

Adaptively-Biased Capacitor-Less CMOS Low Dropout Regulator with Direct Current Feedback

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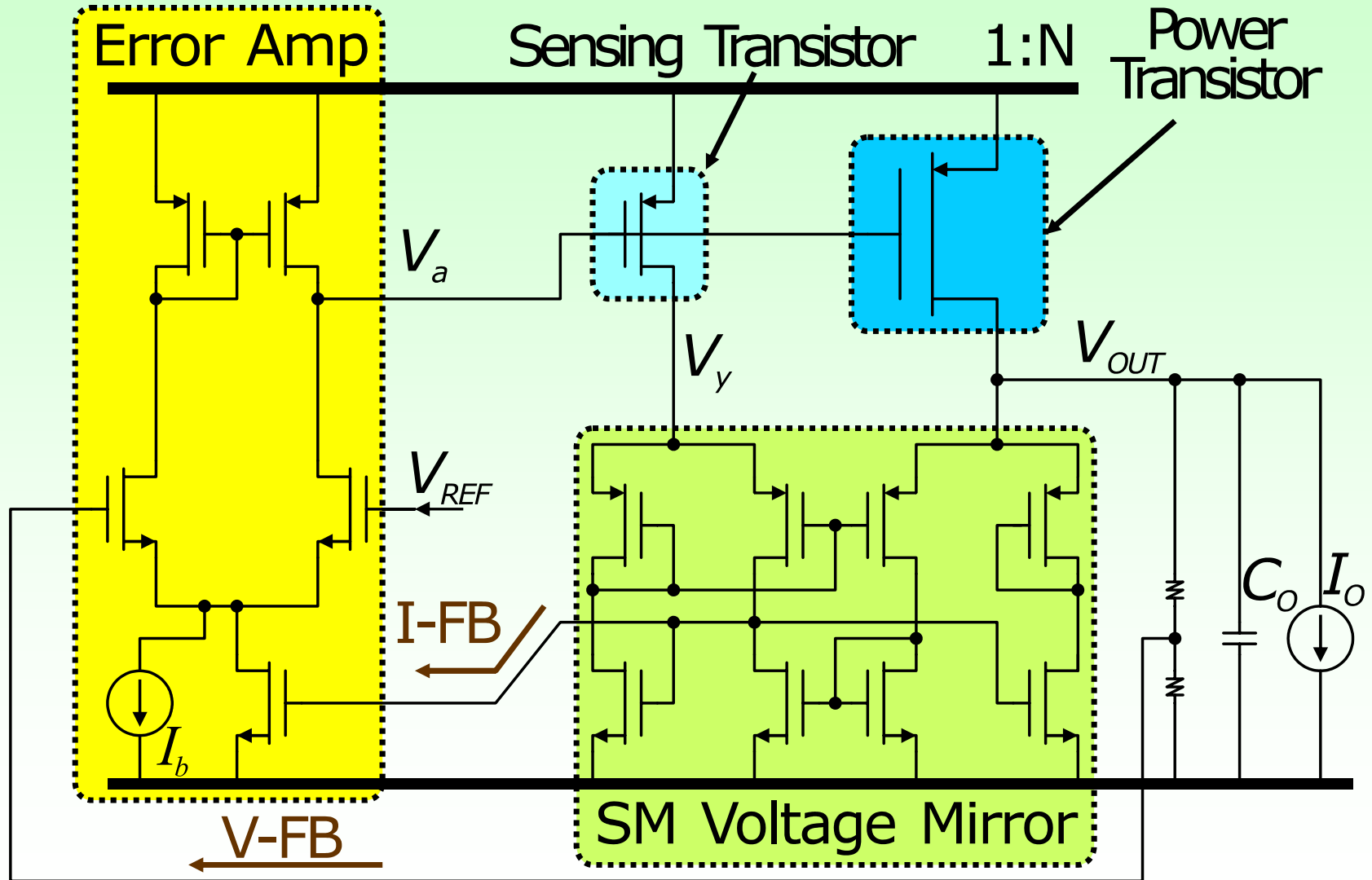


