PMBus Controlled Voltage Regulator for Enterprise Storage SSD ASIC Controller Reference Design

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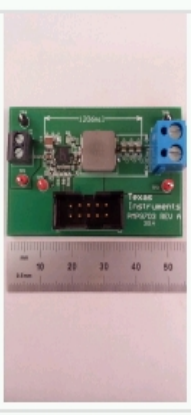


Fully assembled board (shown above) developed for testing and performance validation only, not available for sale.

Description

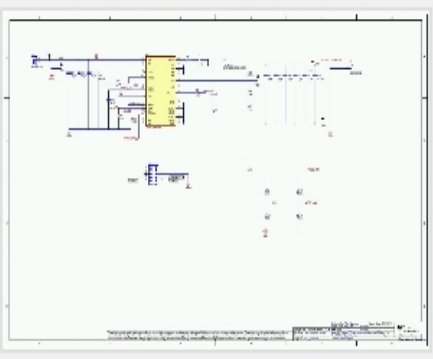
The PMP9703 reference design uses the TPS53915 12A PMBus SWIFT step down converter to provide complete voltage regulation, and system protection of an Enterprise Storage SSD Controller ASIC typically used to control and expand traffic flow in/out of SSDs. The output voltage can be dynamically adjusted in +/- 0.75% steps with a total range of +/-22% of the nominal output voltage (VOUT_ADJUST and VOUT_MARGIN used together) and with programmable step change durations of as little as 4us. The PMBus capability includes adjustment of the typical power supply parameters and monitoring of FAULTs through the STATUS_WORD PMBus command. This PMBus design is ideal for applications that require design flexibility, reduced component count, and Adaptive Voltage Scaling for enhanced performance and optimized power dissipation.

Features

- PMBus programming of power supply parameters including output voltage, Power On Delay, Power Good Delay, Soft Start, Switching Frequency and UVLO
- Integrated 13.8 and 5.9 mΩ MOSFETs With 12-A Continuous Output Current
- Optimized for ASICs with Adaptive Voltage Scaling (AVS) requirements
- 335mm2 total power supply area
- 1.2V output at 12A nominal current
- 81% efficiency at 12V input, 1.2Vout at 12A

Schematic/Block Diagram

Quickly understand overall system functionality.



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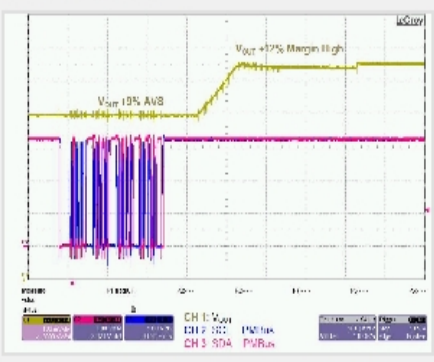

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Design Files

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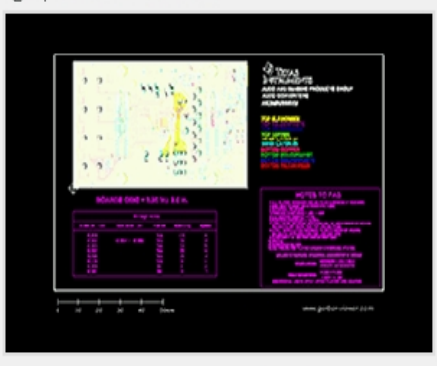

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Bill of Materials (BOM)

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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
TPS53915	1.5V to 18V Input (4.5V to 25V Bias), 12-A Synchronous Step-Down SWIFT™ Converter with PMBus™	Converter (Integrated Switch)	Sample & Buy	View Design Kits & Evaluation Modules

Technical Documents

User Guides (1)

Title	Abstract	Type	Size (KB)	Date	Views
PMP9703 Test Results		PDF	461	16 Jun 2014	49

Design Files (3)

Title	Abstract	Type	Size (KB)	Date	Views
PMP9703 Altium		ZIP	245	16 Jun 2014	43
PMP9703 BOM		PDF	92	16 Jun 2014	52
PMP9703 Schematic		PDF	91	16 Jun 2014	83

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