36V-75VDC Input, 12V/10A Active Clamp Forward, 1/8th Brick Form Factor

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Description

This reference design generates a 12V/10A output from a standard 48V telecom input. The UCC2897A controls an active clamp forward converter power stage. The low gate charge and low RDSon of the CSD18531Q5A, implemented as self-driven synchronous rectifiers, provide for a highly efficient design. This design is laid out in a standard 1/8th brick footprint and includes enable, remote sense, and output overvoltage features.

Features

- 36V to 75VDC Input, 12V/10A Output (120W)
- Active Clamp Foward Topology
- Features UCC2897A Controller along with TI NexFET Synchronous Rectifiers
- Industry Standard Eighth Brick Footprint
- Output Overvoltage protection
- Romote Sense

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

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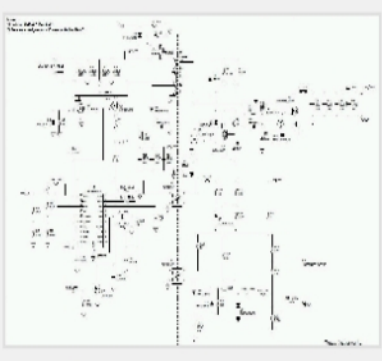
Schematic/Block Diagram

Quickly understand overall system functionality.



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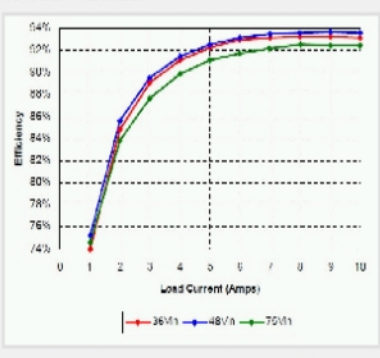

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Design Files

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Bill of Materials (BOM)

Find the complete list of components in this reference design.

Download BOM

Parametrics

	PMP7451
Vin (Max) (V)	75
Vin (Min) (V)	36
Vout (Nom) (V)	12
Iout (Max) (A)	10
Output Power	120
Isolated/Non-Isolated	Isolated
Input Type	DC
Topology	Forward- Active Clamp Forward- Synchronous

TI Devices (3)

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
CSD18531Q5A	60V N-Channel NexFET Power MOSFETs, CSD18531Q5A	Power MOSFET	Sample & Buy	View Design Kits & Evaluation Modules
TL431A	Adjustable Precision Shunt Regulator	Voltage Reference	Sample & Buy	Not Available
UCC2897A	Advanced Current-Mode Active Clamp PWM Controller	AC/DC and Isolated DC/DC Power Supply	Sample & Buy	View Design Kits & Evaluation Modules

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	-
UCC2897A	TSSOP (PW) | 20	Download	Download
	VQFN (RGP) | 20	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
PMP7451 Test Results		PDF	2653	21 May 2012	73

Design Files (3)

Title	Abstract	Type	Size (KB)	Date	Views
PMP7451 Gerber		ZIP	374	19 Jun 2014	86
PMP7451 Schematic		PDF	48	21 May 2012	184
PMP7451 BOM		PDF	22	21 May 2012	69

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