

A circuit for determining sampling point of an inductor current and method for determining the same

Application Number: 202211020702

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ABSTRACT

A CIRCUIT FOR DETERMINING SAMPLING POINT OF AN INDUCTOR CURRENT AND METHOD FOR DETERMINING THE SAME Disclosed herein is a circuit and method for determining sampling point of an inductor current of the converter circuit. The method comprising computing a duty cycle of the circuit based on input voltage and output voltage of the circuit. The method further comprising generating a first intermediate signal based on the duty cycle provided to a gain calculator and mode of current control of the circuit. Further, the method comprising receiving a second intermediate signal from a sawtooth wave generator and comparing the first and second intermediate signals to generate a control signal for an analog-to digital converter, wherein the control signal determines the sampling point of the inductor current in the converter circuit.

KEY APPLICATION AREAS

1. Digital power electronics and power converter control.
2. DC-DC converters, including buck and boost converters.
3. High-frequency digital power converters.
4. Peak and average current-mode control systems.
5. Digital power management and regulated power supplies.
6. Point-of-load (POL) converters.
7. Battery charging and current-regulated power systems.
8. LED and other precision current-control applications.

POTENTIAL USE

1. Accurate timing of inductor-current sampling in digital converters.
2. Digital regulation of peak and average inductor current.
3. Improved current-control implementation in high-frequency converters.

4. Generation of sampling clocks for ADC-based converter control.
5. Digital control of buck/boost and other converter topologies.
6. Current regulation in power supplies, battery chargers, POL converters, and LED drivers.