Low Profile Quad Output Isolated Fly-Buck Power Supply for Industrial Application Reference Design

(ACTIVE) PMP9478.3

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Low Profile Quad Output Isolated Fly-Buck Power Supply for Industrial Application - front

Description

The PMP9478 reference design is a low profile quad output isolated Flyback power supply for industrial applications. The power supply has a synchronous buck regulator. LM5017, and a low profile (6mm) transformer. It generates four isolated outputs of ±5V, ±15V, 50mA each. The LM5017 is a 100V wide Vin, 600mA synchronous buck regulator. The input voltage range of the design is 20V to 32V, making it suitable for 24V input industrial application. The Flyback can regulate the secondary side outputs without opto-coupler or aux winding, and is capable of achieving good cross regulation within ±5%. With LM5017's Constant On-Time control, no loop compensation is required, which simplifies the design and helps reduce the external part count and BOM cost.

Features

- Multiple Isolated bias power using Flyback, Ideal for PLC and Industrial applications
- 2W output power, +/-15V, +/-5V @ 50mA each, with LM5017 capable of 7.5V to 100V input
- Primary Side Regulation without Opto, Good Cross Regulation, within +/-5%
- Less than 6mm low profile transformer
- Constant On Time Control, No Loop Compensation Required, and Fast Transient Response
- This circuit board is tested, and the design files and test report are included

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

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

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

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Bill of Materials (BOM)

Find the complete list of components in this reference design.

Download BOM

Parametrics

	PMP9478.3
Vin (Max) (V)	32
Vin (Min) (V)	20
Vout (Nom) (V)	-15
Iout (Max) (A)	.05
Output Power	.75
Isolated/Non-Isolated	Isolated
Input Type	DC
Topology	Flybuck

TI Devices (1)

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Part Number	Name	Product Family	Sample & Buy	Design Kits & Evaluation Modules
LM5017	7.5-100V Wide Vin, 600mA Constant On-Time Synchronous Buck Regulator	Converter (Integrated Switch)	Sample & Buy	View Design Kits & Evaluation Modules

CAD/CAE symbols

Part #	Package | Pins	CAD File (.bxl)	STEP Model (.stp)
LM5017	HSOP (DDA) | 8	Download	Download
	WSON (NGU) | 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
PMP9478 Test Results		PDF	585	28 Aug 2014	63

Design Files (5)

Title	Abstract	Type	Size (KB)	Date	Views
PMP9478 BOM (Rev. B)		PDF	201	14 Oct 2014	56
PMP9478 Gerber		ZIP	187	28 Aug 2014	18
PMP9478 CAD Files		ZIP	294	28 Aug 2014	40
PMP9478 PCB		PDF	475	28 Aug 2014	33
PMP9478 Schematic		PDF	157	28 Aug 2014	173

Applications

- Programmable Logic Controller

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