

SP6683 Charge Pump Li-Ion Battery to 3.3V_{OUT} @ 100mA

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Designed by: Brian Kennedy

Part Number: SP6683ER

Application Description: Li-Ion Battery to 3.3V out at 100mA

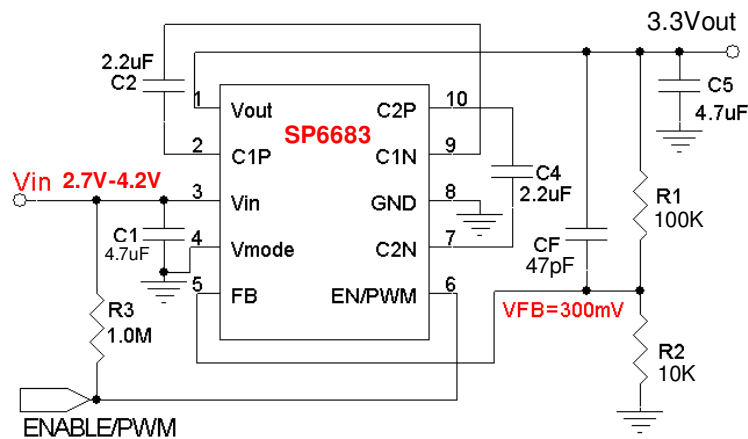
Electrical Requirements:

Input Voltage	2.7V – 4.2V
Output Voltage	3.3V
Output Current	50mA to 100mA

Circuit Description:

This application has been designed for a single Li-Ion battery input with 3.3V outputs that require small size and low output ripple. The input voltage range is from 2.7V to 4.2V and is boosted up or bucked down to a 3.3V output. All the external components have been optimized for an output current of 50mA to 100mA output and have been laid out for small size and to minimize output ripple.

This report includes the application schematic complete with component part numbers and figures 1-4 illustrating electrical performance of the design.



Application Schematic

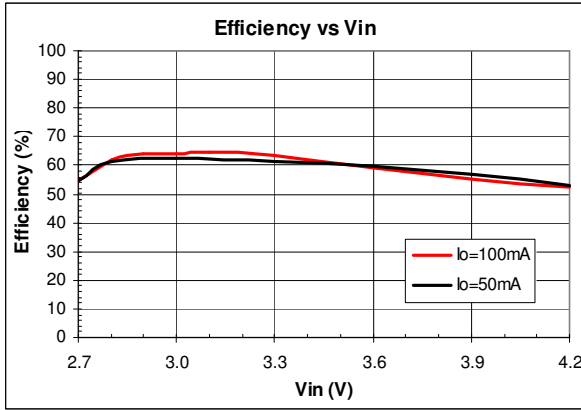


Figure 1. Efficiency Graph

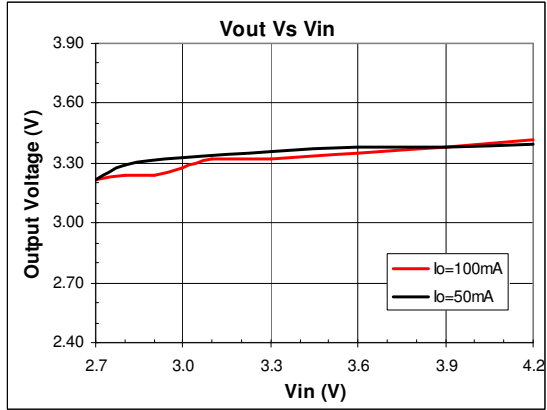


Figure 2. VOUT Regulation Graph

1.5X Mode (100mA Out)					
Vin (V)	Iin(mA)	Vout (V)	Io (mA)	Effi (%)	Vpp (mV)
2.7	76	3.215	35.00	54.8	40
2.8	103	3.238	55.00	61.8	35
2.9	131	3.237	75.00	63.9	30
3.0	153	3.278	90.00	64.3	30
3.1	166	3.318	100.19	64.6	45
3.3	158	3.322	100.01	63.7	50
3.6	157	3.348	100.18	59.3	60
3.9	157	3.379	100.2	55.3	85
4.2	155	3.414	100.1	52.5	85

Figure 3. Output Ripple

1.5X Mode (50mA Out)					
Vin (V)	Iin(mA)	Vout (V)	Io (mA)	Effi (%)	Vpp (mV)
2.7	76	3.215	35.00	54.8	40
2.8	96	3.293	50.01	61.3	25
3.0	89	3.331	50.03	62.4	46
3.3	83	3.359	50.05	61.4	46
3.6	79	3.377	50.02	59.4	46
3.9	76	3.379	50.06	57.1	48
4.2	76	3.394	50.1	53.3	90

Figure 4. Output Ripple