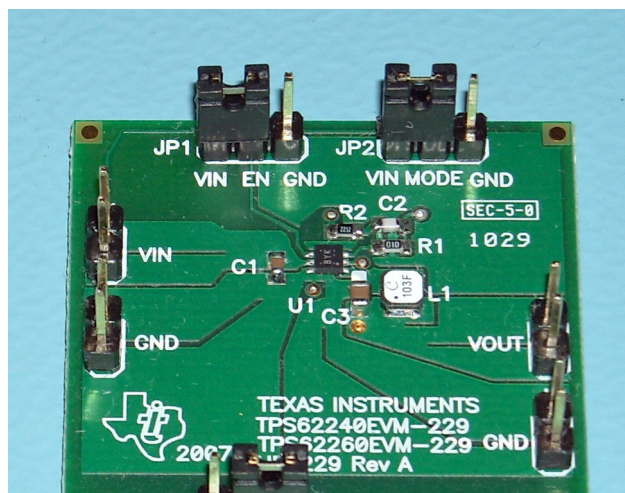


Synchronous Buck with TPS62260 – 3.3V @ 125mA

- Input 5.6 ..5.8V DC
- Output 3.3V @ 125mA
- Controller TPS62260-Q1
- Free-Running switching frequency of 2.25 MHz
- Modified TPS62260 Evaluation Board
- **All measurements were done in forced PWM mode!**



1 Startup

The startup waveform is shown in Figure 1. The input voltage is set at 5.7V, with no load on the 3.3V output.

Channel C1: **5.7V Input voltage**
1V/div, 100us/div

Channel C2: **3.3V Output voltage**
1V/div, 100us/div

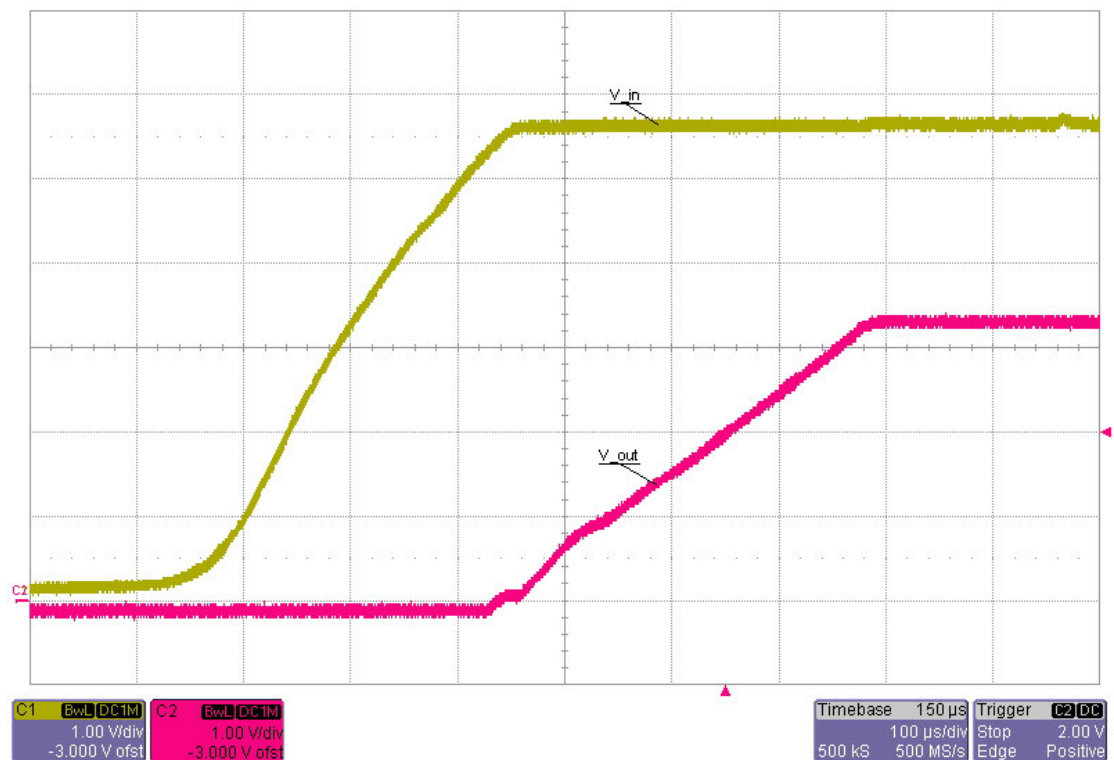


Figure 1

2 Shutdown

The shutdown waveform is shown in Figure 2. The input voltage is set at 5.7V with a 125mA load on the 3.3V output.

