Design Solution # 49

SP6648: 3.0V to 3.2V input to 4.7V output at 70mA

Part Number: SP6648ER

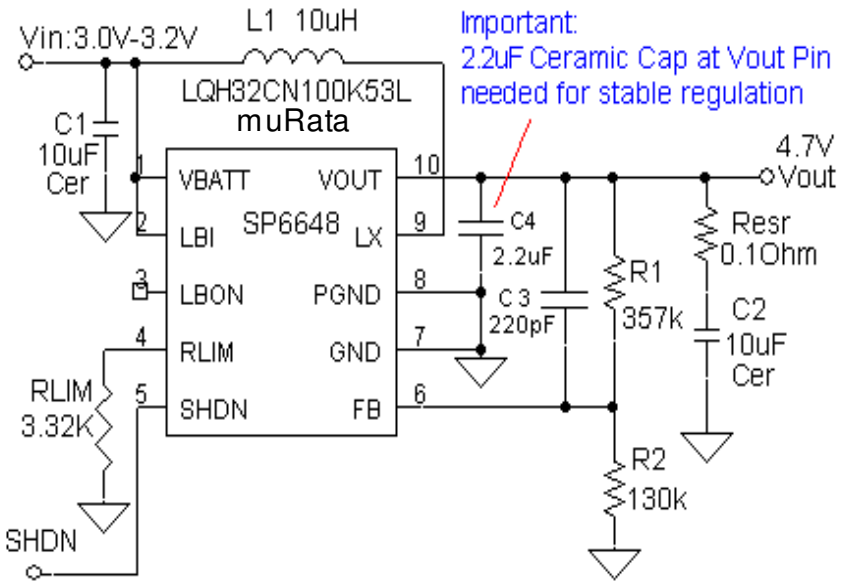
Application Description: 3.0V to 3.2V converted to 4.7V at 70mA output

Electrical Requirements:

Input Voltage	3.0V to 3.2V
Output Voltage	4.7V
Output Current	70mA

Circuit Description:

This application has been designed for a 4.7Voutput that requires up to 70mA output current in a small solution size with low output ripple. The SP6648 boost regulator uses pulse frequency mode control with a 20uA quiescent current to provide excellent light load efficiency. All the external components have been optimized for an output current up to 70mA output which includes a small 1210 size inductor and 0805 size 10uF capacitors. The circuit has been designed with 0.1ohm ESR resistor in series with the output and a small 220pF feed-forward capacitor 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.



