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Slope Adjustable Triangular Wave Generator Design for Improving Dynamic Performance of Buck Converter

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DC-DC Buck converter is widely used in portable device

Research Objective

A **Slope Adjustable** triangular wave generator

- **Improve dynamic performance** for Buck converter
- **Simple**
  ---Without current sensor or slope compensation

Principle

- Slope proportional to input voltage

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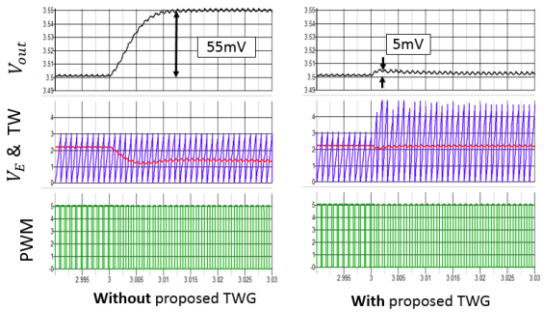
  Line feed-forward control

- Slope inversely proportional to variation in output voltage

  ⇓

  Wideband, fast modulation

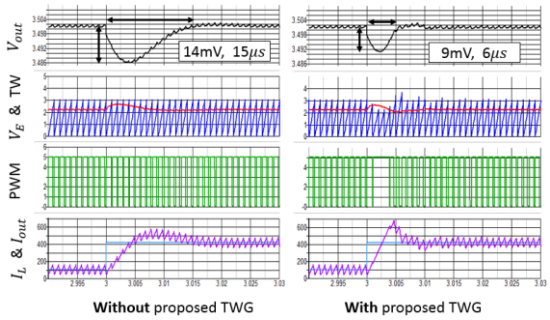
Line transient response



V_g: $5V \leftrightarrow 8V$

SATWG	With	Without
Over-shoot	5mV	55mV
Response time	5μ s	400μ s

Load transient response



I_{out}: $100mA \leftrightarrow 420mA$

SATWG	With	Without
Under-shoot	9mV	14mV
Response time	6μ s	15μ s