

1 Startup

The startup waveform is shown in Figure 1. The input voltage is set at 12V, with no load on the output.

- Channel C1: **input voltage**
2V/div, 1ms/div
- Channel C2: **output voltage**
200mV/div, 1ms/div

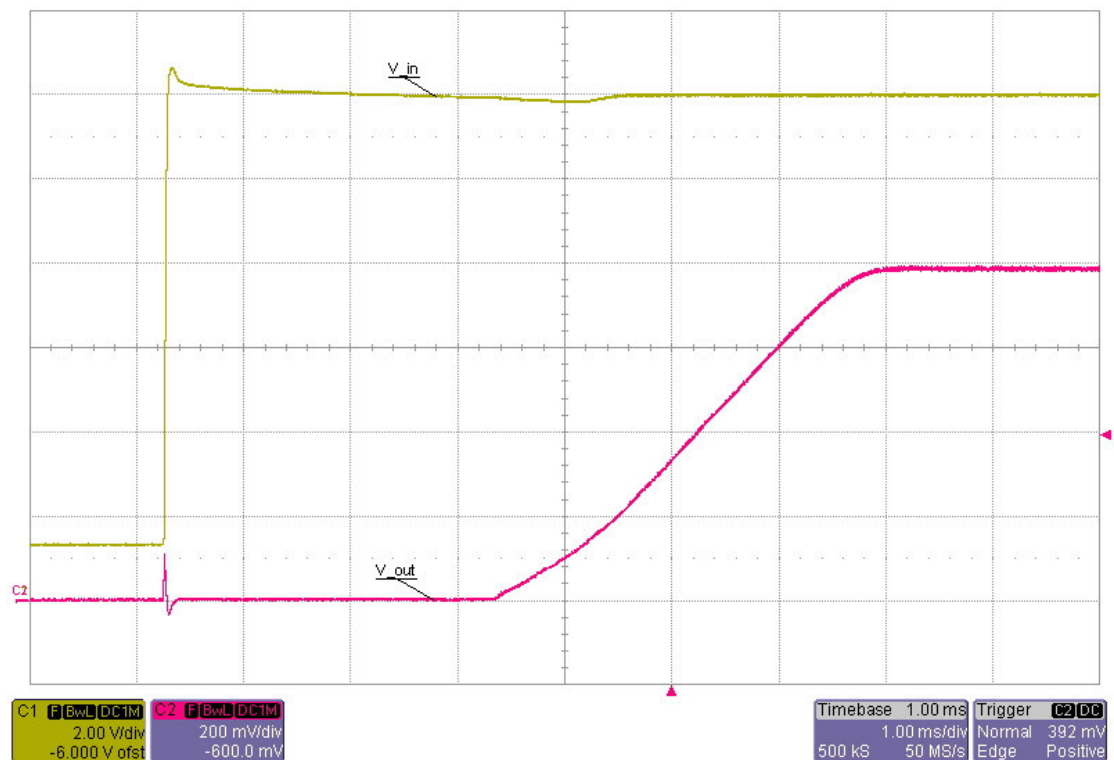


Figure 1

2 Shutdown

The shutdown waveform is shown in Figure 2. The input voltage is set at 12V with a 6.0A load on the output.

- Channel C1: **input voltage**
2V/div, 1ms/div
- Channel C2: **output voltage**
200mV/div, 1ms/div