Channel C1: **5.7V Input voltage**
1V/div, 50us/div

Channel C2: **3.3V Output voltage**
1V/div, 50us/div

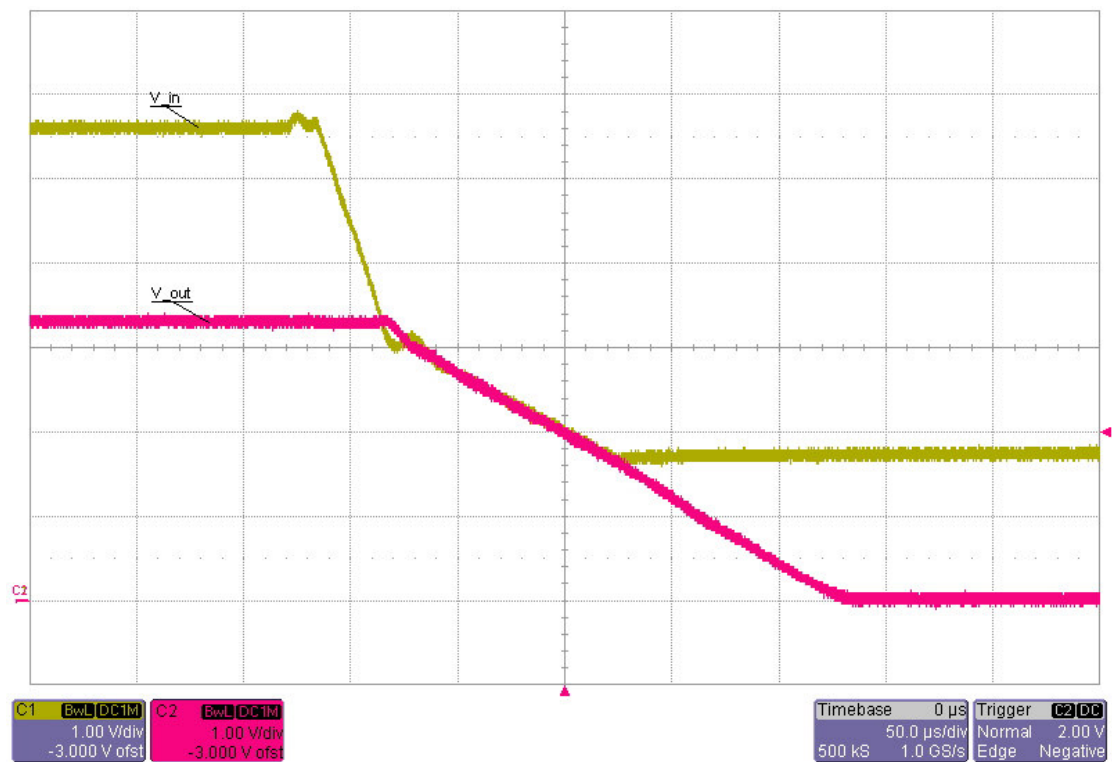


Figure 2

3 Efficiency

The efficiency and load regulation are shown in Figure 3 and Figure 4.

