36-60Vin, 350W Slow Drain Modulation Power Converter with PSFB ZTE and HSHB Reference Design

(ACTIVE) PMP7246.1

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Description

This is a 350W High Speed Full Bridge Phase Shift ZVT Synchronous Rectification DC/DC reference design. It is built for telecom applications to supply a RF Power Amplifier stage. The design is utilizing UCC28950 voltage mode forward and average current limitation backward converter (two quadrant converter). It can modulate output voltage from 20V to 32V within 200us (at maximum 200uF of capacitive load) - so called: slow drain modulation. The converter has full load steps capability as well. It is a very small design for high sophisticated telecom applications. The system can also be used for all other two quadrant applications. Input voltage range: 36VDC-60VDC; Output voltage: 20VDC…32VDC (adjustable); Output current: 12A (15Apeak).

36-60Vin, 350W Slow Drain Modulation Power Converter with PSFB ZTE and HSHB Reference Design (top view)

Features

- Greater than 90% efficiency at full load (24V/0.5A)
- Less than 60mW of stand-by power consumption under no load
- Constant Current regulation feature of UCC28700DBV ensures output short circuit protection
- Fast Start-up

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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Test Data

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Design Files

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Bill of Materials (BOM)

Find the complete list of components in this reference design.

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Parametrics

	PMP7246.1
Vin (Max) (V)	60
Vin (Min) (V)	36
Vout (Nom) (V)	32
Iout (Max) (A)	12
Output Power	384
Isolated/Non-Isolated	Isolated
Input Type	DC
Topology	Full Bridge- Phase Shifted

TI Devices (9)

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
INA194	Voltage Output High-Side Measurement Current Shunt Monitor	Shunt-based/Non-Isolated	Sample & Buy	Not Available
LM317L	3-R Pin 100mA Adjustable Positive Regulator	Linear Regulator (LDO)	Sample & Buy	Not Available

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CAD/CAE symbols

Part #	Package	Pins	CAD File (.bxl)	STEP Model (.stp)
INA194	SOT (DBV)	5	Download	Download
LM317L	TO-92 (LP)	3	Download	Download
	SIP (PK)	3	Download	-
	SOIC (D)	8	Download	Download
	TSSOP (PW)	8	Download	-
LM5039	HTSSOP (PWP)	20	Download	Download
TL431	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	-
TLV271	SOT (DBV)	5	Download	Download
	SOIC (D)	8	Download	Download
	PDIP (P)	8	Download	Download
TLV272	SOIC (D)	8	Download	Download
	VSSOP (DGK)	8	Download	Download
	PDIP (P)	8	Download	Download
UCC27200A	SOIC (D)	8	Download	Download
	HSOP (DDA)	8	Download	Download
	VSON (DRM)	8	Download	-
UCC28950	TSSOP (PW)	24	Download	Download
UCC37324	SOIC (D)	8	Download	Download
	HVSSOP (DGN)	8	Download	Download
	PDIP (P)	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

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Technical Documents

User Guides (1)

Title	Abstract	Type	Size (KB)	Date	Views
PMP7246 Test Results		PDF	949	24 Nov 2014	17

Design Files (3)

Title	Abstract	Type	Size (KB)	Date	Views
PMP7246 Gerber		ZIP	216	24 Nov 2014	16
PMP7246 BOM		PDF	29	24 Nov 2014	13
PMP7246 Schematic		PDF	309	24 Nov 2014	40

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