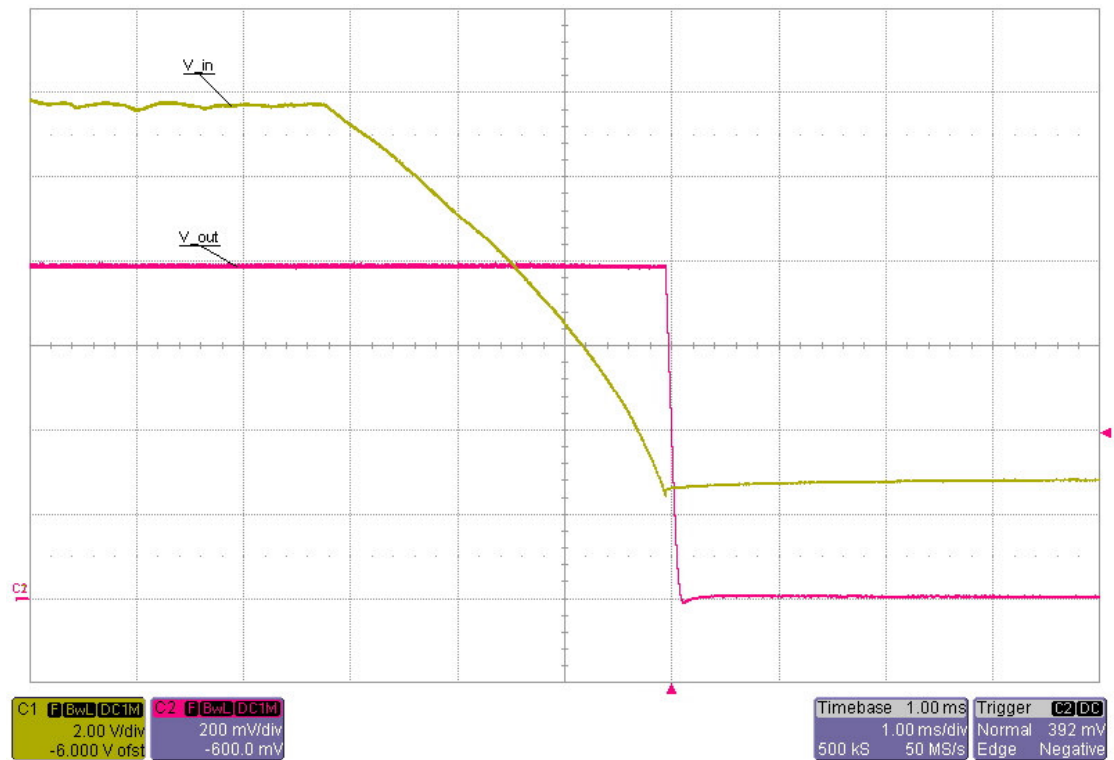


Figure 2

3 Efficiency

The efficiency is shown in Figure 3.

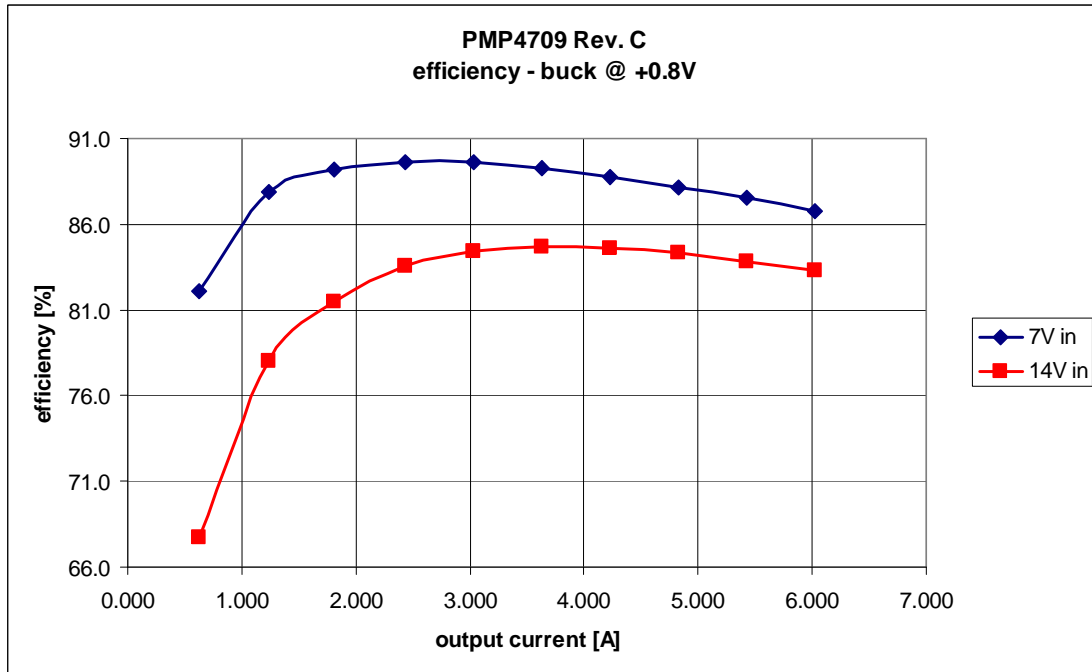


Figure 3

4 Load regulation

The load regulation of the 0.8V output is shown in Figure 4.

