Automotive eCall Power Supply Reference Design with Low Intermediate Voltage

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Automotive eCall Power Supply Reference Design with Low Intermediate Voltage

Description

This reference design includes a complete power management solution for a standalone emergency call (eCall) system in an automotive environment. The circuit is supplied directly from the car battery rail. It also manages a backup battery to power the eCall system while the car battery rail is not available. It includes power path management which routes the available power rail directly to four DC/DC converters which are supplying the required functional blocks of the eCall system. The solution is optimized to operate at maximum efficiency while powered from the backup battery.

Features

- Complete power solution for an automotive eCall system
- Operating input voltage range up to 40V
- Provides supply voltage for all required eCall functional blocks
- Up to 87% total efficiency while operating at backup power
- Up to 90% total efficiency in standby at backup power
- All DC/DC converters used can operate at switching frequencies above 2MHz

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

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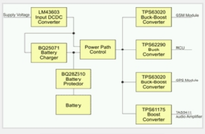
Schematic/Block Diagram

Quickly understand overall system functionality.



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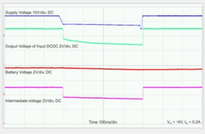

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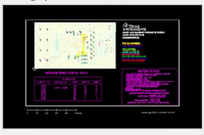
Design Files

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



Download Design Files

Bill of Materials (BOM)

Find the complete list of components in this reference design.

Download BOM

Parametrics

	PMP9769.4
Vin (Min) [V]	5
Vin (Max) [V]	40
Vout (Nom) [V]	9
Iout (Max) [A]	1
Output Power [W]	9
Isolated/Non-Isolated	Non-Isolated
Input Type	DC
Topology	Boost- Integrated Switch

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
BQ25071	1A, Single-Input, Single-Cell LiFePO4 Linear Battery Charger with 50mA LDO	Battery Management Products	Sample & Buy	Not Available
BQ28Z610	Battery Fuel Gauge with Integrated Protector for 1-2 Series Packs	Battery Management Products	Sample & Buy	View Design Kits & Evaluation Modules
CSD16412Q5A	N-Channel NexFET™ Power MOSFET	Power MOSFET	Sample & Buy	View Design Kits & Evaluation Modules

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CAD/CAE symbols

Part #	Package | Pins	CAD File (.bxl)	STEP Model (.stp)
BQ25071	WSON (DQC) | 10	Download	Download
CSD16412Q5A	VSONP (DQJ) | 8	Download	-
LM43603-Q1	HTSSOP (PWP) | 16	Download	Download
TL331-Q1	SOT (DBV) | 5	Download	Download
TPS62290-Q1	WSON (DRV) | 6	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.

- read more -

Technical Documents

User guides (1)

Title	Abstract	Type	Size (KB)	Date	Views
PMP9769 Test Results		PDF	176	13 Jan 2016	95

Design files (4)

Title	Abstract	Type	Size (KB)	Date	Views
PMP9769 Gerber		ZIP	275	13 Jan 2016	25
PMP9769 PCB		PDF	1151	13 Jan 2016	43
PMP9769 BOM		PDF	89	13 Jan 2016	47
PMP9769 Schematic		PDF	88	13 Jan 2016	232

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