High Power Density 12Vin, 11.8W Buck Converter with Inductor On Top of the IC

TIDesigns

(ACTIVE) TIDA-00595

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Description

The TPS53515 Inductor-On-Top Step-Down Buck Converter reference design enables reduction of X-Y area while enabling >87% efficiency with 2.6W of power loss @12A load and 12mV of output voltage ripple with only 10x22uF ceramic output caps. This power reference design supports a 12V input and a 1.2V output at 12A and switches at 1MHz.

TIDA-00595 Evalutaion Board

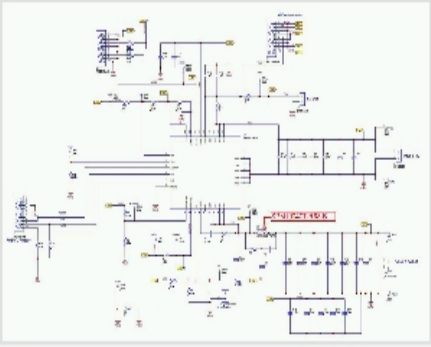
Features

- >87% Efficiency at 12VIN, 1.2Vout, 1MHz
- 2.6W power loss at 11.8W Output Power
- 12mV Output Voltage Ripple at 5A and 1MHz Fsw
- 16mV Output Voltage Overshoot in response to 5A to 10A load step, 2.5A/us
- 17mV Output Voltage Undershoot in response to 10A to 5A load release, 2.5A/us

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

Schematic/Block Diagram

Quickly understand overall system functionality.



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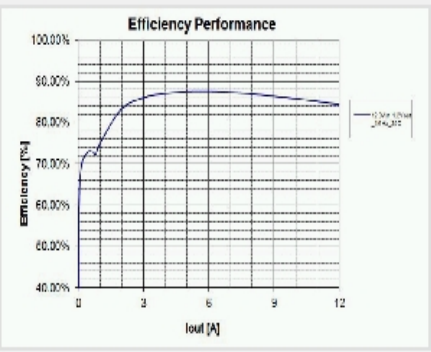

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Design Files

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Bill of Materials (BOM)

Find the complete list of components in this reference design.

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Part Number	Status
TIDA-00595: High Power Density 12Vin, 11.8W Buck Converter with Inductor On Top of the IC	ACTIVE

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TI Devices (1)

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
TPS53515	1.5V to 18V Input (4.5V to 25V Bias), 12-A Synchronous Step-Down SWIFT™ Converter	Converter (Integrated Switch)	Sample & Buy	View Design Kits & Evaluation Modules

Technical Documents

User guides (1)

Title	Abstract	Type	Size (KB)	Date	Views
TIDA-00595 Test Results		PDF	1640	05 Jun 2015	0

Design files (3)

Title	Abstract	Type	Size (KB)	Date	Views
TIDA-00595 Gerber		ZIP	291	05 Jun 2015	0
TIDA-00595 BOM		PDF	95	05 Jun 2015	0
TIDA-00595 Schematic		PDF	388	05 Jun 2015	0

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