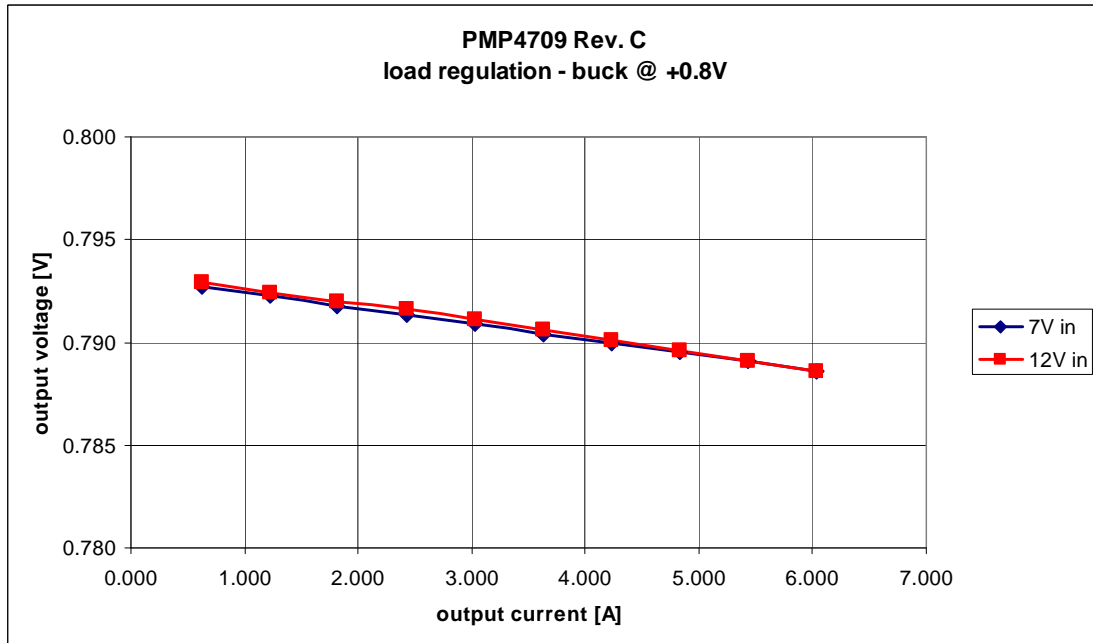


Figure 4

5 Output ripple voltage

The output ripple voltage at 6.0A load and 7.0V, 12.0V and 14.0V input voltage is shown in Figure 5.

