Universal AC Input, 5V/10A/50W PSR Flyback Power Supply W/Rapid Load Transient Response Ref Design

(ACTIVE) PMP10407

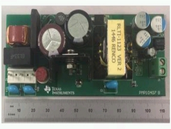
Description & Features | Technical Documents | Support & Community | Order Now

View the Important Notice for TI Designs covering authorized use, intellectual property matters and disclaimers.

Key Document

- PMP10407 Test Results (PDF 1248 KB)
  29 Jun 2015 66 views

» View All Technical Documents (2)



PMP10407 Universal AC Input, 5V/10A/50W PSR Flyback Power Supply W/Rapid Load Transient Response Ref Design Top of Board

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

Description

PMP10407 is a quasi-resonant Flyback power suppy based on the UCC28730 primary side regulation (PSR) controller demonstrating the use of wake up device UCC24650 to achieve rapid load transient response from light load condition when the system is under low frequency operation. The elimination of optocoupler using PSR topology promises higher reliability and lower system cost. The design achieves less than 50mW standby power losses and over 86% efficiency at 25% load. The design also features UCC24610 synchronous rectification controller and demonstrates the use of UCC24650's ENS pin output to enforce diode rectification at light load conditions to reduce stand-by power losses.

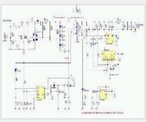
Features

- 85VAC to 265VAC, 50/60Hz input 5V/10A/50W output
- Fast transient response, <250mV deviation under 0A to 5A load step
- Over 84% average 4-point efficiency
- Over 79% efficiency at 10% load (5W)
- Less than 50mW standby power losses
- Protected against output short-circuits

TI's Standard Terms and Conditions for Evaluation Modules apply.

Schematic/Block Diagram

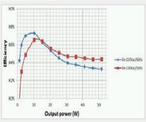
Quickly understand overall system functionality.



Download Schematic

Design Guide

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



Download Design Guide

Design Files

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

Download Design Files

Bill of Materials (BOM)

Find the complete list of components in this reference design.

Download BOM

Parametrics

	PMP10407
Vin (Min) (V)	85
Vin (Max) (V)	265
Vout (Nom) (V)	5
Iout (Max) (A)	10
Output Power	50
Isolated/Non-Isolated	Isolated
Input Type	AC
Topology	Flyback- DCM

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
CSD18501Q5A	40V N-Channel NexFET Power MOSFETs, CSD18501Q5A	Power MOSFET	Sample & Buy	Not Available
TPS715	50 mA, 24 V, 3.2-µA Iq, Low-Dropout Linear Regulator in SC70 Package	Linear Regulator (LDO)	Sample & Buy	View Design Kits & Evaluation Modules
UCC24610	Secondary Side Synchronous Rectifier Controller	AC/DC and Isolated DC/DC Power Supply	Sample & Buy	View Design Kits & Evaluation Modules
UCC24650	200-V Wake-up Monitor for Fast Transient Primary-side Regulation	Power Management	Sample & Buy	View Design Kits & Evaluation Modules
UCC28730	Zero Standby PSR Flyback Controller with CVCC and Wake-Up Monitoring	AC/DC and Isolated DC/DC Power Supply	Sample & Buy	View Design Kits & Evaluation Modules

Show More

CAD/CAE symbols

Part #	Package | Pins	CAD File (.bxl)	STEP Model (.stp)
CSD18501Q5A	VSONP (DQJ) | 8	Download	-
TPS715	SOT (DCK) | 5	Download	Download
UCC24610	SOIC (D) | 8	Download	Download
	VSON (DRB) | 8	Download	-
UCC24650	SOT (DBV) | 5	Download	Download
UCC28730	SOIC (D) | 7	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.

- read more -

Technical Documents

User guides (1)

Title	Abstract	Type	Size (KB)	Date	Views	TI Recommends
PMP10407 Test Results		PDF	1248	29 Jun 2015	66	✓

Design files (6)

Title	Abstract	Type	Size (KB)	Date	Views
PMP10407 Gerber		ZIP	240	30 Jun 2015	15
PMP10407 Altium		ZIP	700	30 Jun 2015	30
PMP10407 PCB		PDF	289	30 Jun 2015	18
PMP10407 Assembly Drawing		PDF	116	30 Jun 2015	20
PMP10407 BOM		PDF	127	30 Jun 2015	60
PMP10407 Schematic		PDF	159	30 Jun 2015	127

Applications

- Printer

Support & Community

TI E2E™ community

TI E2E™ Community

As a member of my.TI you can join the TI E2E™ Community where you can ask questions, share ideas and collaborate with fellow engineers and TI experts

Contents are provided "AS IS" by the respective TI and Community contributors and do not constitute TI specifications. See Terms of use.

Engage in the Community

- Amplifiers
- Broadband RF/IF & Digital Radio
- Clocks & Timers
- Data Converters
- DLP® & MEMS
- Interface
- Logic
- Power Management
- Wireless Connectivity

Wikis

Visit the TI Wiki

Other Support

- TI E2E Community
- Contact Technical Support

Your History

Products You Recently Viewed

There are no items in your history.

TI is a global semiconductor design and manufacturing company. Innovate with 100,000+ analog ICs and embedded processors, along with software, tools and the industry's largest sales/support staff.

© Copyright 1995-2015 Texas Instruments Incorporated. All rights reserved.

Trademarks | Privacy policy | Terms of use | Terms of sale