3-A, 1-V/5-A outputs
- Flyback output (5 V) peak efficiency greater than 85%
- Flyback output dissipates 61 mW at no-load
- Helps meeting Energy Star requirements

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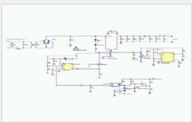
Schematic/Block Diagram

Quickly understand overall system functionality.



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Design Guide

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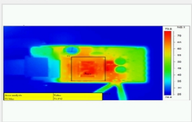

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Design Files

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Bill of Materials (BOM)

Find the complete list of components in this reference design.

Download BOM

Parametrics

	PMP11180.5
Vin (Min) (V)	4.5
Vin (Max) (V)	6
Vout (Nom) (V)	1
Iout (Max) (A)	5
Output Power (W)	5
Isolated/Non-Isolated	Non-Isolated
Input Type	DC
Topology	Buck

TI Devices (7)

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
CSD17559Q5	30V N-Channel NexFET™ Power MOSFET	Power MOSFET	Sample & Buy	Not Available
TLVH431A	Low-Voltage Adjustable Precision Shunt Regulator	Voltage Reference	Sample & Buy	Not Available
TPS562210	17 V Input, 2A Synchronous Step-Down Regulator in SOT-23 with Advanced Eco-mode™, PG & SS	Converter (Integrated Switch)	Sample & Buy	View Design Kits & Evaluation Modules

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CAD/CAE symbols

Part #	Package | Pins	CAD File (.bxl)	STEP Model (.stp)
TLVH431A	SOT (DBZ) | 3	Download	Download
	TO-92 (LP) | 3	Download	Download
	SIP (PK) | 3	Download	-
	SOT (DBV) | 5	Download	Download
	SOT (DCK) | 6	Download	Download
TPS562210	SOT (DDF) | 8	Download	Download
TPS563210	SOT (DDF) | 8	Download	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
PMP11180 Test Results		PDF	5265	19 Jan 2016	29	✓

Design files (4)

Title	Abstract	Type	Size (KB)	Date	Views
PMP11180 Gerber		ZIP	386	19 Jan 2016	9
PMP11180 Assembly Drawing		PDF	79	19 Jan 2016	28
PMP11180 BOM		PDF	103	19 Jan 2016	36
PMP11180 Schematic		PDF	199	19 Jan 2016	63

Applications

- STB, DVR & Streaming Media

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