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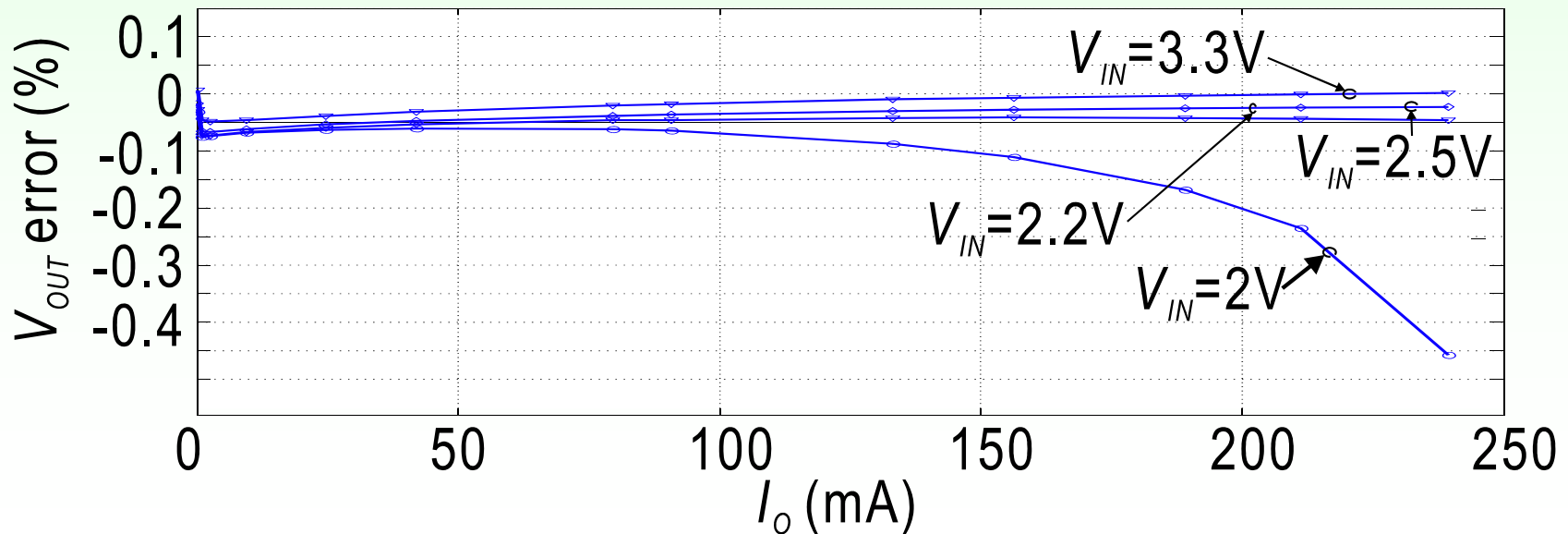
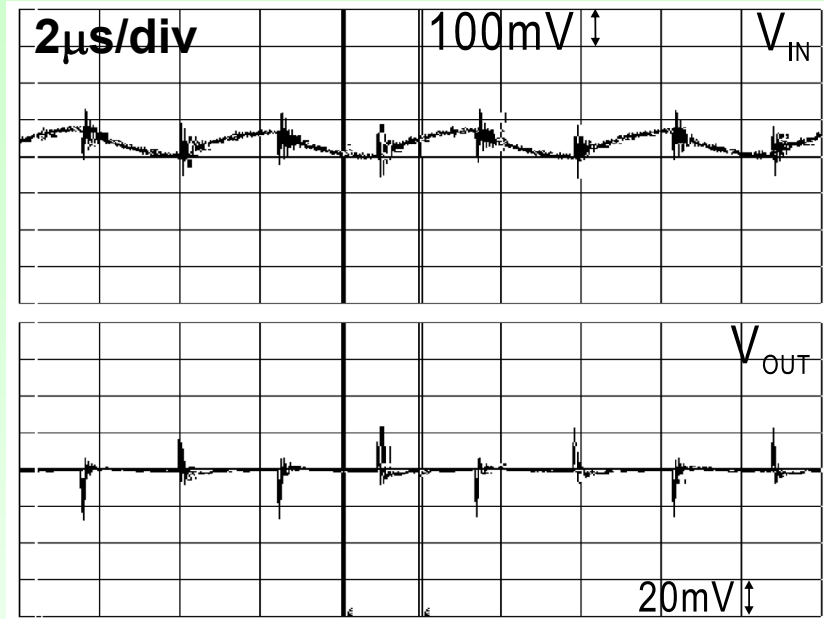
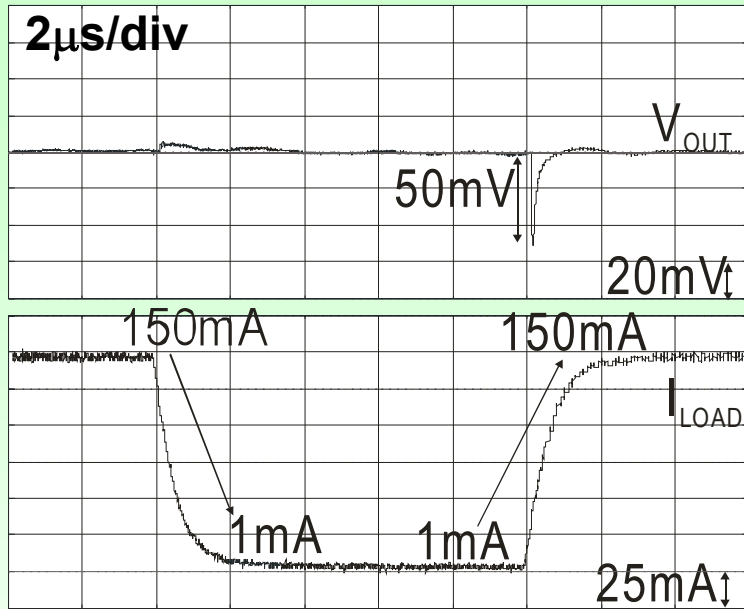
Features