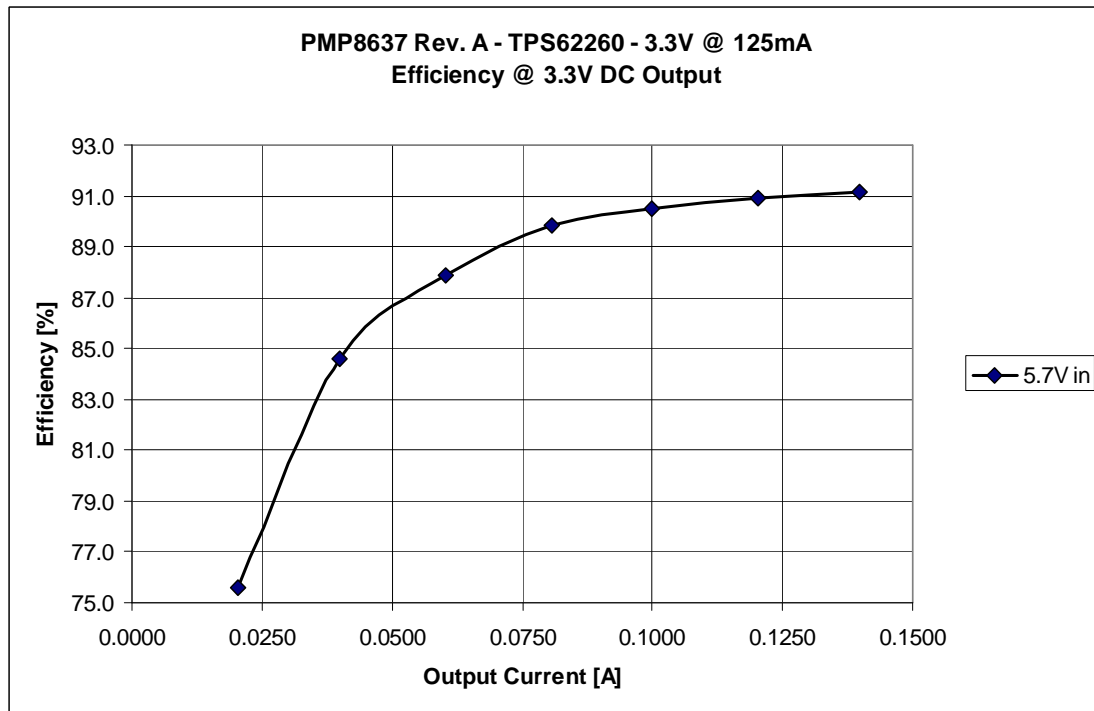


Figure 3

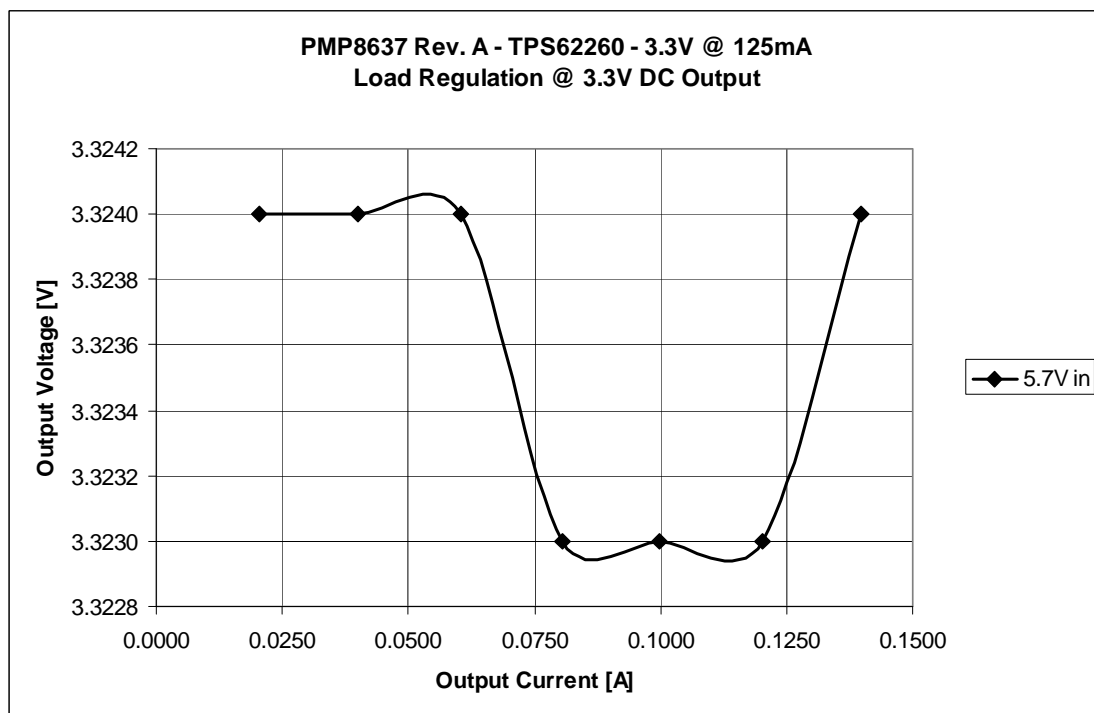


Figure 4

4 Load step

The response to a load step and a load dump for the 3.3V output at an input voltage of 5.7V is shown in Figure 5.

