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

(ACTIVE) PMP11180.1

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- PMP11180 Test Results (PDF 5265 KB)
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PMP11180.1 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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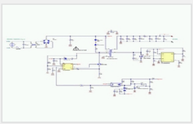
Schematic/Block Diagram

Quickly understand overall system functionality.



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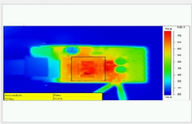

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Design Files

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Bill of Materials (BOM)

Find the complete list of components in this reference design.

Download BOM

Parametrics

	PMP11180.1
Vin (Min) (V)	90
Vin (Max) (V)	132
Vout (Nom) (V)	5
Iout (Max) (A)	5
Output Power (W)	25
Isolated/Non-Isolated	Isolated
Input Type	AC
Topology	Flyback- Quasi Resonant

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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