

SP6136: 12V input to 3.3V output at 15A

Designed by: Shahin Maloyan

Part Number: SP6136ER1

Application Description: 12V input to 3.3V output at 15mA

Electrical Requirements:

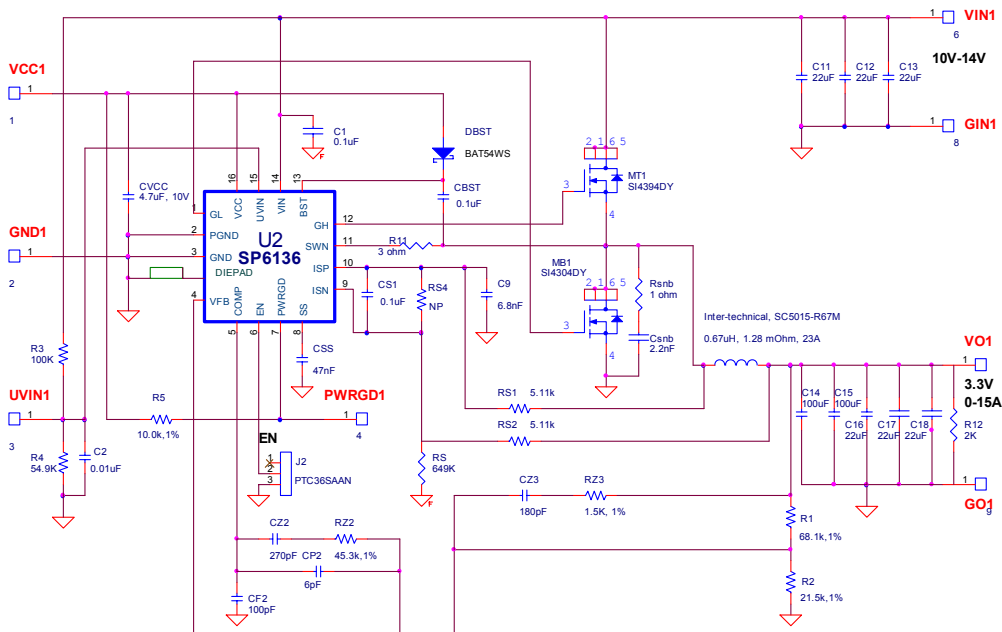
Input Voltage	12V
Output Voltage	3.3V
Output Current	15A
Step Load	60mV response to 15A step

Circuit Description:

This buck converter has been designed to provide 3.3V output at 15A with a low 60mV transient response to a 15A step. The SP6136 is a high performance buck regulator controller that provides all necessary functions required by a buck regulator: over-current protection, power-good output, adjustable UVLO and Enable input. High switching frequency (600kHz) minimizes solution cost and size.

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

Schematic:



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Vin (V)	Iin (A)	Vout (V)	Iout (A)	Efficiency(%)
12.000	0.098	3.335	0	
12.000	0.240	3.335	0.5	57.9
12.000	0.383	3.335	1	72.5
12.000	0.672	3.335	2	82.7
12.000	1.254	3.335	4	88.6
12.000	1.835	3.335	6	90.8
12.000	2.422	3.336	8	91.8
12.000	3.019	3.336	10	92
12.000	3.324	3.336	11	92
12.000	3.630	3.336	12	91.9
12.000	4.247	3.337	14	91.6
12.000	4.562	3.337	15	91.4