The minimum load step of the electronic load is higher than required for this power supply and also higher than the maximum output current.

Nevertheless it shows a very good performance which will be even better at a load step of 50% to 100%.

Channel C2: **Output voltage**, -52mV undershoot (-1.6%), 73mV overshoot (+2.2%)
50mV/div, 1ms/div, AC coupled

Channel C1: **Load current**, load step 50mA to 300mA and vice versa
100mA/div, 1ms/div

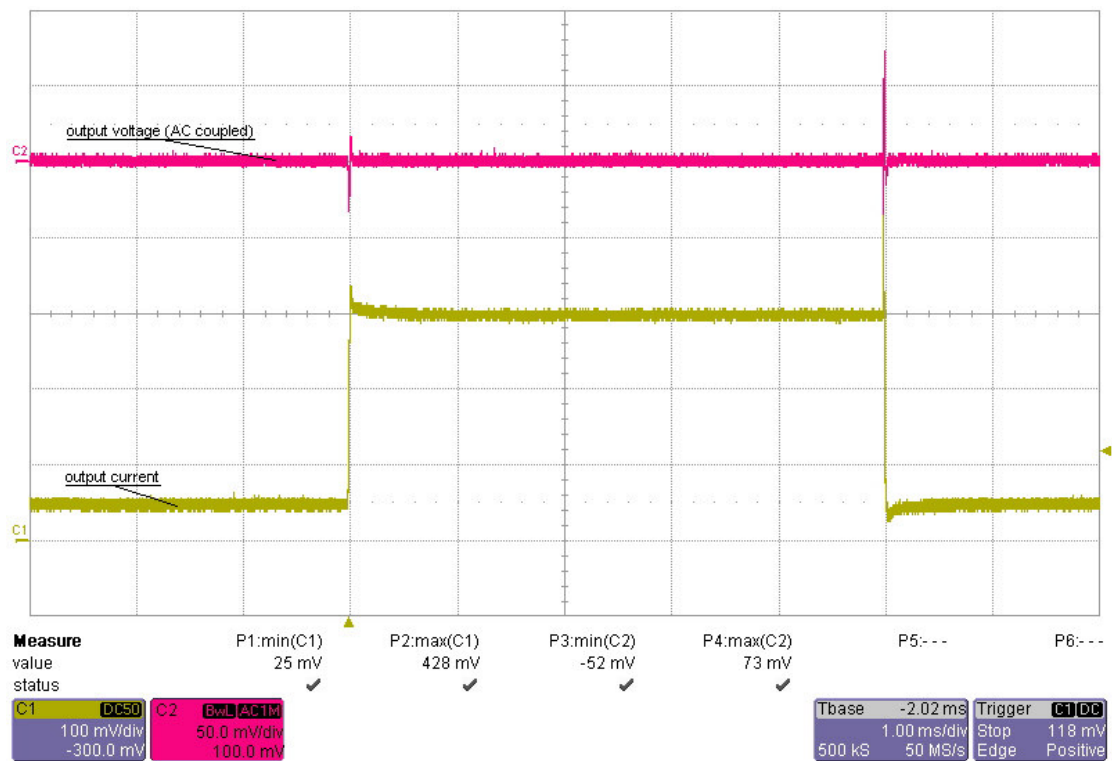


Figure 5

5 Frequency response

Figure 6 shows the loop response at 5.7V input voltage and a load of 125mA.

