Power Solution for C667x DSP AVS Core (CVDD) with Dynamic Voltage Scaling

(ACTIVE) TIDEP0011

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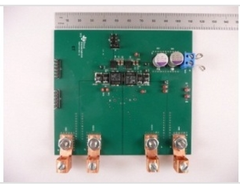


Fully assembled board (shown above) developed for testing and performance validation only, not available for sale.

Description

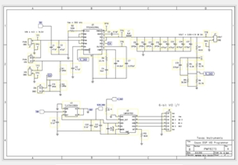
This reference design aims to supply the AVS core supply (CVDD) in the Keystone Multicore DSPs, mainly the C66x series. The C66x series uses SmartReflex technology to enable the DSP to control its supply voltage. In order to meet this requirement, this design combines a Synchronous Buck Converter (TPS56121) with the voltage Programmer for POL (LM10011). The LM10011 accepts a 6-bit or 4-bit VCNTL from the DSP and changes the output voltage of the TPS56121 to what the DSP requires. The LM10011 has a high accuracy (1.0%) accuracy allowing additional system margin in the remaining power supply components and distribution. For processors which require specific initial startup voltages the LM10011 can be configured to start up at one of 16 selectable currents.

Features

- 1.0% Output Current Accuracy (0°C to +100°C)
- 1.25% Output Current Accuracy (–40°C to +125°C)
- Input Voltage Range: +2.97V to +5.5V
- Pin Selectable VID Format (6/4 bit)
- 16 Selectable Start-Up Currents
- Precision Enable to Support Custom UVLO
- Tested reference design that includes schematic, design files, bill of materials, and test data.

Schematic/Block Diagram

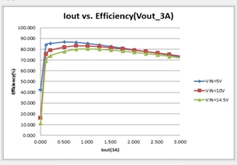
Quickly understand overall system functionality.



Download Schematic

Test Data

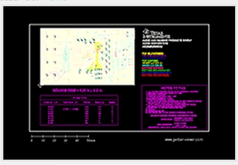
Get results faster with test and simulation data that's been verified.



Download Test Data

Design Files

Download ready-to-use system files to speed your design process. Get Viewer.



Download Design File

Bill of Materials (BOM)

Find the complete list of components in this reference design.

Download BOM

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Part Number	Status
TIDEP0011: Power Solution for C667x DSP AVS Core (CVDD) with Dynamic Voltage Scaling	ACTIVE

TI Devices (10)

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
LM10011	1% Accuracy 4/6-Bit VID Voltage Programmer for Point of Load Regulator w/ Adj Start-Up Current	Power Supply Support	Sample & Buy	View Design Kits & Evaluation Modules
TLV70433	150mA, Ultra-Low IQ, High Vin Low-Dropout Regulator	Linear Regulator (LDO)	Sample & Buy	View Design Kits & Evaluation Modules
TMS320C6670	Multicore Fixed and Floating-Point System-on-Chip	KeyStone Multicore DSP	Not Available	View Design Kits & Evaluation Modules

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CAD/CAE symbols

Part #	Package | Pins	CAD File (.bxl)	STEP Model (.stp)
TLV70433	SOT (DBV) | 5	Download	Download
TMS320C6670	FCBGA (CYP)| 841	Download	-
TMS320C6672	FCBGA (CYP)| 841	Download	-
TMS320C6674	FCBGA (CYP)| 841	Download	-
TMS320C6678	FCBGA (CYP)| 841	Download	-
TPS54320	VQFN (RHL) | 14	Download	-
TPS54521	VQFN (RHL) | 14	Download	-
TPS84320	B1QFN (RUQ) | 47	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
PMP8275 Test Results		PDF	1268	13 Jun 2014	39

Design Files (3)

Title	Abstract	Type	Size (KB)	Date	Views
Power Solution for C667x DSP AVS Core (CVDD) Design Files		ZIP	2171	13 Jun 2014	58
Power Solution for C667x DSP AVS Core (CVDD) Bill of Materials (BOM)		ZIP	17	13 Jun 2014	23
Power Solution for C667x DSP AVS Core (CVDD) Schematic		PDF	276	13 Jun 2014	102

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