# Design Solution # 42

# SP6652: 3.3V or 5V input to 1.3V output at 1.0A

**Designed by:** Brian Kennedy

**Part Number:** SP6652ER

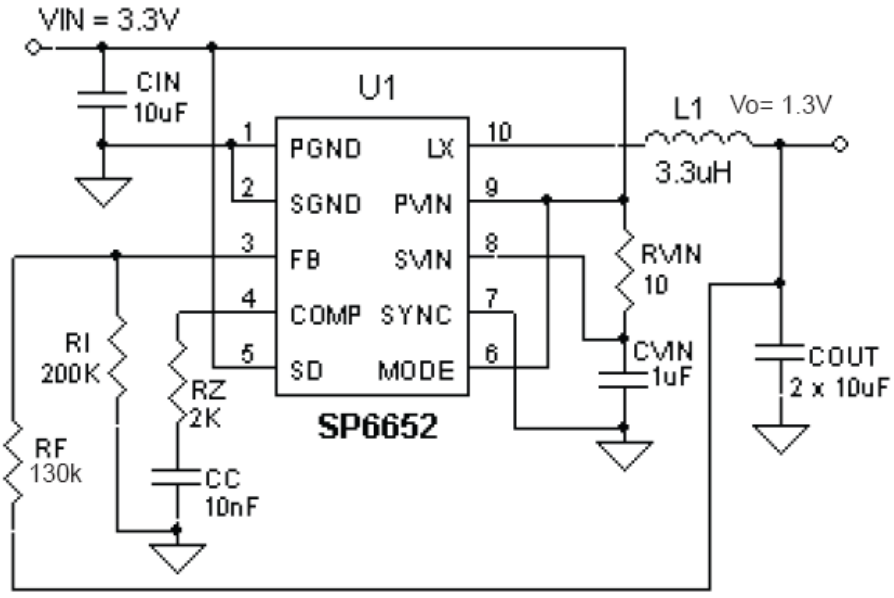
**Application Description:** 3.3V or 5.0V converted to 1.3V at 1.0A

**Electrical Requirements:**

| | |
|---|---|
| Input Voltage | 3.3V or 5.0V |
| Output Voltage | 1.3V |
| Output Current | 1.0A |

**Circuit Description:**

This application has been designed for a 1.3Voutput that requires up to 1.0A output current in a small solution size with low output ripple. The SP6652 buck regulator uses current mode control to simplify the loop compensation to only one small resistor and capacitor. All the external components have been optimized for an output current up to 1.0A output and have been laid out for small size and to minimize output ripple. This report includes figure 7 application schematic complete with component part numbers and figures 1-6 illustrating electrical performance of the design.




