New Release

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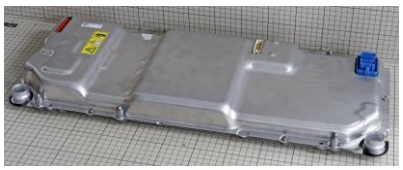
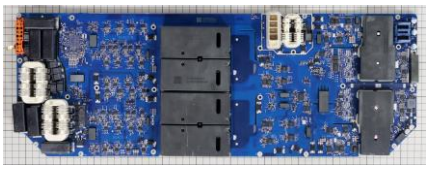
OBC+DCDC : mounted in CYBERTRUCK Circuit Analysis report

CYBER TRUCK (from Web site)



Overview of OBC+DCDC



PCB (Top View)

Reference:
https://hypebeast.com/jp/2022/7/cybertruck-delivery-mid-2023-date-news-info

Overview

TESLA announced CYBERTRUCK in November 2019.
This vehicle has attracted attention because of its unique appearance, but it also features various new technologies, such as TESLA's first external power supply function (Powershare) and that switches the connection of an 800V lithium-ion battery, which consists of two 400V lithium-ion batteries connected in series, to two 400V batteries connected in parallel to enable rapid charging using a supercharger. Various new technologies are employed, such as switching to two 400V batteries connected in parallel for charging.
It is equipped with a Power Conversion System (OBC+DCDC) that has the functions of an OBC that charges 800 V lithium-ion batteries and a DCDC that charges 48 V system auxiliary battery batteries.
This is a circuit analysis report of OBC+DCDC installed in RWD model.
This product avoids the use of electrolytic capacitors. This report also explores how this is accomplished.

Product features

- Size：623mm (W) × 255mm (L) × 59mm (H)　・Weight：7.0kg　・Water cooling
- Matrix Converter is used as the circuit method for OBC
- 3-level LLC Resonant Converter is used as the DCDC circuit method.
- The transistors used in the Matrix Converter and 3-level LLC Resonant Converter are packaged in a top-heat-dissipating package.
- OBC and DCDC are controlled by a single MCU.
- The use of a planar transformer makes the product thinner.
- Large capacitors (film capacitors, electrolytic capacitors, etc.) for DC link are not used.
- A number of ceramic capacitors are placed around the transformer and MOSFETs.

LTEC Corporation US Representative Office www.ltec-biz.com/en/
2310 Homestead Rd, C1 #231 Los Altos, CA 94024
Phone: +1-(650) 382-1181
Contact2@ltec.biz

Report No　：24G-0177-2
Release day：2024.xx.yy

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Report Contents

(1) Input Filter + OBC + DCDC Converter (153 Pages)

(2) Input Filter

(3) OBC

(4) DCDC Converter (103 Pages)

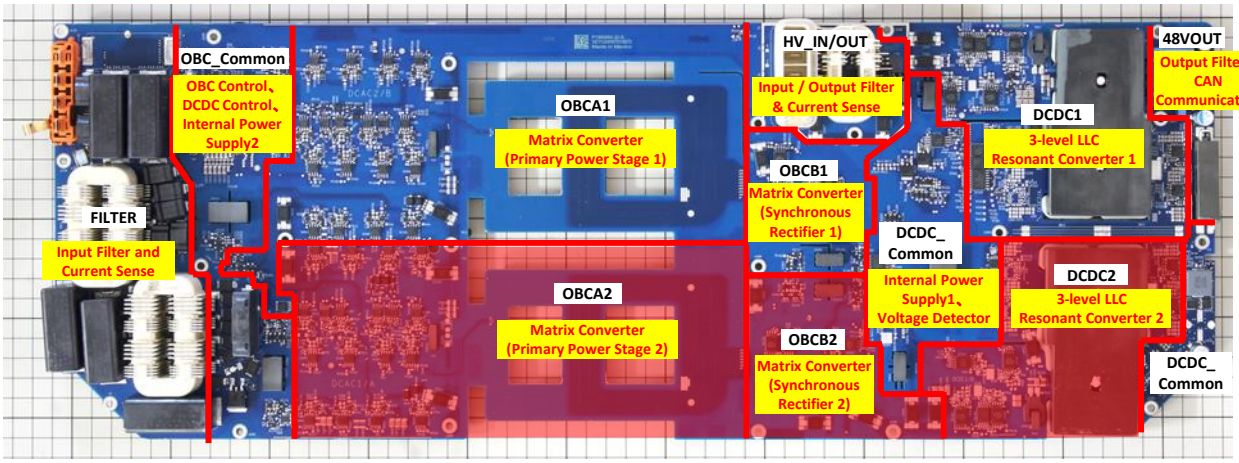
- Product teardown
- Component list including value
- Detail component level schematic, Function block diagram
- Cross reference viewer software

*The report will only include the analysis results for the analysis areas (1)-(4), respectively.

Report price

(1)-(4)Delivered one week after order placement

Please contact us for report pricing.



Analysis Area

*The red framed area in the above figure is not included in the analysis because it is the same circuit.

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