5.7V input

- 64 deg phase margin @ crossover frequency 82 kHz
- -25 db gain margin

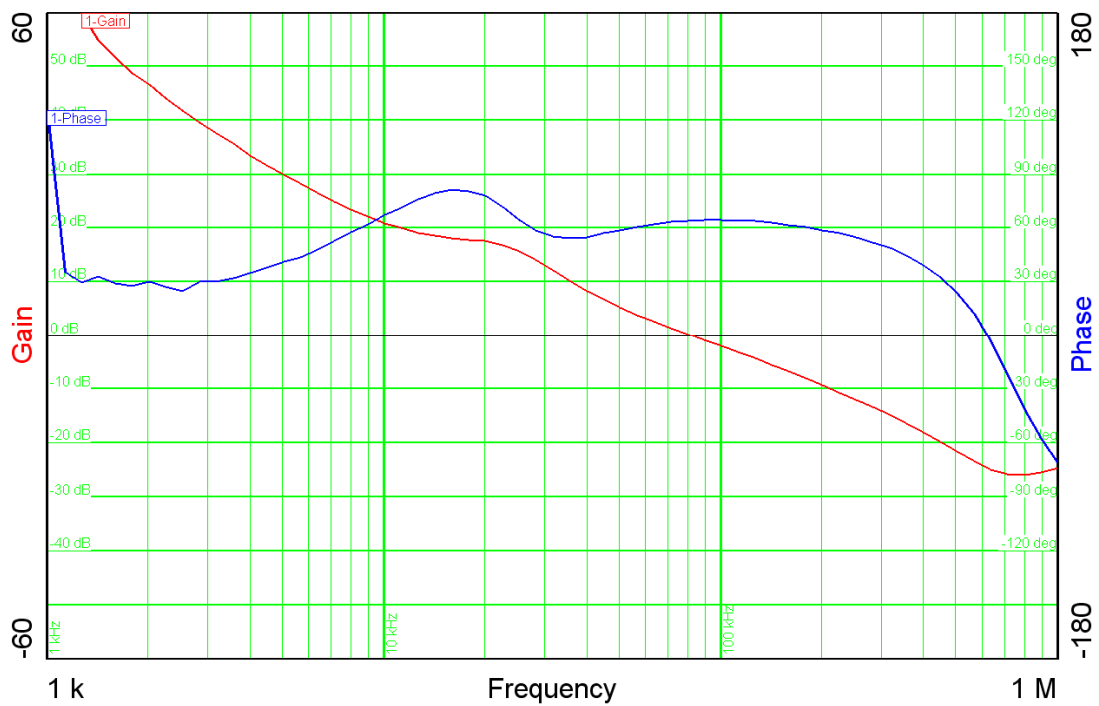


Figure 6

6 Switching Node

The drain-source voltage on the switching node is shown in Figure 7. The image was captured with 5.7V input and 125mA load.

Channel C2: **Drain-source voltage**, -840mV minimum voltage, 5.9V maximum voltage
1V/div, 200ns/div

