

## High Speed Response Single-Inductor Dual-Output DC-DC Converter with Hysteretic Control

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**Abstract :** This paper proposes two kinds of new single-inductor dual-output (SIDO) DC-DC switching converters with ripple-based hysteretic control. First SIDO converters of type 1 utilize the triangular signal generated by the CR-circuit connected across the inductor. This triangular signal is used for generating the PWM signal instead of the saw-tooth signal used in the conventional converters. Second SIDO converters of type 2 utilize the triangular signal generated by the CR-circuit connected across the voltage error amplifier. This paper describes circuit topologies, Operation principles, simulation results and experimental results of the proposed SIDO converters. In simulation results of both type of SIDO converters, static output voltage ripples are less than 5mVpp and over/under shoots of the dynamic load regulations for the output current step are less than +/- 10mV. In experimental results of single output converter of type 2, static output voltage ripples are about 20mVpp. Output ripples of SIDO type 1 converter are about 80mVpp.

**Keywords :** DC-DC converter, switching converter, SIDO converter, hysteretic control, ripple-based control

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