Design Solution 16

SP6656 Converts Li-Io Battery to Low Output Voltages

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Designed by: Brian Kennedy (bkennedy@sipex.com)

Part Number: SP6656

Application Description: Graphics ASICs in Mobile Phones

Electrical Requirements:

Input Voltage	3.0V – 4.2V
Output Voltage	1.1V and 1.5V (logic selectable)
Output Current	400mA

Circuit Description:

The SP6656 is designed to provide dynamic adjustment of its output voltage in response to a logic control signal. The circuit in Figure 5 provides two levels of output voltages: 1.1V and 1.5V. This can be used in portable applications by a graphics IC or an ASIC in order to improve its power consumption. Understand that, by mode, the voltage is reduced to 1.1V in order to provide lower power dissipation. When full performance is required, the SP6656 is commanded to increase its voltage to the pre-set level – 1.5V for this schematic.

Circuit performance, such as efficiency and load regulation is shown in Figures 1 through 4. Low quiescent current of the SP6656 is ensuring very high efficiency even at 100uA load currents!

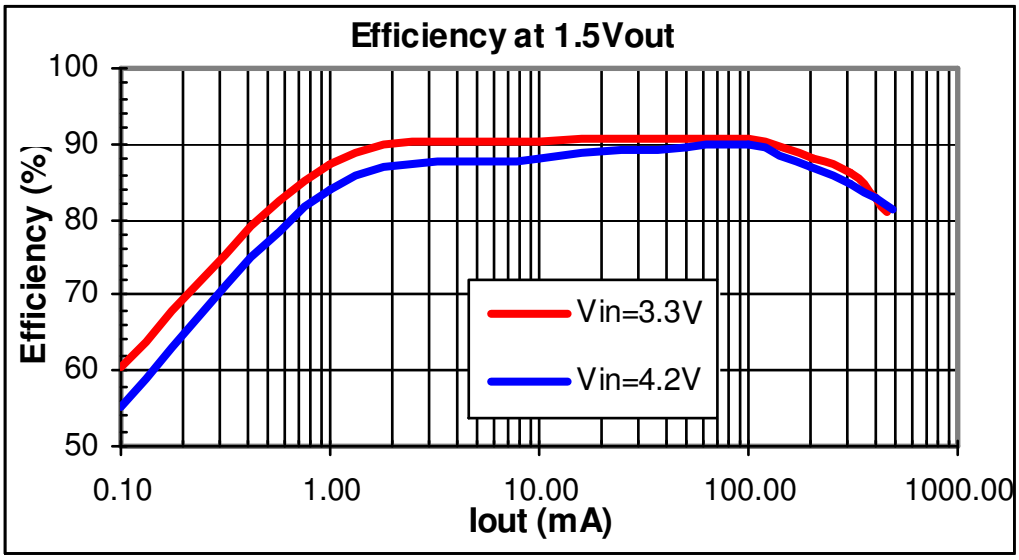

Figure 1. Efficiency Graph for 1.5V Output Voltage

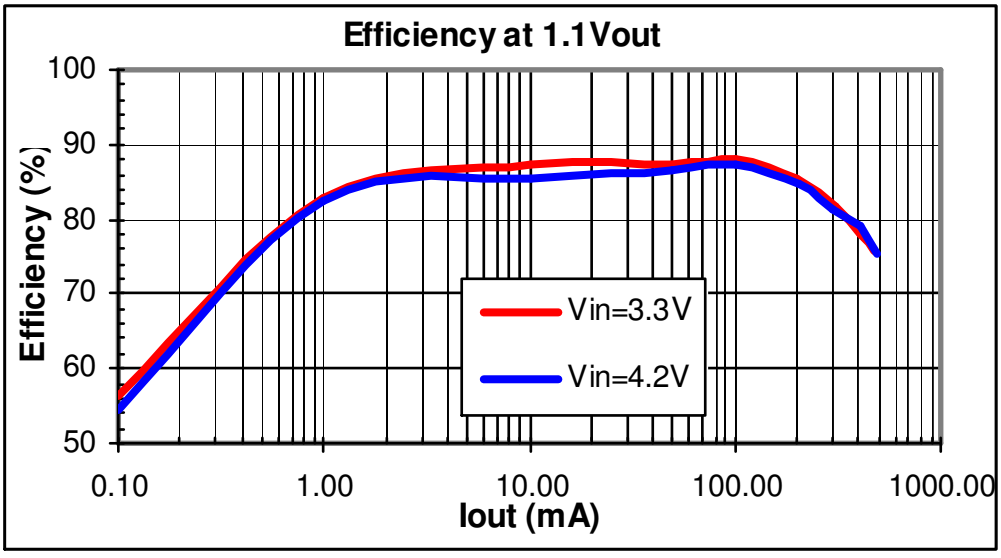

Figure 2. Efficiency Graph for 1.1V Output Voltage

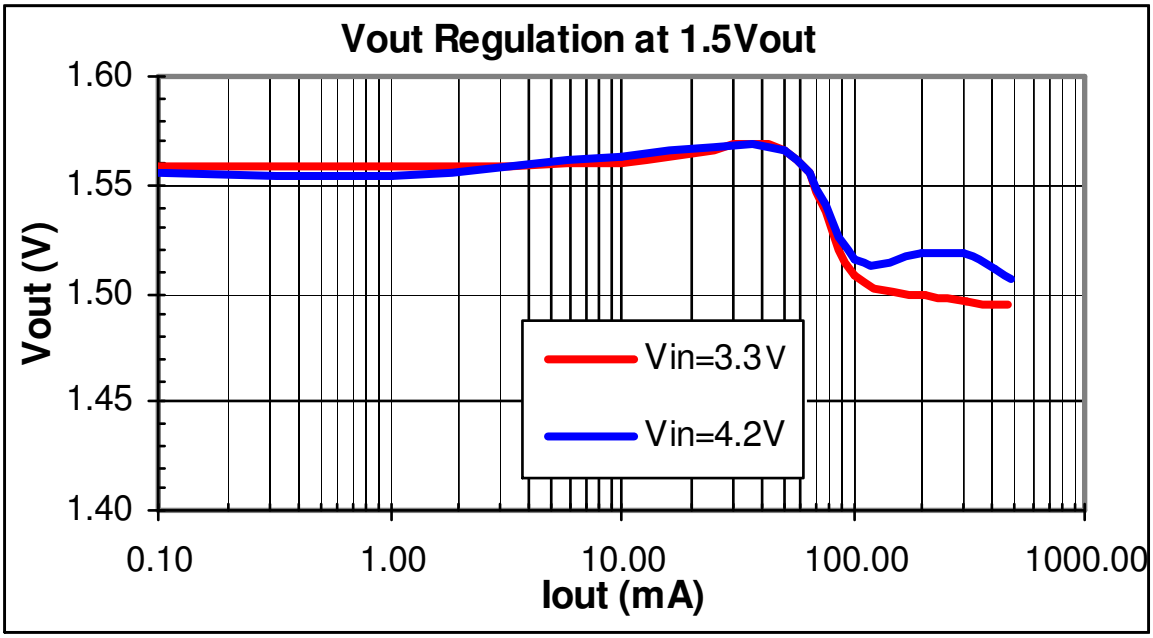

Figure 3. Output Voltage Load Regulation for 1.5V Output.