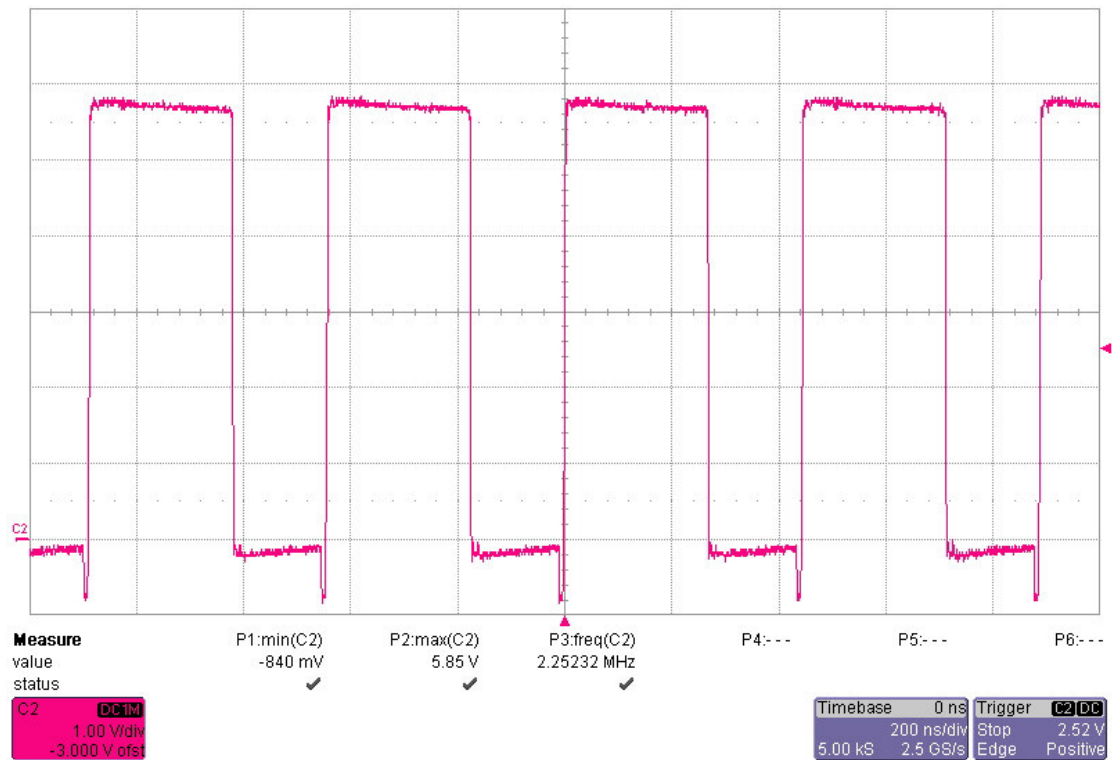


Figure 7

7 Thermal measurement

The thermal image (Figure 8) shows the circuit at an ambient temperature of 21 °C with an input voltage of 5.7V and a load of 125mA.

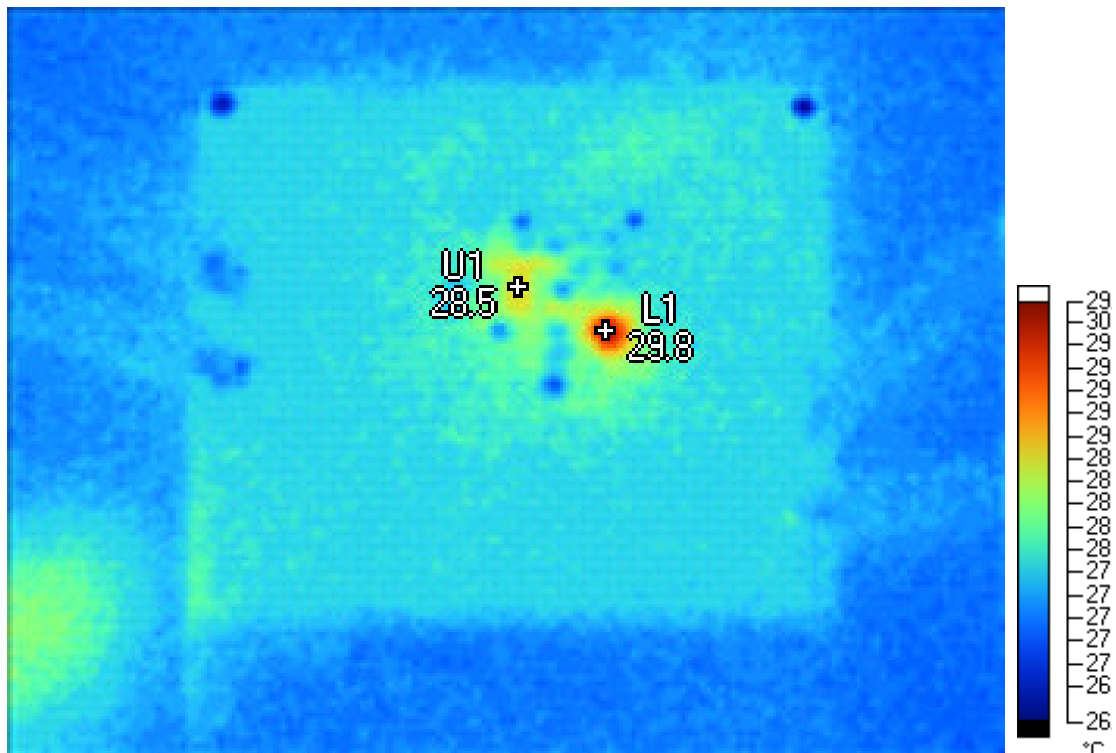


Figure 8

Markers

Label	Temperature	Emissivity	Background
L1	29.8 °C	0.95	21.0 °C
U1	28.5 °C	0.95	21.0 °C

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