

A 200-500 mA Buck Converter for RF Applications

Introduction

This work has developed a multi-MHz silicon “driver & MOSFET” platform for dc-dc power-trains aimed at providing next generation power converter.

The target specification is a 2.8–5 V to 0.5–4.5 V 500 mA dc-dc step-down converter, with a switching frequency in the 20-50 MHz range.

Increasing the switching frequency results in a significant reduction in the size of external passive components, enabling inductor and capacitor co-packaging and integration. This has the simultaneous benefits of substantially shrinking the power converter footprint and reducing the number of discrete components required.

The integrated drivers and MOSFETS are complimented by a highly configurable digital PWM engine as well as auxiliary interfacing for precise dead-time control and efficiency enhancing protocols, such as banking in an auxiliary top-switch at heavy loads

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Team

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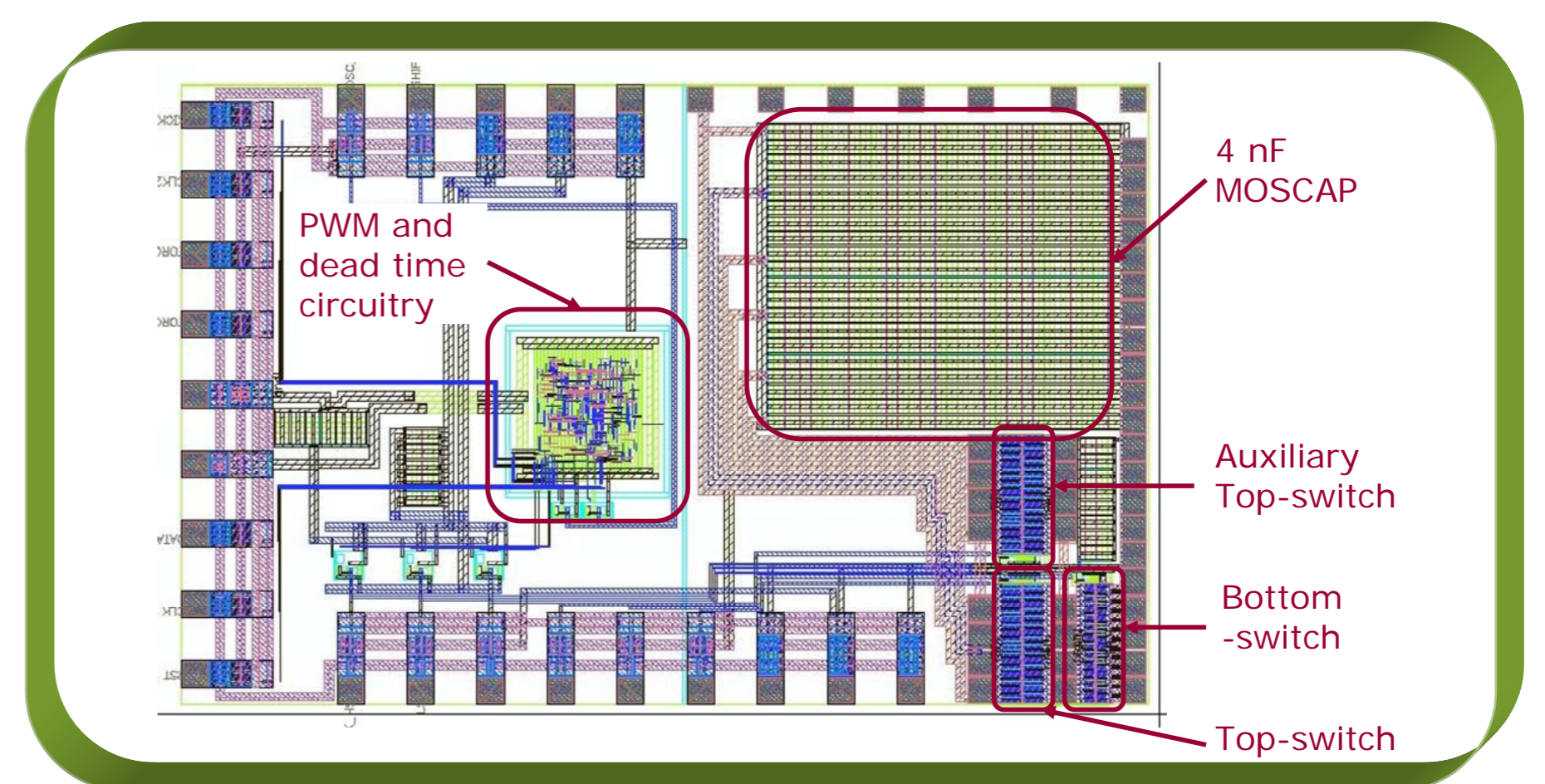
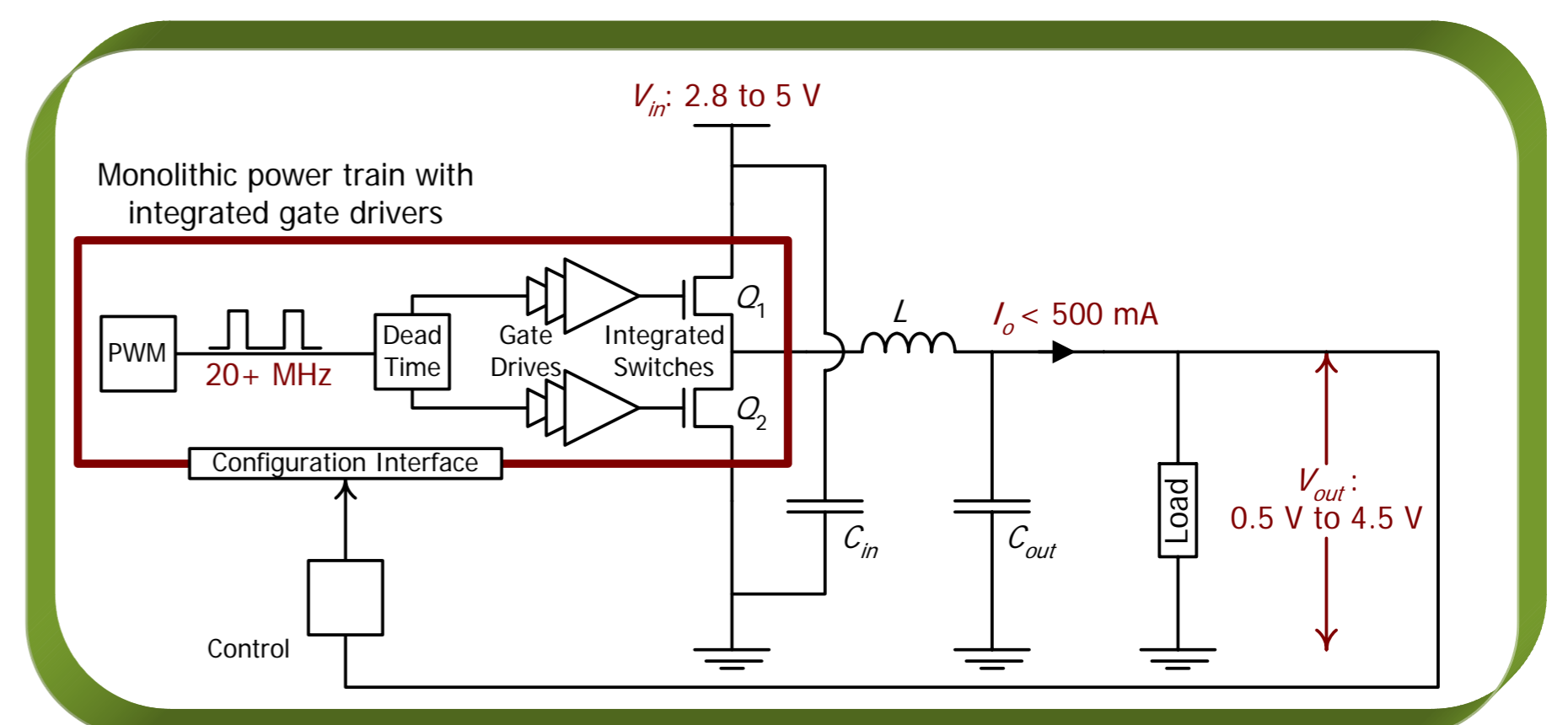
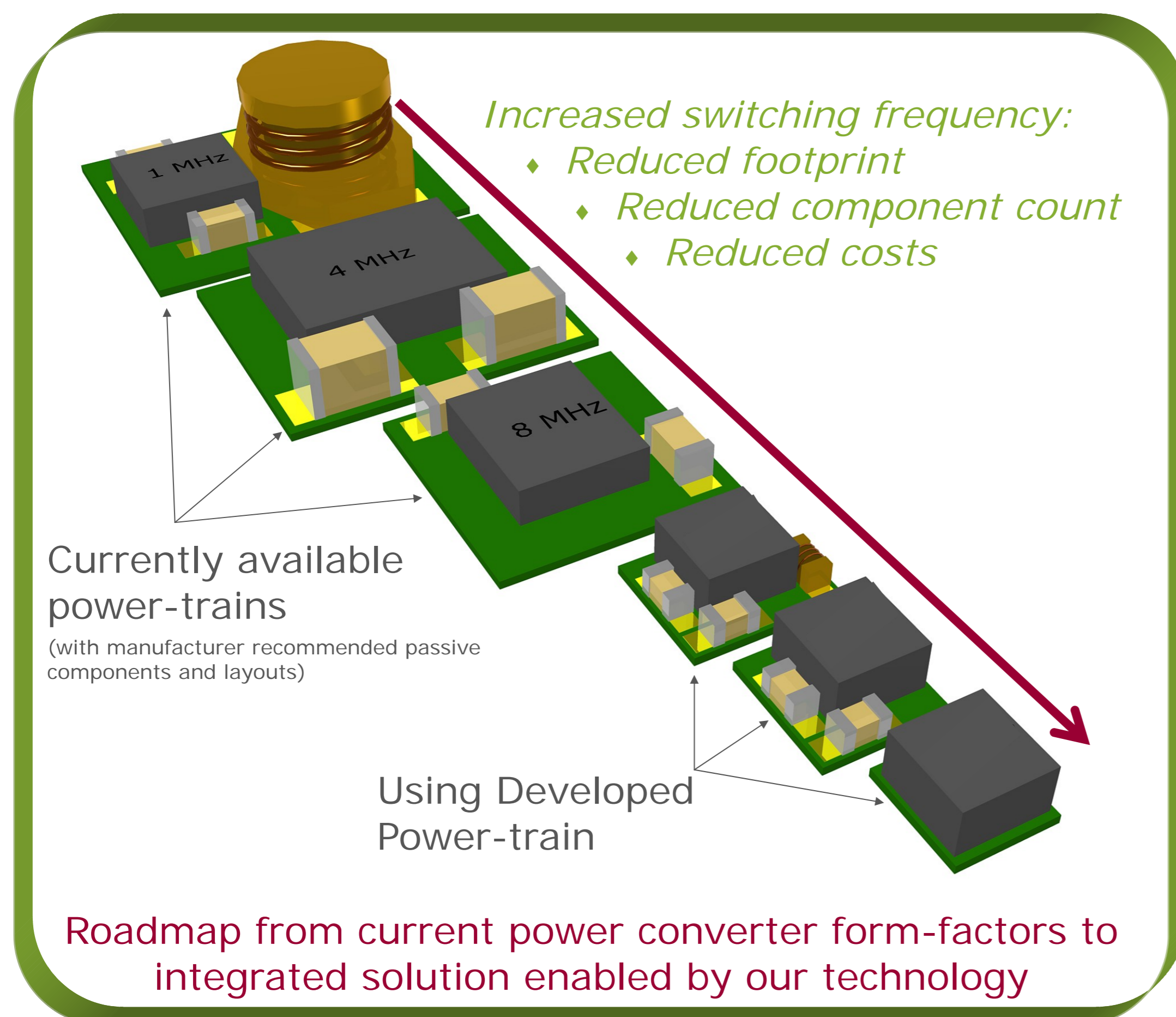
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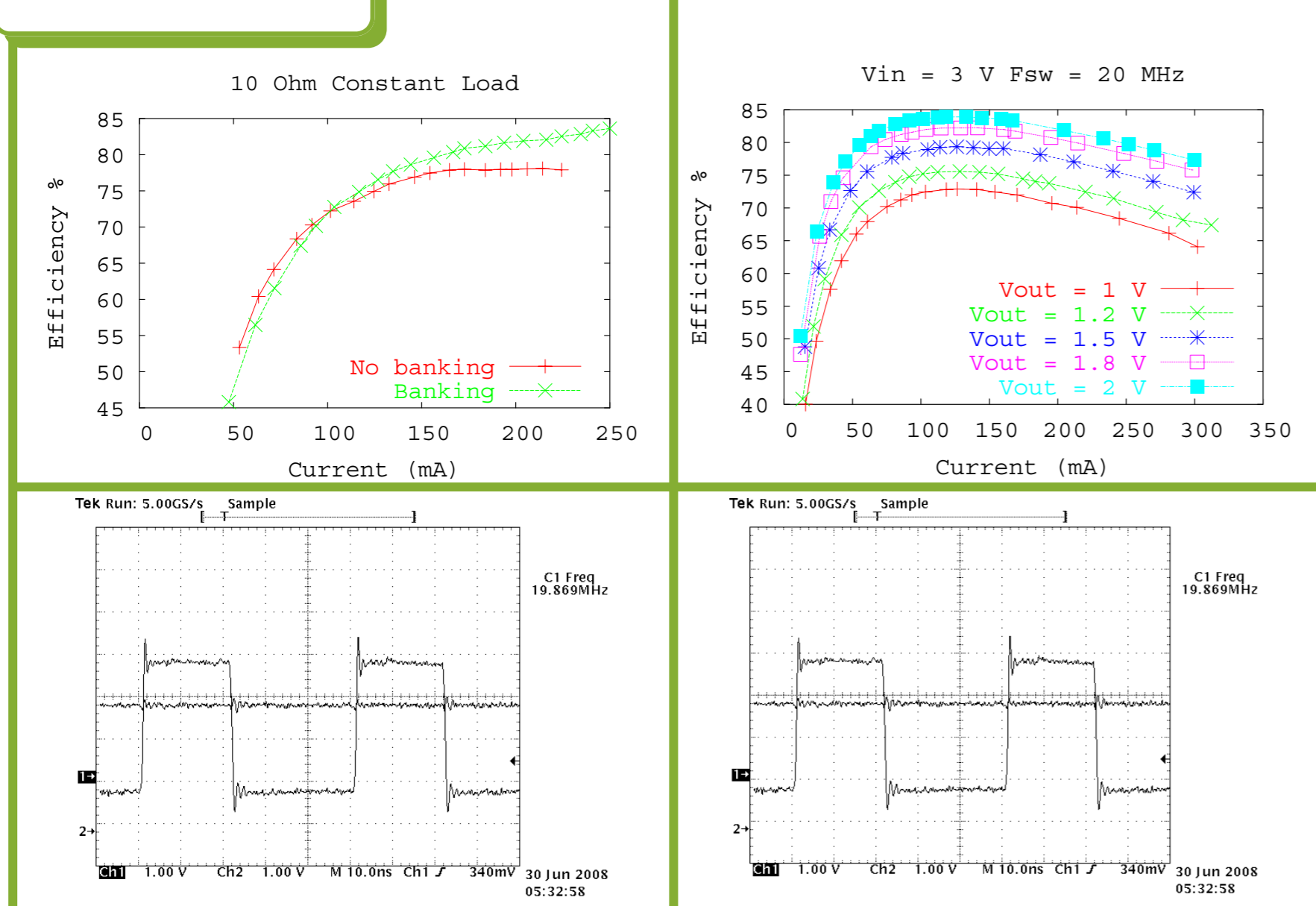
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Measurements



Data Sheet

| Parameter | Value |
|----------------------------|--------------------|
| V_{in} | 2.8–5.0 V |
| V_o | 0.5–4.5 V |
| I_o | 500 mA |
| F_s | 20–50 MHz |
| Target Converter Footprint | 16 mm ² |
| Target Converter Height | 1 mm |
| Load Regulation | 0.50% |

Markets

- ♦ Power supply on chip
- ♦ 3G mobile phone hand-sets
- ♦ Portable/wearable computing
- ♦ Space-constrained circuit boards