DC-DC Regulator Selection

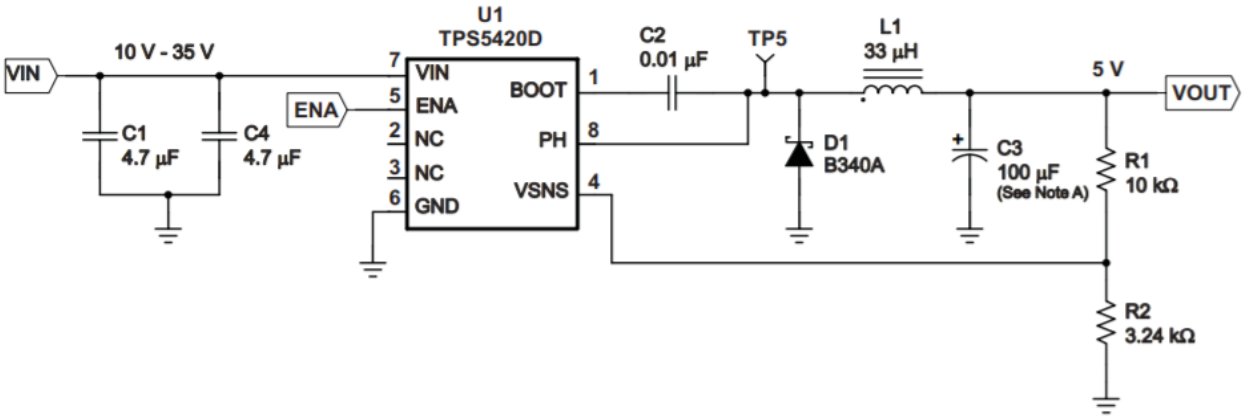
Requirement for our battery operated application:

- Low IQ (<100 μA)
- Low Noise
- Low EMI(Electromagnetic Interference)
- High Load Dump Voltage
- Continuous 1A / 2A current output with High switching frequency
- Output voltage range
- Over-current protection

Test 1: With TPS5420 Buck Converter.

Design for TPS5420

1	Input Voltage Range	5.5 V to 36 V
2	Output Current	2-A Continuous (3-A Peak)
3	Output Voltage	Adjustable Down to 1.22V
4	Switching Frequency	500-kHz
5	Over Voltage Protection & Over Current Limiting	Yes
6	Thermal Shutdown	Yes
7	Operating Junction	–40°C to 125°C
8	Package	8-Pin SOIC



Output and Observation: TPS5420

1) Voltage Test :
    a) Standard Input voltage- Input 12V , Expected Output 5V – Test Pass

b) High Input Voltage – Input 29V, Expected Output – 5V- Test Pass

c) Lower cutoff Voltage- Negative Testing – Input 4.9V, Expected output – 0V – Pass

d) Current – On-load Test- Pass

Tested with Motor-

- Input Voltage Range of 5V to 12V
- Current Reading of 1.1A

e) Sleep current/ Quiescent Current – 3mA – Test Fail [Expected is < 100µA]

Observation:

TPS542X series is ideal for automotive appliance with Load dump and current surge protection.

http://www.ti.com/lit/ds/symlink/tps54140.pdf - 1.2$ for 1ku

http://www.ti.com/lit/ds/symlink/tps54160a.pdf - 1.7$ for 1ku

http://www.ti.com/lit/ds/symlink/tps54340.pdf - 2.6$ 1KU