Channel M1: **output voltage**, 10mV peak-peak
20mV/div, 5us/div, AC coupled

Channel M1: **output voltage**, 10mV peak-peak
20mV/div, 5us/div, AC coupled

Channel M3: **output voltage**, 10mV peak-peak
20mV/div, 5us/div, AC coupled

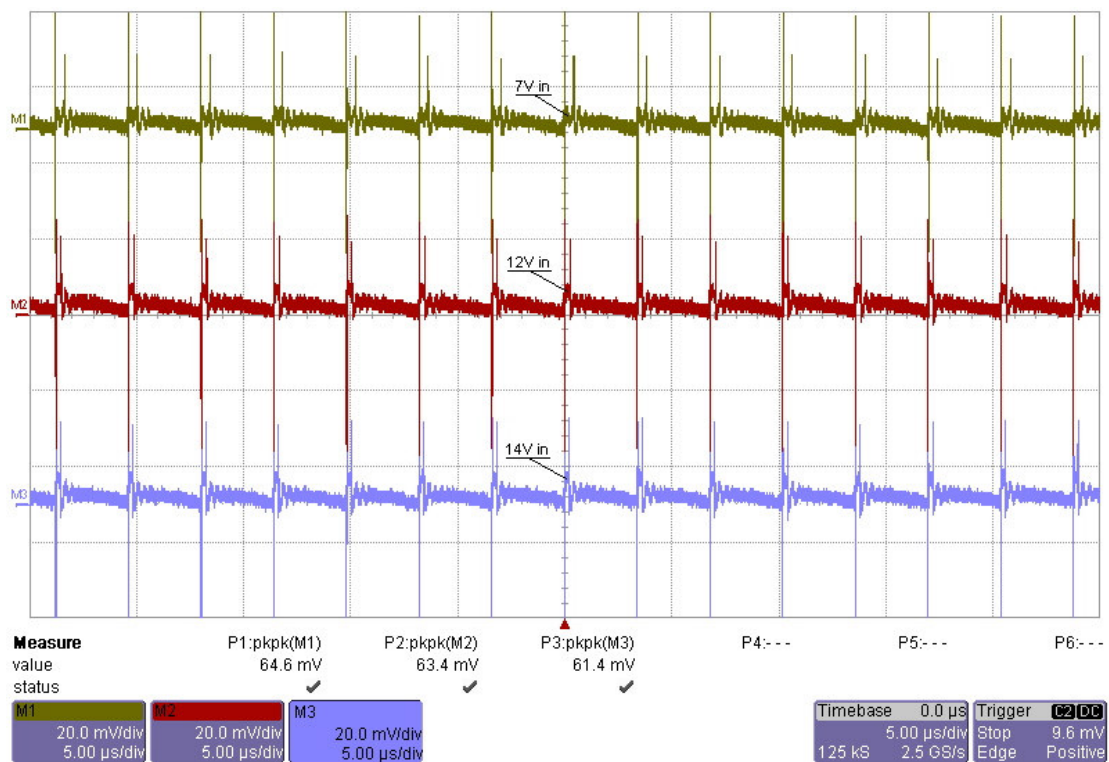


Figure 5

6 Load transients

The response to a load step and a load dump at an input voltage of 12.0V is shown in Figure 6 and Figure 7.

Channel C2: **output voltage**, -5mV undershoot, 0mV overshoot
 20mV/div, 50us/div, AC coupled