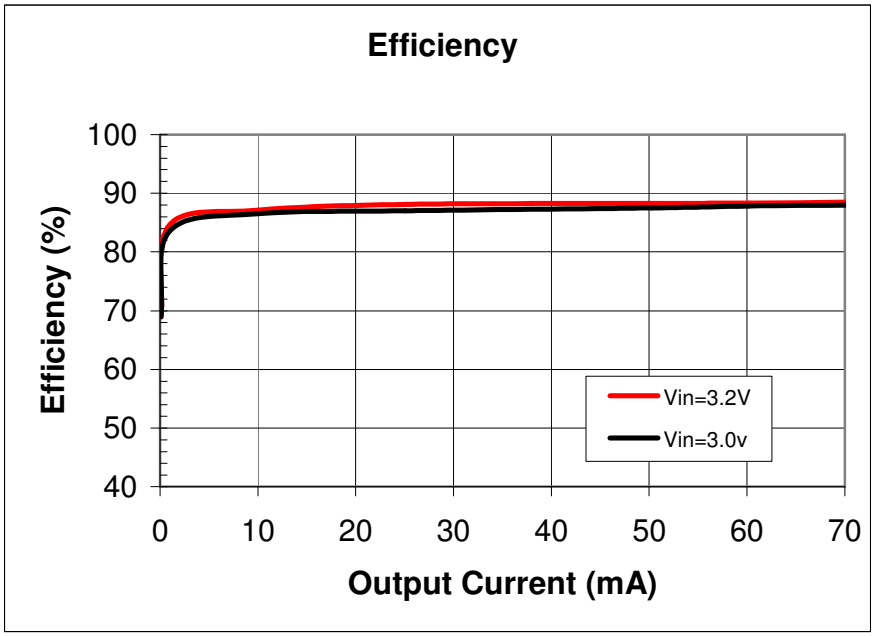


Figure 1. Efficiency Graph

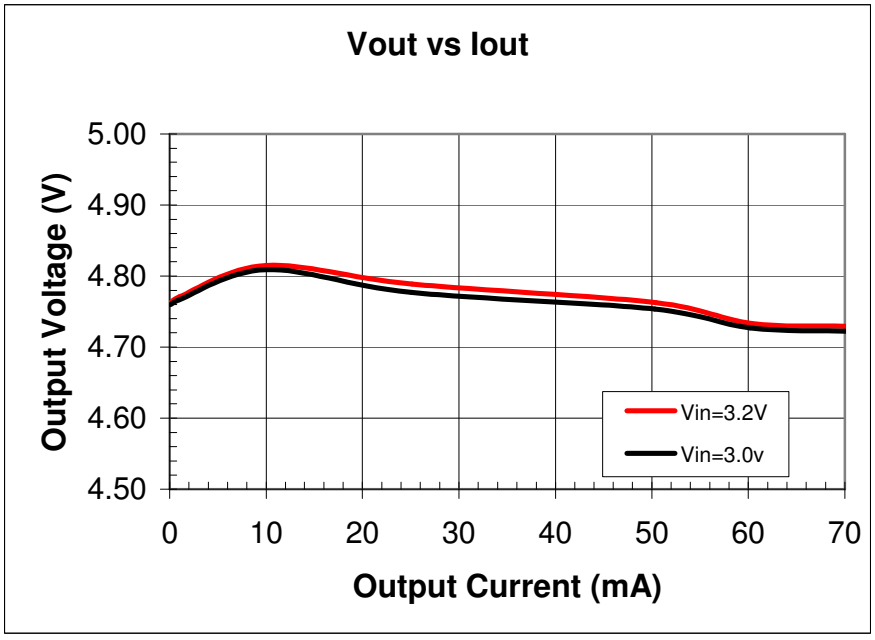
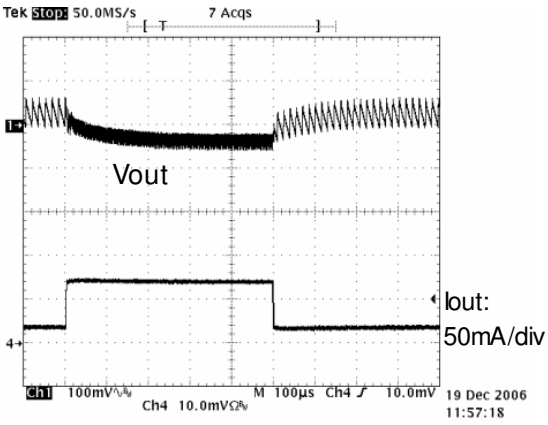


Figure 2. Vout Vs Iout



Vin=3.0V, Iout step = 20mA to 70mA

Figure 3. 3.0V Transient Response

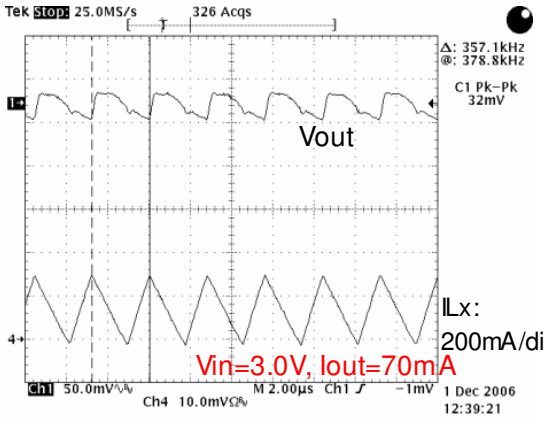
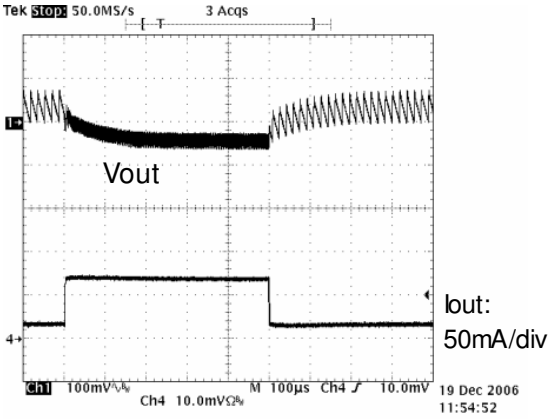


