CISPR 25 Class 5 Rated 10 W Reference Design for Automotive USB Charger System

(ACTIVE) PMP9496.2

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Key Document

- PMP9496 Test Results (PDF 7815 KB)
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PMP9496.2 CISPR 25 Class 5 Rated 10 W Reference Design for Automotive USB Charger System Board Top View

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

Description

The PMP9496 reference design is a conducted EMI-optimized (CISPR 25 Class 5) 10 W design for efficient automotive USB charger application utilizing the LM53603 regulator IC (2.1MHz fully-integrated synchronous buck for automotive application) and TPS2549 USB switch (TPS2549-Q1 Automotive USB Charging Port Controller with integrated Power Switch & Cable Compensation). The design accepts wide input voltage range of 7Vin to 25Vin and provides the outputs of 5V@2.1A. It features a small size and is an inexpensive and more efficient solution customized for automotive USB charger application. The board dimension of the PMP9496 PCB is 2800mil * 4000mil. Four layer PCB was used for the design.

Features

- 7V to 20Vin, output:5V@2.1A , 3.5 V to 36V IC Vin capability with Transient upto 42V
- Complete design for USB charger with USB controller
- In compliance with the CISPR 25 Class 5 conducted emissions standard, passing both AM & FM radio band tests
- LM53603 and TPS2549- AEC-Q100 qualified version available.
- TPS2549-Q1 Automotive USB Charging Port Controller with integrated Power Switch & Cable Compensation

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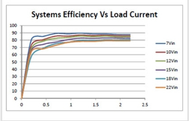
Schematic/Block Diagram

Quickly understand overall system functionality.

Download Schematic

Test Data

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



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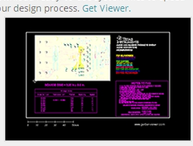
Design Files

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

	PMP9496.2
Vin (Min) (V)	5
Vin (Max) (V)	5
Vout (Nom) (V)	5
Iout (Max) (A)	2.1
Output Power (W)	10.5
Isolated/Non-Isolated	Non-Isolated
Input Type	DC
Topology	USB Switch

TI Devices (2)

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
LM53603-Q1	3.5 to 36Vin, 3 Ampere Synchronous DC-DC Converter for Automotive Applications	Converter (Integrated Switch)	Sample & Buy	View Design Kits & Evaluation Modules
TPS2549-Q1	USB Charging Port Controller	USB Power and Charging Port Controllers	Sample & Buy	View Design Kits & Evaluation Modules

CAD/CAE symbols

Part #	Package | Pins	CAD File (.bxl)	STEP Model (.stp)
TPS2549-Q1	WQFN (RTE) | 16	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	TI Recommends
PMP9496 Test Results		PDF	7815	18 Nov 2015	42	✓

Design files (4)

Title	Abstract	Type	Size (KB)	Date	Views
PMP9496 Gerber		ZIP	231	18 Nov 2015	13
PMP9496 BOM		PDF	24	18 Nov 2015	31
PMP9496 Block Diagram		PDF	560	18 Nov 2015	28
PMP9496 Schematic		PDF	166	18 Nov 2015	40

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