Channel C1: **load current**, load step 3.0A to 6.0A
 2A/div, 50us/div

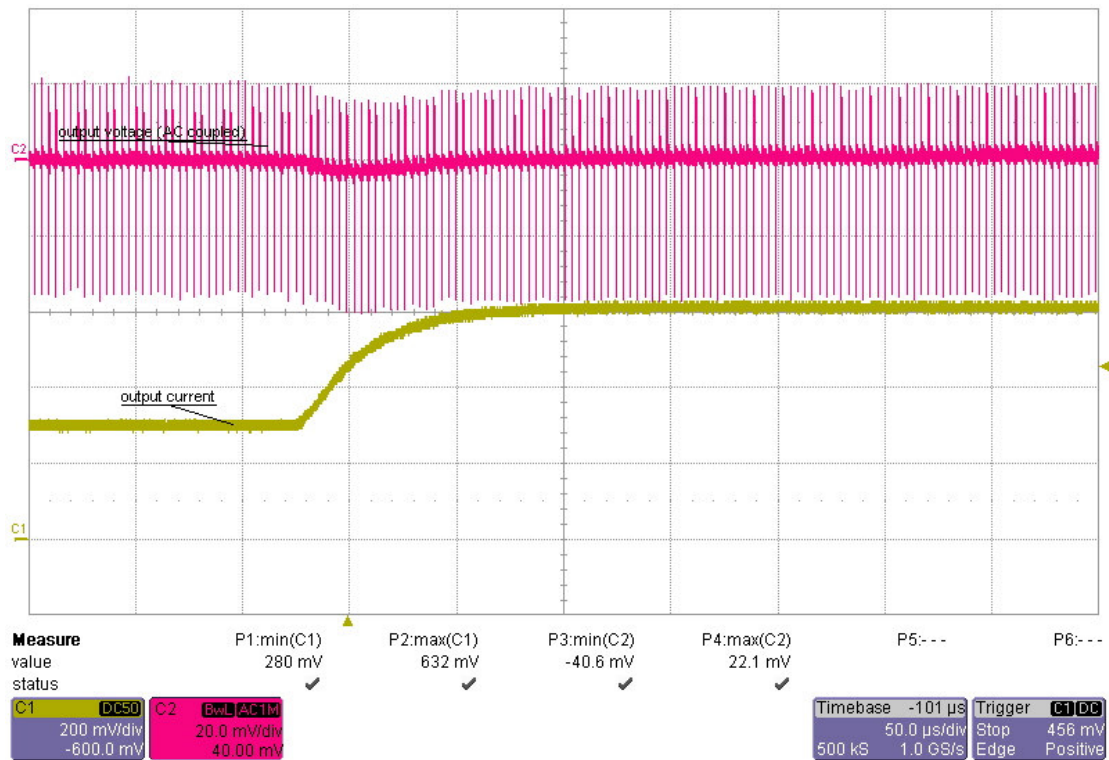


Figure 6

Channel C2: **output voltage**, 5mV overshoot, 0mV undershoot
 20mV/div, 50us/div, AC coupled

Channel C1: **load current**, load dump 6.0A to 3.0A
 2A/div, 50us/div

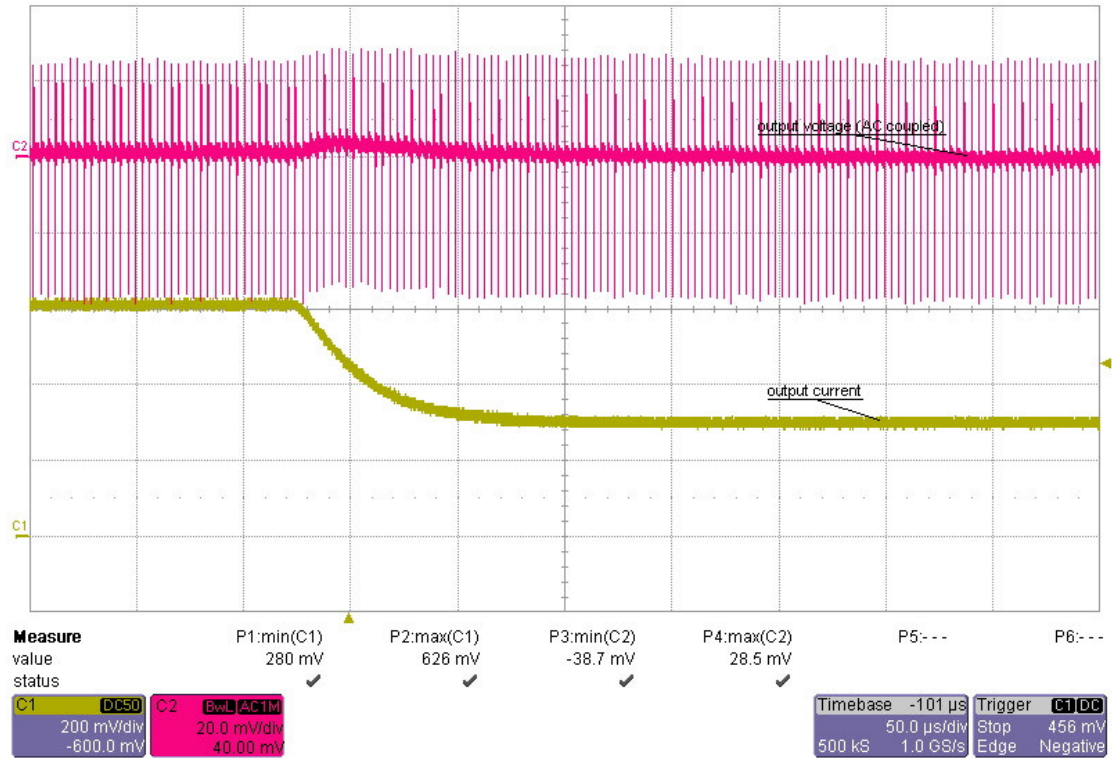


Figure 7

7 Frequency response

Figure 8 shows the loop response of the 0.8V output with 12.0V input and a 6.0A load.

