



A New Control Strategy of the On-chip POL Based on Parallel Connections

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Motivation

Advantages of on-chip POL

- Miniaturization of Electronic equipment
- Mass Production like LSI
- High Efficiency at light load

Result

Simulation (MATLAB/Simulink) – 20 parallel

Prototype – 3 parallel

Load sudden change

Prototype

Control Strategy

1. Small Power Capacity

2. High Frequency Switching (several ten MHz)

A. Parallel Connection

A. New Control in lieu of PWM control

New Parallel Control

Number of parallel converter : N

$$V_{out} = D \cdot V_{in} - \frac{r}{N} I$$

A stable output voltage is obtained by control of parallel connection.

Future Work

- Series & Parallel connections

