Automotive ADAS Power Design Optimized for Xilinx® Zynq® 7020 SoC

TIDesigns

(ACTIVE) TIDA-00390

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Automotive ADAS Power Design Optimized for Xilinx® Zynq® 7020 SoC (top view)

Description

The TIDA-00390 design is an optimized power solution for Xilinx® Zynq® 7020 FPGA/SoC (out of the Zynq® 7000 series family of products). It targets ADAS applications where customers opt to use FPGA instead of Multicore DSP or MPU. This design runs from a single intermediate 3.3V or 5V power supply rail and provides a complete solution to power the Xilinx® Zynq® 7020. DDR memory termination and a 5V supply for a CAN Transceiver are also implemented. A LM3880 provides power up and power down sequencing. The design is tested and optimized for automotive applications.

Features

- Provides all the power supply rails for a Xilinx® Zynq® 7020 based ADAS system
- Individual High efficiency switching regulators and LDO for best layout and IC placement flexibility and heat spreading on the board
- All switching regulators operate at >2MHz for optimized size and cost of external components and to reduce noise in the AM radio band
- Voltage sequencing for all supply rails implemented on board
- Dedicated DDRx memory termination available
- This circuit is tested and includes design considerations

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

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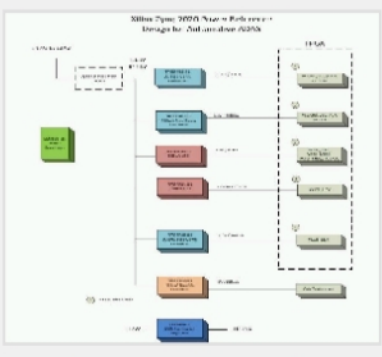
Schematic/Block Diagram

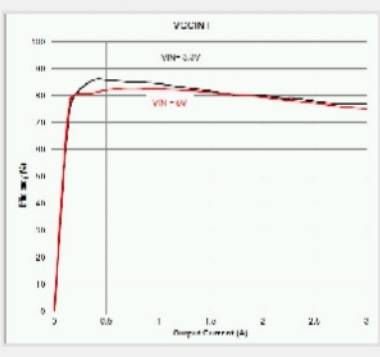
Quickly understand overall system functionality.



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.

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Bill of Materials (BOM)

Find the complete list of components in this reference design.

Download BOM

TI Devices (8)

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
LM3880-Q1	Power Supply Sequencer	Power Management	Sample & Buy	View Design Kits & Evaluation Modules
LP2998-Q1	DDR Termination Regulator for Automotive Applications	Power Management	Sample & Buy	View Design Kits & Evaluation Modules
TLV70018-Q1	Automotive Catalog 300mA, Low IQ, Low Dropout Regulator	Linear Regulator (LDO)	Sample & Buy	Not Available
TPS61240-Q1	Automotive Catalog 5V, 400mA, 4MHz Step-Up DC/DC Converter	Converter (Integrated Switch)	Sample & Buy	Not Available
TPS62090-Q1	Automotive: 3A, 2.5 to 6V input, up to 97% efficiency, 3x3 QFN, Step-Down Converter	Converter (Integrated Switch)	Sample & Buy	Not Available
TPS62260-Q1	Automotive Catalog 2.25MHz 600mA Step-Down Converter in 2x2mm SON/TSOT23 Package	Converter (Integrated Switch)	Sample & Buy	Not Available
TPS62261-Q1	Automotive Catalog 2.25MHz 600mA Step-Down Converter in 2x2mm SON/TSOT23 Package	Converter (Integrated Switch)	Sample & Buy	Not Available
TPS73201-Q1	Automotive Catalog Single Output LDO, 250mA, Adj.(1.2 to 5.5V), Low Noise, Fast Transient Response	Linear Regulator (LDO)	Sample & Buy	Not Available

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CAD/CAE symbols

Part #	Package | Pins	CAD File (.bxl)	STEP Model (.stp)
LM3880-Q1	SOT (DBV) | 6	Download	Download
LP2998-Q1	HSOP (DDA) | 8	Download	Download
TLV70018-Q1	SOT (DDC) | 5	Download	-
TPS61240-Q1	WSON (DRV) | 6	Download	-
TPS62090-Q1	VQFN (RGT) | 16	Download	-
TPS62260-Q1	WSON (DRV) | 6	Download	-
TPS62261-Q1	WSON (DRV) | 6	Download	-
TPS73201-Q1	SOT (DBV) | 5	Download	Download
	VSON (DRB) | 8	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 (2)

Title	Abstract	Type	Size (KB)	Date	Views
TIDA-00390 Design Considerations		PDF	214	15 Jan 2015	0
TIDA-00390 Test Results		PDF	972	15 Jan 2015	0

Design Files (3)

Title	Abstract	Type	Size (KB)	Date	Views
TIDA-00390 Gerber		ZIP	367	15 Jan 2015	0
TIDA-00390 BOM		PDF	198	15 Jan 2015	0
TIDA-00390 Schematic and Block Diagram		PDF	1360	15 Jan 2015	0

Applications

- Front Camera
- Surround View

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