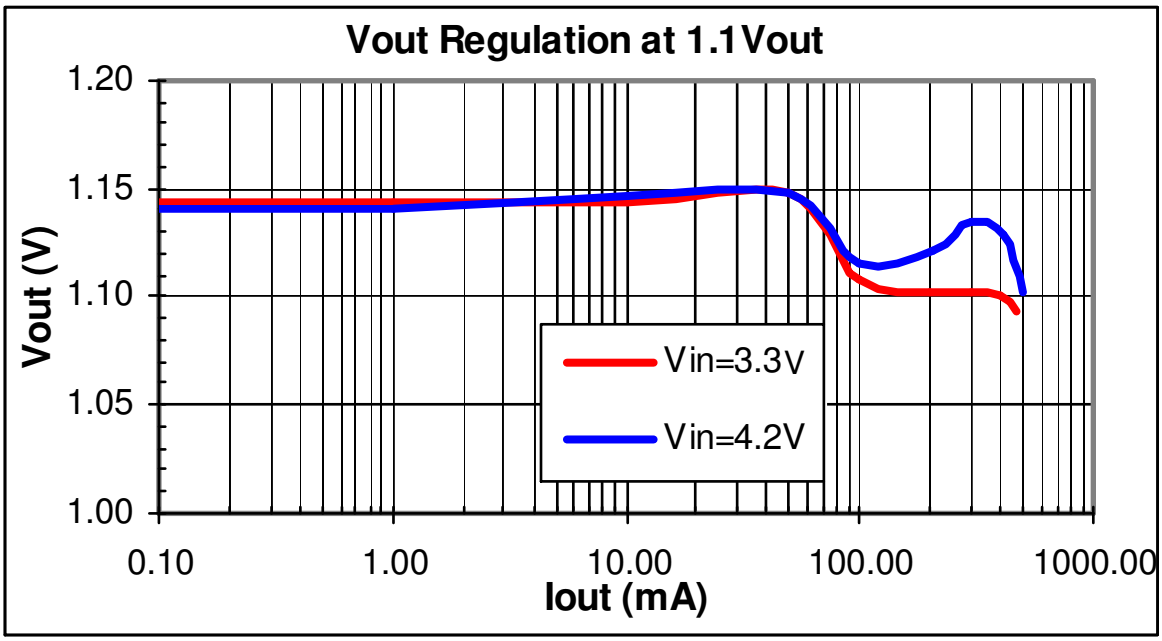

Figure 4. Output Voltage Load Regulation for 1.1V Output

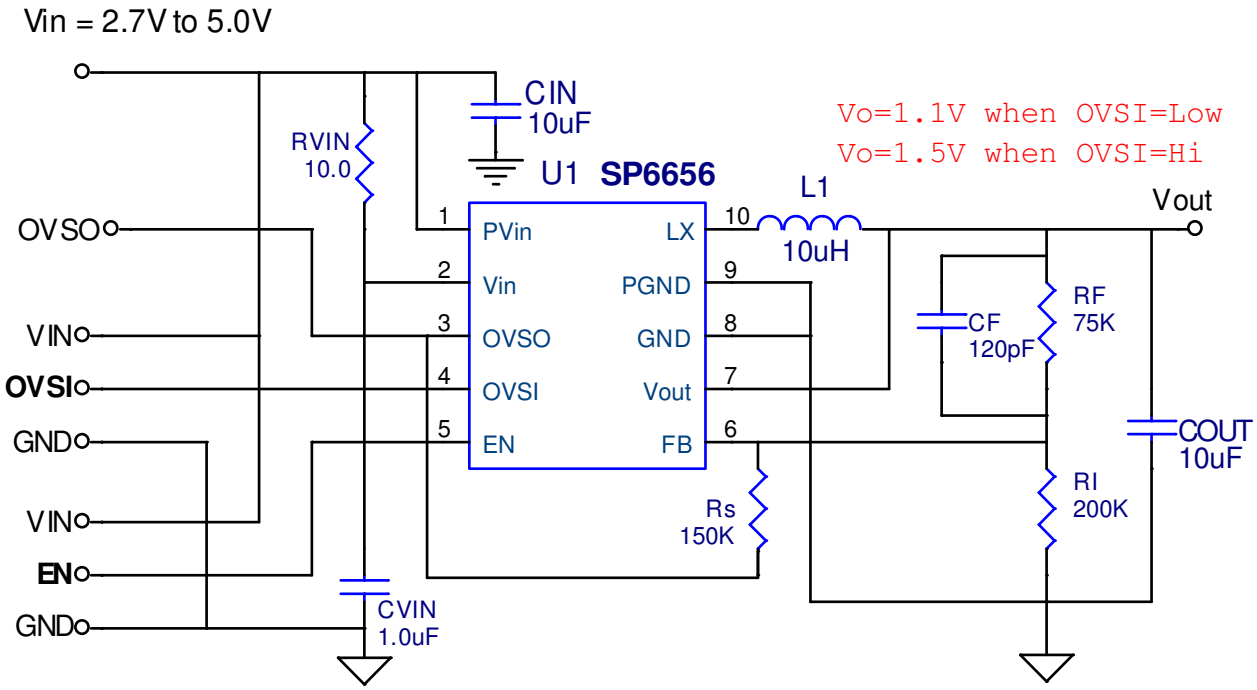

Figure 5. SP6656 Electrical Schematic