Figure 4. 3.0V Output Ripple



Vin=3.2V, Iout step = 20mA to 70mA

Figure 5. 3.2V Transient Response

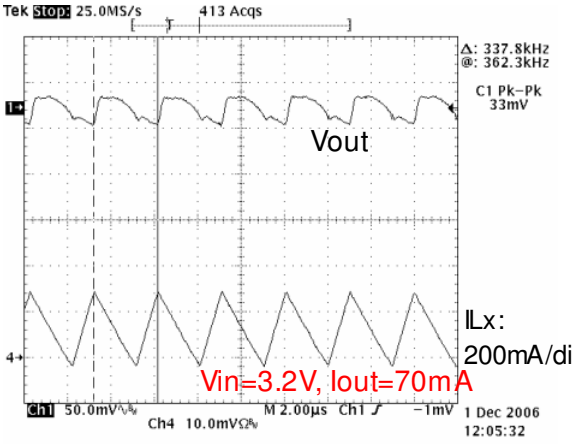


Figure 6. 3.2V Output Ripple

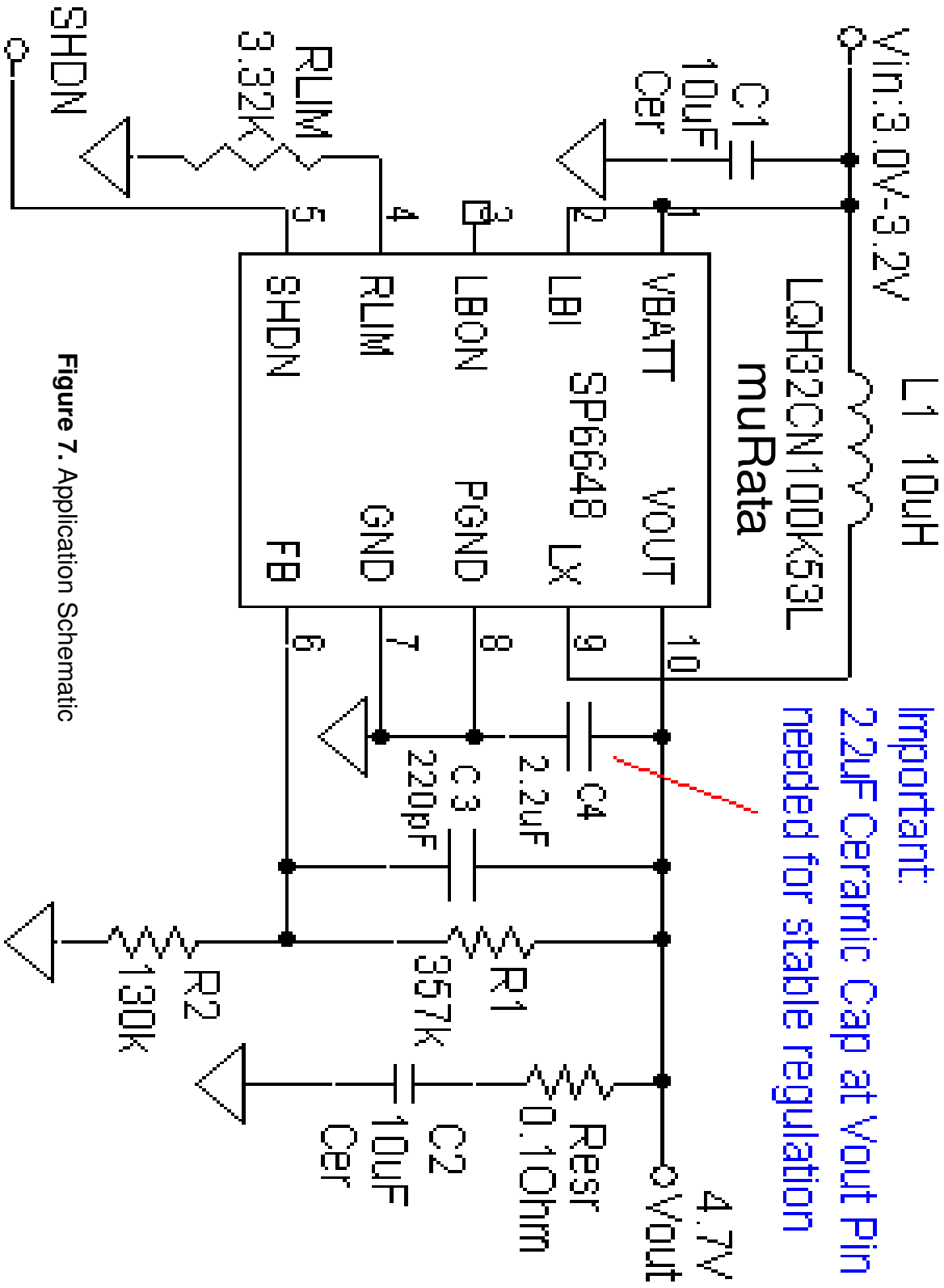


Figure 7. Application Schematic

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