Non-Standard (>25.5W) PoE - High Efficiency Forward Converter (5V@10A) Reference Design

(ACTIVE) PMP8923

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PMP8923 Board

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

Description

This converter provides a high power PoE output of 5V/10A. The TPS2379 PD controller allows the use of an external hot swap FET for increased efficiency. The UCC2897A PWM controller is used to implement a high efficiency active clamp forward converter.

Features

- High efficiency (93% with PoE supply, 92% with adapter supply)
- 5V at 10A output
- Isolated Forward with synchronous rectifier
- Uses TPS2379 combined with UCC2897A to implement a high efficiency active forward converter
- Allows an external hot swap FET for increased efficiency

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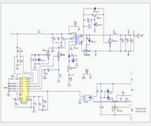
Schematic/Block Diagram

Quickly understand overall system functionality.



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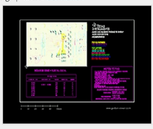

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Bill of Materials (BOM)

Find the complete list of components in this reference design.

Download BOM

Parametrics

	PMP8923
Vin (Min) (V)	42
Vin (Max) (V)	57
Vout (Nom) (V)	5
Iout (Max) (A)	10
Output Power	50
Isolated/Non-Isolated	Isolated
Input Type	DC
Topology	Forward- Active Clamp POE

TI Devices (4)

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
CSD18503Q5A	40V N-Channel NexFET™ Power MOSFET, CSD18503Q5A	Power MOSFET	Sample & Buy	Not Available
TL431A	Adjustable Precision Shunt Regulator	Voltage Reference	Sample & Buy	Not Available
TPS2379	IEEE 802.3at PoE High-Power PD Interface with External Gate Driver	Power Over Ethernet (PoE)/LAN Solutions	Sample & Buy	View Design Kits & Evaluation Modules
UCC2897	Current Mode Active Clamp PWM Controller	AC/DC and Isolated DC/DC Power Supply	Sample & Buy	Not Available

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CAD/CAE symbols

Part #	Package | Pins	CAD File [.bxl]	STEP Model [.stp]
TL431A	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
	SOIC (D) | 8	Download	Download
	PDIP (P) | 8	Download	Download
	SOP (PS) | 8	Download	-
	TSSOP (PW) | 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
PMP8923 Test Results		PDF	659	27 Mar 2015	0

Design files (3)

Title	Abstract	Type	Size [KB]	Date	Views
PMP8923 Gerber		ZIP	251	27 Mar 2015	0
PMP8923 BOM		PDF	112	27 Mar 2015	0
PMP8923 Schematic		PDF	417	27 Mar 2015	0

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