65 deg phase margin @ crossover frequency 51.7 kHz

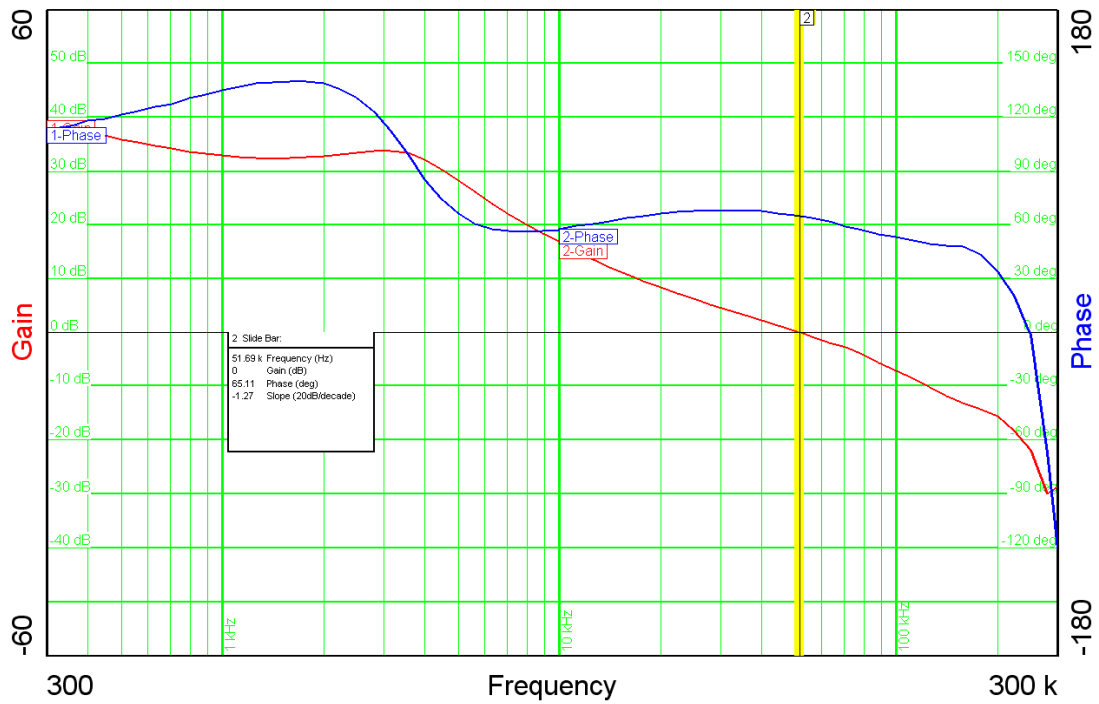


Figure 8

8 Miscellaneous waveforms

The drain-source voltage on the switching node is shown in Figure 9. The image was captured with a 14V input and a 6.0A load.

Channel C2: **drain-source voltage**, -1.3V minimum voltage, 18.0V maximum voltage
5V/div, 1us/div