Table 1: Efficiency and regulation Data

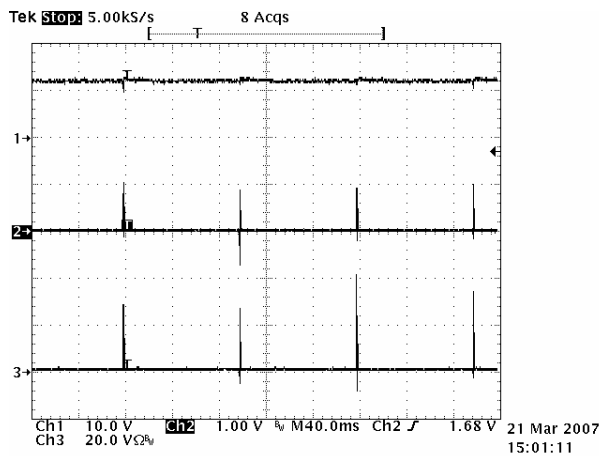


Figure 1: Hiccup at Overcurrent
Ch1: Vin, ch2: Vout, ch3: Iout

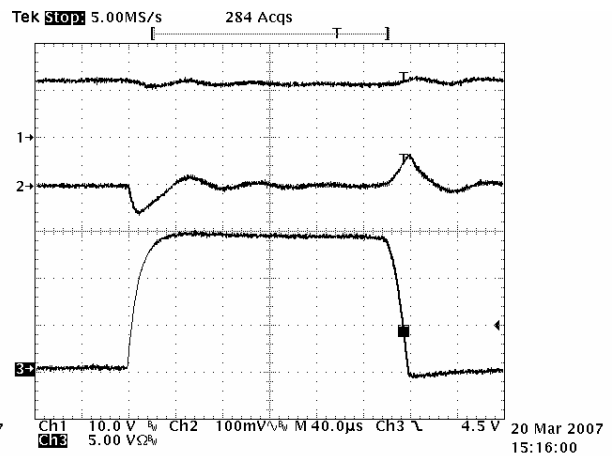


Figure 2. 60mV response to 0-15A Step
Ch1: Vin, ch2: Vout, ch3: Iout

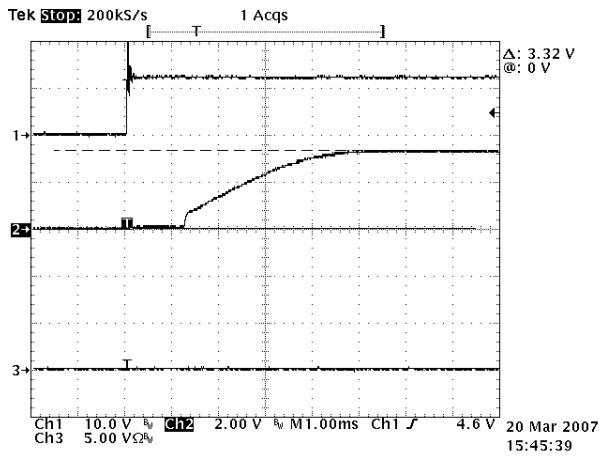


Figure 3. Startup at no Load
Ch1: Vin, ch2: Vout, ch3: Iout

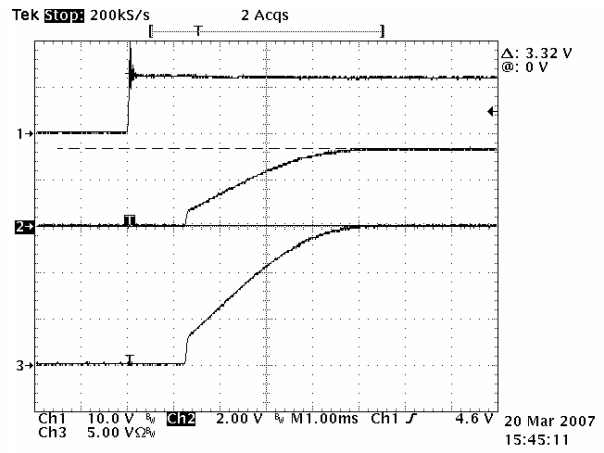
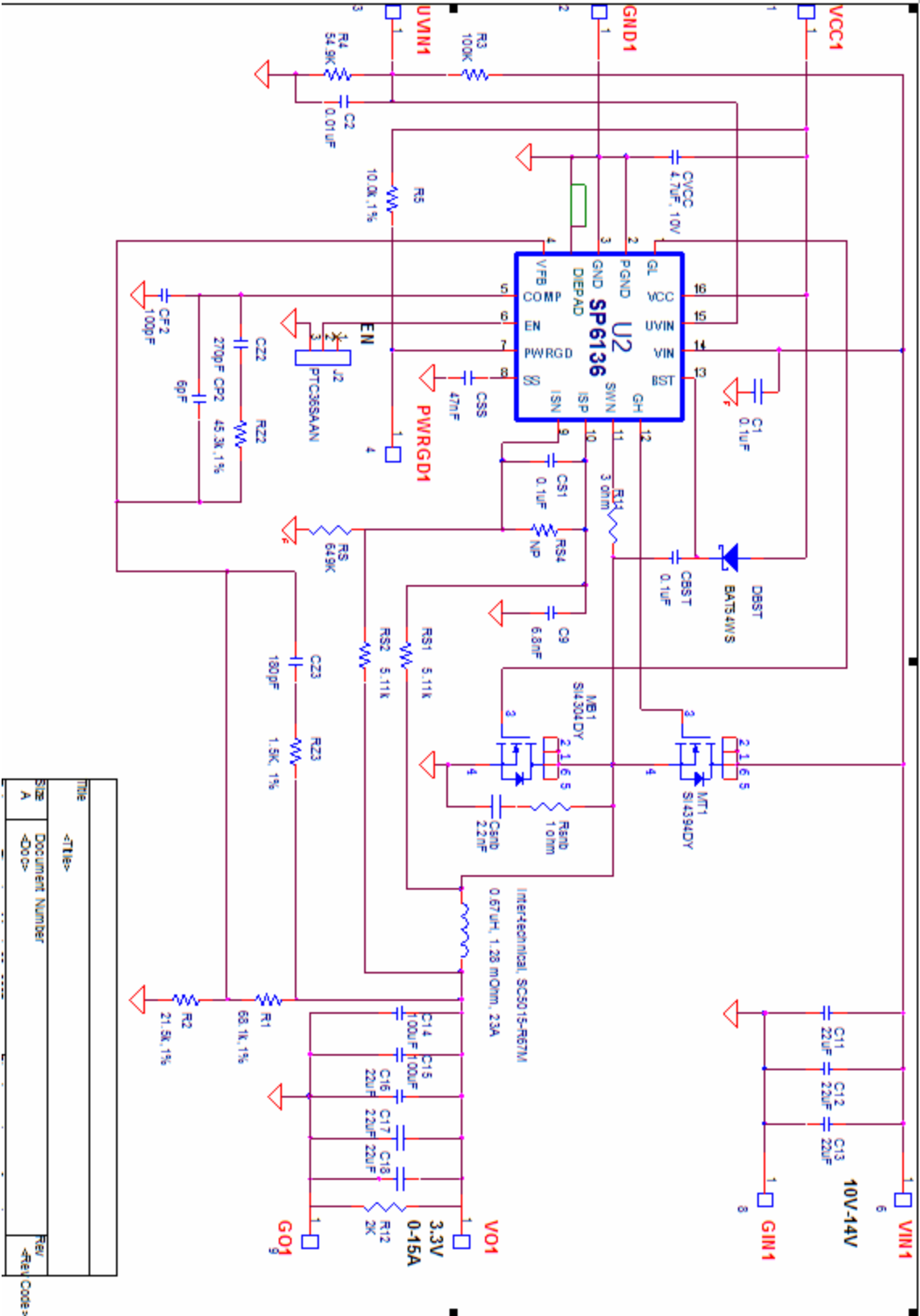


Figure 4. Startup at 15A
Ch1: Vin, ch2: Vout, ch3: Iout

Circuit Schematic



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