



TECHNOLOGY AVAILABLE FOR LICENSING

Self-Balanced Dual Interleaved Active-Clamp Forward for High Input Voltage Application *and* Self-Balanced Input-Series Two-Stage DC-DC Converters and Ripple Match Design

Patent Application Numbers 61/154,607 and 61/154,612

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Invention Details:

The inventions describe topologies that can be used for DC-DC converters or AC-DC converters. These topologies allow for conversion from higher input voltage to a lower input voltage. The topologies are very small, and combine the transformer and inductor which results in the ability to save board space. Additional advantages include ripple match design, which cancels out ripple voltages. These inventions have implications for applications or uses where the input voltage is high and has a wide range (i.e. if the input is 1000-2000V). The self-balanced dual interleaved active-clamp forward solves the charge balance problem.

Benefits of the Invention:

Advantages:

- Reduced number of high voltage components
- Charge balance can be automatically regulated without adding extra control schemes or auxiliary circuits.
- Drain-source switch voltage can drop to a low value before the switches are turned on.
- Lower voltage ripple
- Reduction of magnetic component size

Applications:

- Hybrid electric vehicles
- Hybrid-electric powertrain technology
- Power generation systems
- Medical power supplies (3-600V)
- Laptops
- Appliance manufacturing
- Telecommunications power supply
- Military electric vehicles and weapons

The Bottom Line:

There is an immediate need and desire for integrated magnetics and this type of technology. The methods of the invention enable the manufacture of improved DC-DC converters, affording improvements in numerous consumer and industrial devices. Prototypes of the novel converters have been built.

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