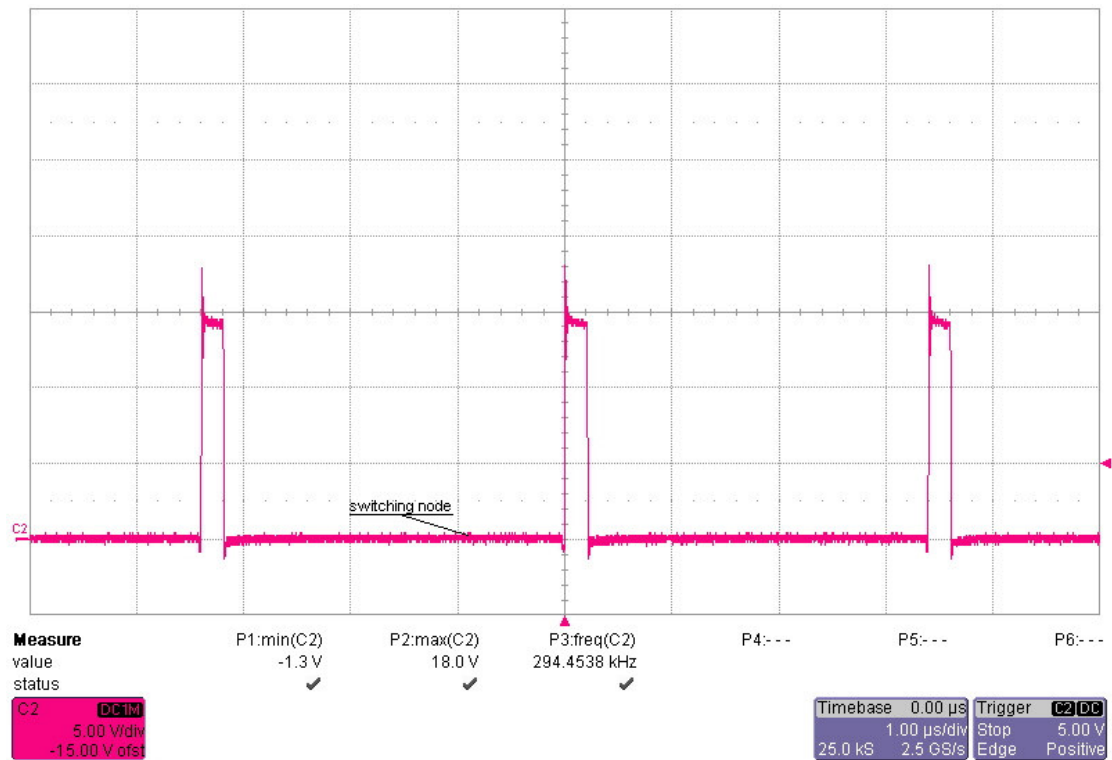


Figure 9

9 Thermal measurement

The thermal image (Figure 10) shows the circuit at an ambient temperature of 21 °C with an input voltage of 14V and a load of 6.0A (worst case).

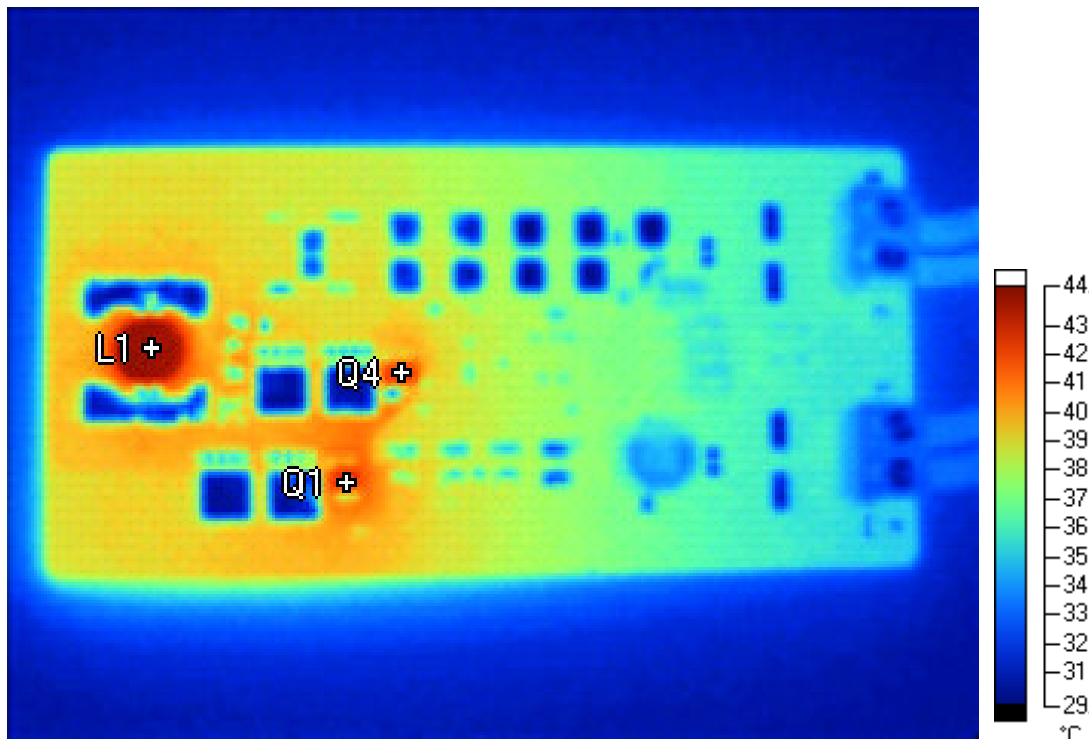


Figure 10

device	max. temperature	measured temp. @ 21 °C
Q1 – CSD16409Q3	150 °C	42.9 °C
Q4 – CSD16323Q3	150 °C	42.2 °C
L1 – MSS1048-222NLC	85 °C	44.1 °C

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