**Application Schematic**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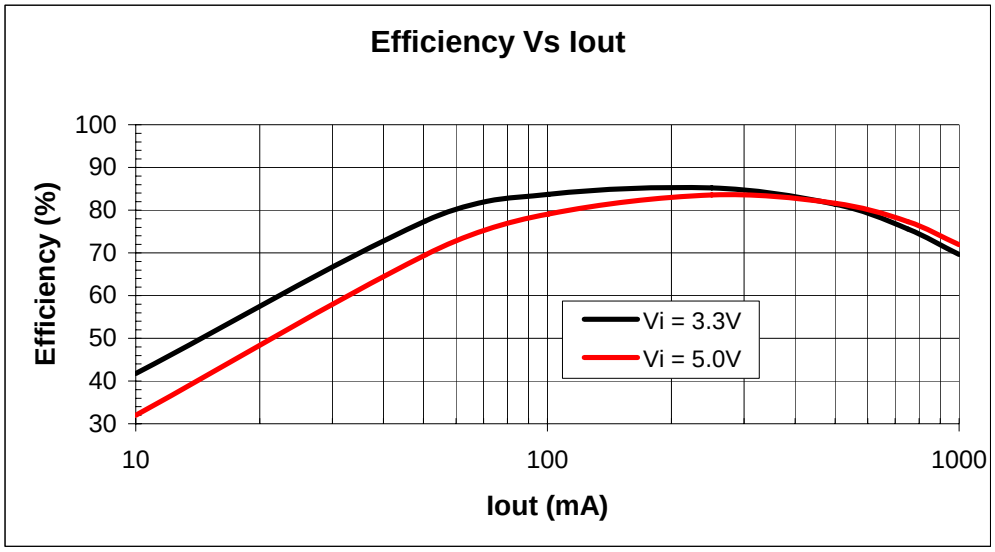



**Figure 1.** Efficiency Graph

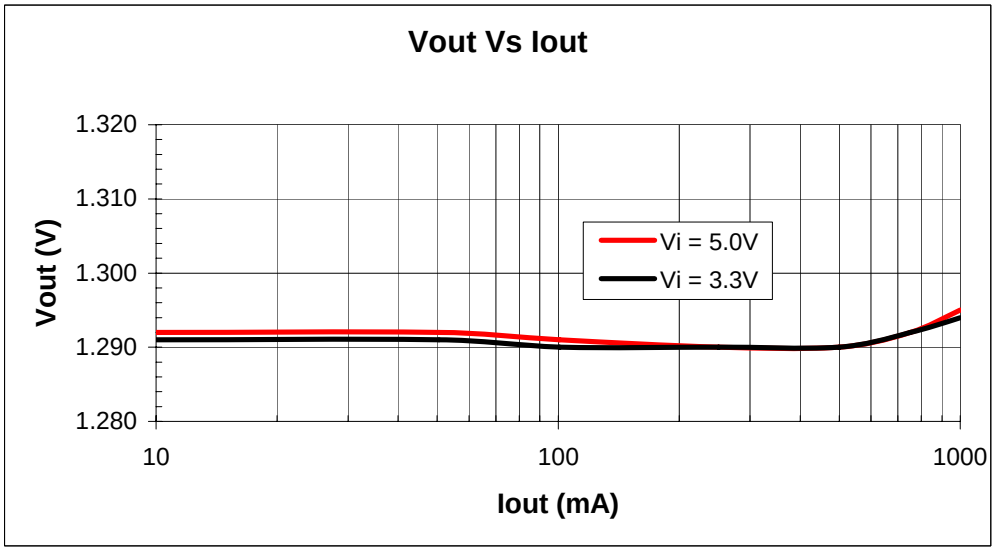
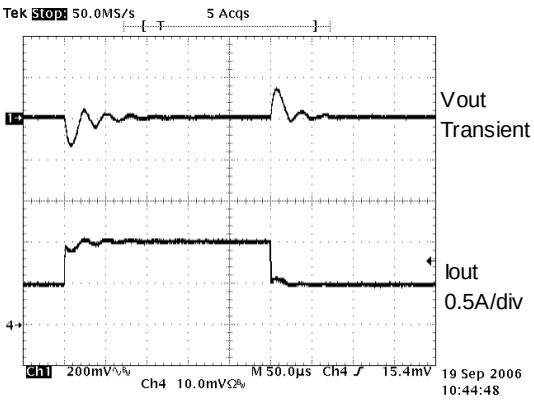



**Figure 2.** Vout Vs Iout




Transient Response:
Vin=3.3V, Iout step=0.5A - 1A

**Figure 3.** 3.3V Transient Response

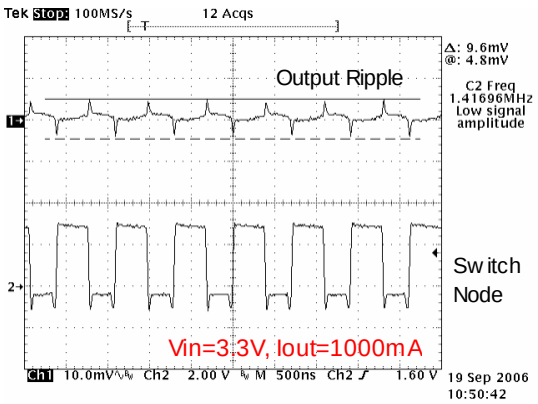
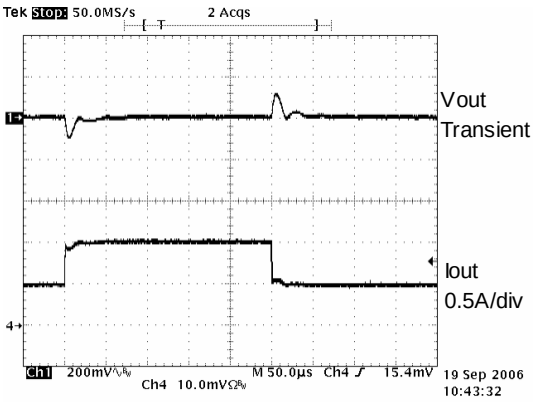



**Figure 4.** 3.3V Output Ripple




Transient Response:
Vin=5.0V, Iout step=0.5A - 1A

**Figure 5.** 5.0V Transient Response

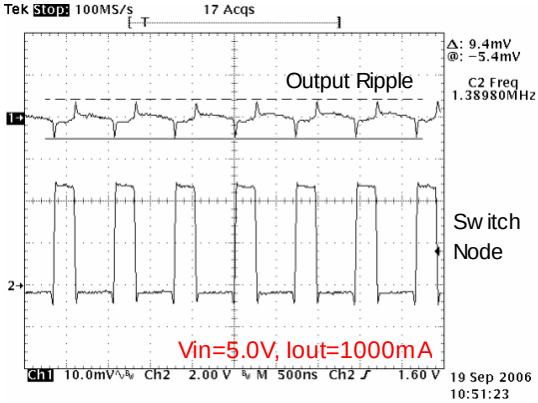



**Figure 6.** 5.0V Output Ripple