- **Fully integrated symmetrically-matched current sensor**
 - Direct current feedback (DCF)
- **Compact size**
 - No internal/external compensation cap is needed
 - No filtering cap is needed, and stable with 300pF filtering cap
- **Pole-tracking**
 - Dominant pole & loop bandwidth track with load current
- **Small quiescent current at light load, fast transient response at heavy load**
 - $I_Q=3\mu\text{A}$ @ $I_O=0\text{mA}$ and $I_Q=1.03\text{mA}$ @ $I_O=200\text{mA}$
- **Excellent line and load regulation**
 - Load regulation is compensated by DCF, symmetrical matching for good line regulation

Implementation

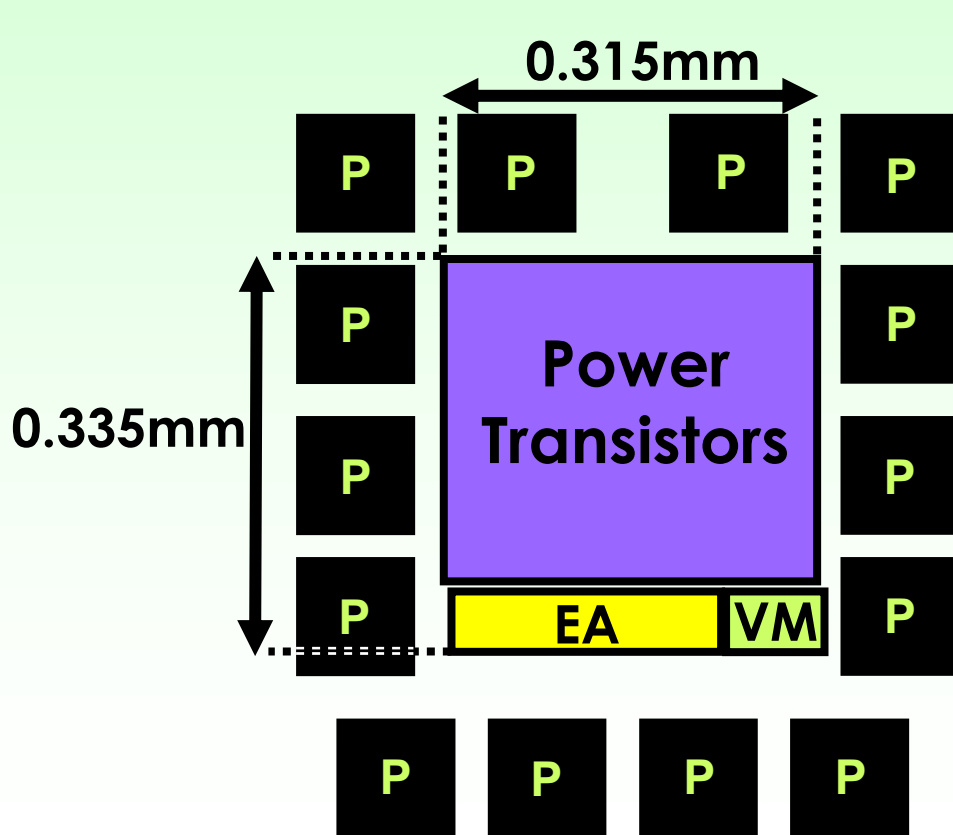


Measurement results

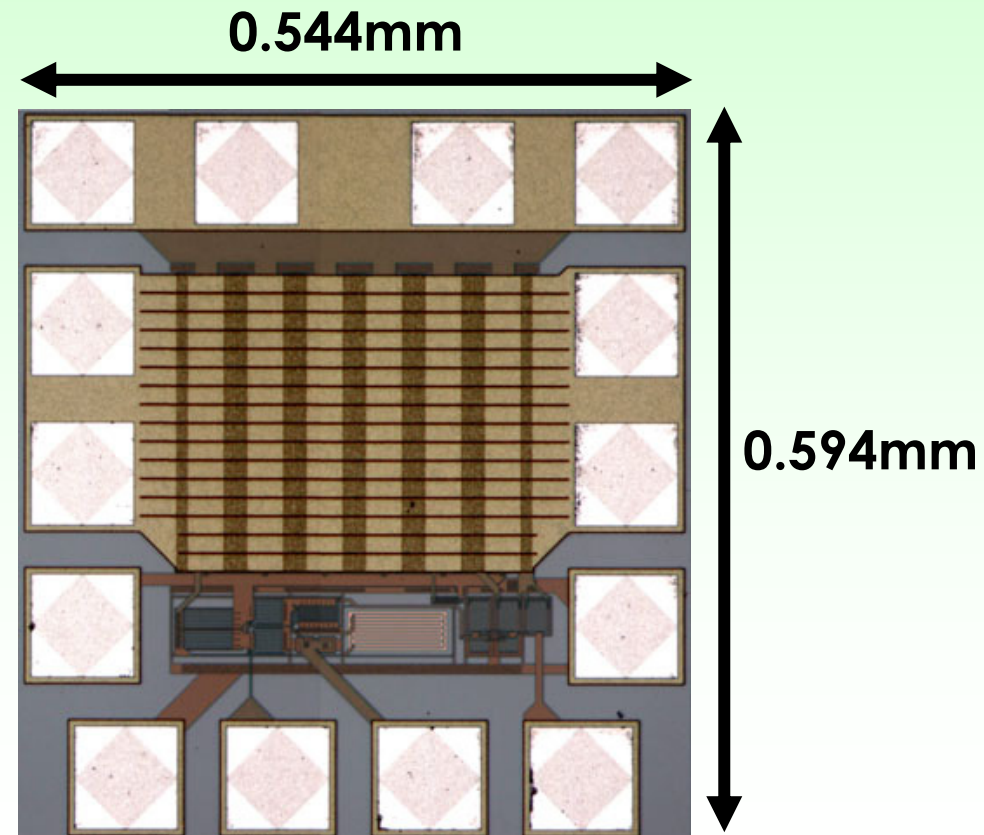


Chip Micrograph

- EA – Error Amplifier
- VM – Symmetrically Matched Voltage Mirror
- P – Bond Pads



Active circuit area = 0.106mm²



Total chip area = 0.323mm²