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18-60VDCin, 6V/31A Active Clamp Forward Reference Design

{ACTIVE} PMP10395

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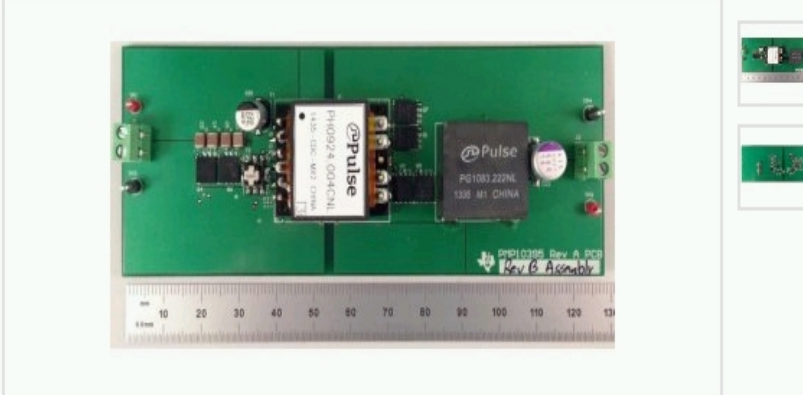
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Description

This reference design generates a 6V/31A output from a wide range 18V to 60V DC telecom input. The UCC2897A controls an active clamp forward converter power stage. The low gate charge and low RDson of the CSD18540Q5B, implemented as self-driven synchronous rectifiers, allow this design to achieve a max load efficiency over 94%. The compact UCC27511 drivers simplify the gate drive circuitry for the synchronous rectifiers.

Features

- High Efficiency (over 95%)
- Low profile, less than 0.5 inches (12.5mm) max component height
- Self-driven synchronous rectifiers reduce drive complexity

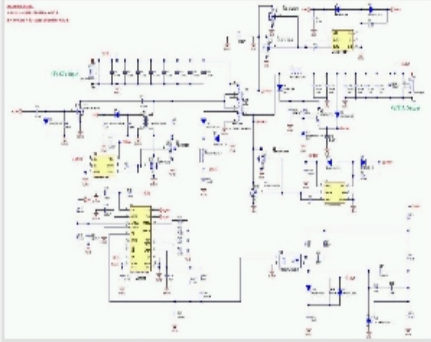


18-60VDCin, 6V/31A Active Clamp Forward Reference Design - top view

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

Schematic/Block Diagram

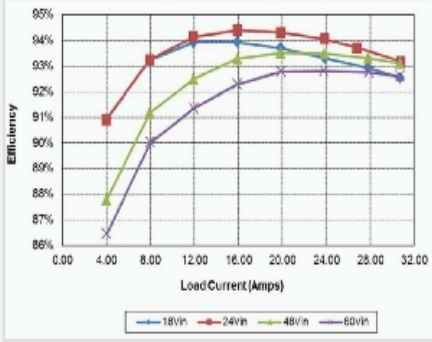
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Test Data

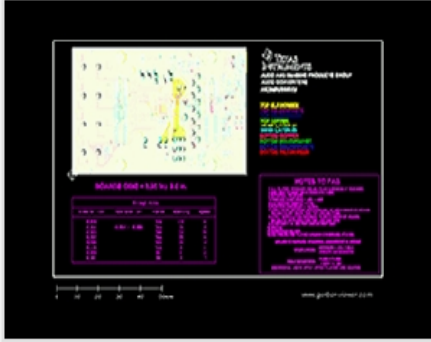
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Design Files

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

	PMP10395
Vin (Max) (V)	60
Vin (Min) (V)	18
Vout (Nom) (V)	6
Iout (Max) (A)	31
Output Power	186
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
CSD18540Q5B	60V, N-Channel NexFET(TM) Power MOSFET	Power MOSFET	Sample & Buy	Not Available
UCC27511	4A/8A Single Channel High-speed Low-side Gate Driver	AC/DC and Isolated DC/DC Power Supply	Sample & Buy	View Design Kits & Evaluation Modules
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)
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.

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Technical Documents

User Guides (1)

Title	Abstract	Type	Size (KB)	Date	Views
PMP10395 Test Results		PDF	4492	14 Oct 2014	5

Design Files (4)

Title	Abstract	Type	Size (KB)	Date	Views
PMP10395 PCB		PDF	338	14 Oct 2014	6
PMP10395 Assembly Drawing		PDF	87	14 Oct 2014	4
PMP10395 BOM		PDF	84	14 Oct 2014	5
PMP10395 Schematic		PDF	186	14 Oct 2014	28

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