

## Llc Resonant Converter For Battery Charging Applications

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Is your LLC resonant controller an underachiever?

*Transformer Design for Bi-directional Interleaved CLLC Resonant Converter Charger* *Llc Resonant Converter For Battery* *LLC Resonant Converter for Battery Charging Application 385 V. SIMULATION RESULTS* . The proposed converter is simulated using PSIM software and PI controller is used to obtain a constant output voltage. The PWM is created with the help of sinusoidal signal and reference signal. The pulses generated are adjusted by the PI controller

*LLC Resonant Converter for Battery Charging Application*

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High efficiency, high power density and wide output voltage are required for on-board charger (OBC) applications. LLC resonant converter has the advantage of achieving zero-voltage switching for variable frequency and different load conditions. Compared with conventional fundamental harmonic approximation method, operation-mode analysis based on the time domain model provides an accurate description of resonant current, voltage and DC gain.

*High-efficiency design method of LLC resonant converter ...*

Resonant Converter in Battery Charging Applications Based on Time-Weighted Average Efficiency. Abstract: In this paper, an LLC resonant converter design methodology for battery charging applications is proposed aiming at achieving high efficiency. Compared with traditional resistive or constant power load applications, the battery voltage and current are nonlinear and vary with the charging profiles, making the optimal design of battery charger more difficult and complicated.

*Optimal Design Methodology for LLC Resonant Converter in ...*

The HB LLC resonant converters have been used for reducing the current and voltage stress and switching losses of the components. However, it is not suited for wide range of the voltage and output voltage due to the uneven voltage and current component's stresses. The HB LLC resonant for battery charge of on board is presented in this paper.

*A study on Half bridge LLC resonant converter for battery ...*

resonant converter and the second stage is a traditional LLC resonant converter. The first stage operates in constant voltage mode when the battery voltage is at or above the pre-set level ( $V_{set}$ ), and in constant current mode when it is below  $V_{set}$ . The second stage LLC resonant converter transformer turns ratio is adjustable to allow switching

*Battery charger with a capacitor-diode clamped LLC ...*

The softly switched LLC resonant converter is one of the best topologies for designing battery chargers due to its ability to produce variable voltage gains in different operating frequencies, while providing soft switching for all semiconductor devices. The objective of this paper is to solve the Time Domain set equations of the LLC resonant converter in boost mode, and extract closed form answer for the voltage gain as a function of converter variables (e.g. input voltage, switching ...

*Time domain analysis of LLC resonant converters in the ...*

The converter presented in this study contains a bidirectional buck-boost converter and an LLC resonant converter in addition to a voltage source grid-tied inverter which are interfacing the PV, the battery and the utility. Extensive simulation analyses through MATLAB/Simulink have proved the operations of the proposed topology. Total Views: 126

*A Multiport Bidirectional LLC Resonant Converter for Grid ...*

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### *Llc Resonant Converter For Battery Charging Applications*

LLC is an isolated buck-boost converter, and the isolation between the primary and secondary side is formed by transformer. The primary side incorporates the pulse-wave voltage generator, resonant network, isolated drivers, and isolated UART port to communicate with other devices, such as, the front stage PFC converter.

### *LLC Resonant Converter Using MC56F83783*

While a resonant LLC converter has several desired features such as high efficiency, low EMI and high power density, the design of a resonant converter is an involved task, and requires more effort for optimization compared to PWM converters. This document aims to simplify this task, and make it easier to

### *Resonant LLC Converter: Operation and Design*

Resonant power converters contain resonant L-C networks whose voltage and current waveforms vary sinusoidally during one or more subintervals of each switching period.

### *Resonant Power Conversion*

Based on the respective merits of the LLC resonant converter and the VI (Variable Inductor), a new battery charger topology is proposed. This paper presents a design methodology for the LLC ...

### *Efficiency optimization design of LLC resonant converter ...*

Among the many topologies, a LLC resonant converter becomes the most attractive topology for medium power applications due to its high efficiency and wide input range. When the switching frequency equals the resonant frequency, the LLC resonant converter operates optimally in terms of efficiency. Under this condition, the conduction loss and the

### *Precise Analytical Solution for the Peak Gain of LLC ...*

Resonant converters, with modern-day wide bandgap devices, can help designers target the high-efficiency design at high frequencies. Popular resonant converter configurations based on the LLC converter with fixed and variable dc bus voltage are described in the literature.

### *OBC Design Challenges with LLC Derived DC-DC Topologies ...*

The EV charger uses a half-bridge LLC resonant converter design, because of its high-power and high-efficiency characteristics, to obtain DC power for charging the battery. The design utilises a rectifier circuit for converting input AC

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voltage to high-voltage DC output, and it also has an electromagnetic interference (EMI) filter to eliminate high-frequency noise from input power source.

### *Design Your Own Electric Vehicle Battery Charging Solutions*

In this paper, these four isolated half-bridge resonant converters (SRC, PRC, LCC, and LLC) are investigated and evaluated for PEV battery charging applications. It is shown that that LLC could...

### *Comprehensive Topological Analyses of Isolated Resonant ...*

Computer Science IEEE Transactions on Vehicular Technology In this paper, an inductor-inductor-capacitor (LLC) resonant dc-dc converter design procedure for an onboard lithium-ion battery charger of a plug-in hybrid electric vehicle (PHEV) is presented.

### *[PDF] Design Methodology of LLC Resonant Converters for ...*

Abstract In this paper, LLC resonant converter simulation with dual closed loop control is demonstrated for Electric Vehicles (EVs) battery charger. To improve efficiency and fast charging conditions, switching losses must be diminished to have a maximum energy transfer among the variable converter components.

2020 IEEE Applied Power Electronics Conference and Exposition (APEC) Resonant Power Converters Advances in High-Efficiency LLC Resonant Converters 9th International Conference on Robotic, Vision, Signal Processing and Power Applications Study of a Symmetrical LLC Dual-active Bridge Resonant Converter Topology for Battery Storage Systems Hybrid Electric Vehicles Proceedings of the Seventh Asia International Symposium on Mechatronics New Topologies and Modulation Schemes for Soft-Switching Isolated DC-DC Converters Advanced Battery Technologies Transformers and Inductors for Power Electronics Energy Efficiency in Electric Motors, Drives, Power Converters and Related Systems Analysis and Design of Power Converter Topologies for Application in Future More Electric Aircraft 2018 7th International Conference on Renewable Energy Research and Applications (ICRERA) Electric Vehicles 2021 IEEE Applied Power Electronics Conference and Exposition (APEC) DC Power Supplies Emerging Trends in Computing and Expert Technology Power Systems & Smart Energies GaN Transistors for Efficient Power Conversion 2015 9th International Conference on Power Electronics and ECCE Asia (ICPE-ECCE Asia 2015)

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