

1 Startup

The startup waveform is shown in Figure 1. The input voltage is set at 12V, with no load on the 7.8V output.

Channel C1: **Input voltage**
5V/div, 5ms/div

Channel C2: **Output voltage**
2V/div, 5ms/div

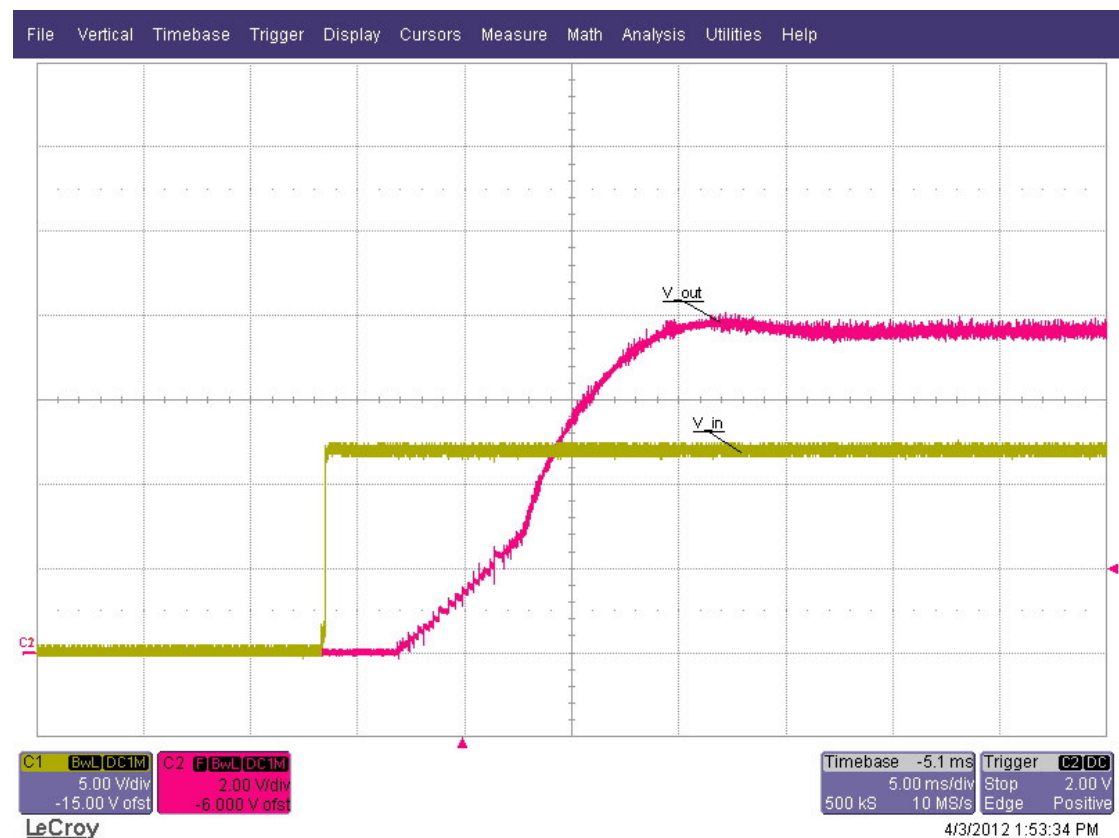


Figure 1

2 Shutdown

The shutdown waveform is shown in Figure 2. The input voltage is set at 12V with a 0.8A load on the 7.8V output.

Channel C1: **Input voltage**
5V/div, 1ms/div

Channel C2: **Output voltage**
2V/div, 1ms/div



Figure 2

3 Efficiency

The efficiency is shown in Figure 3.

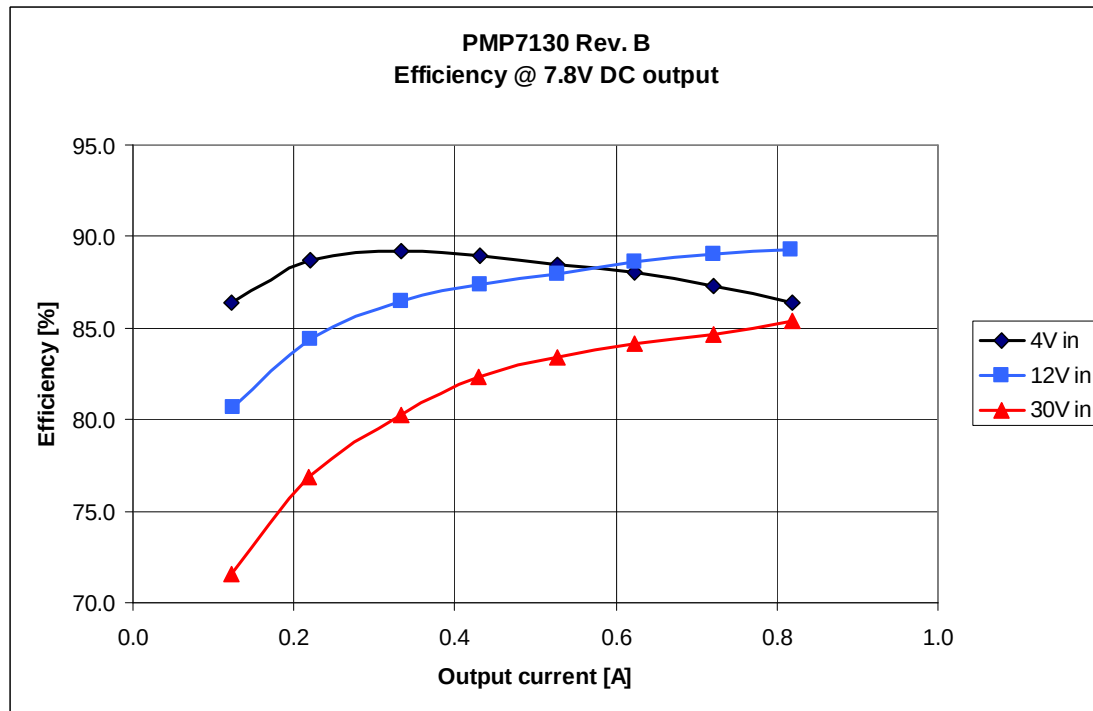


Figure 3

4 Load regulation

The load regulation of the 7.8V output is shown in Figure 4.

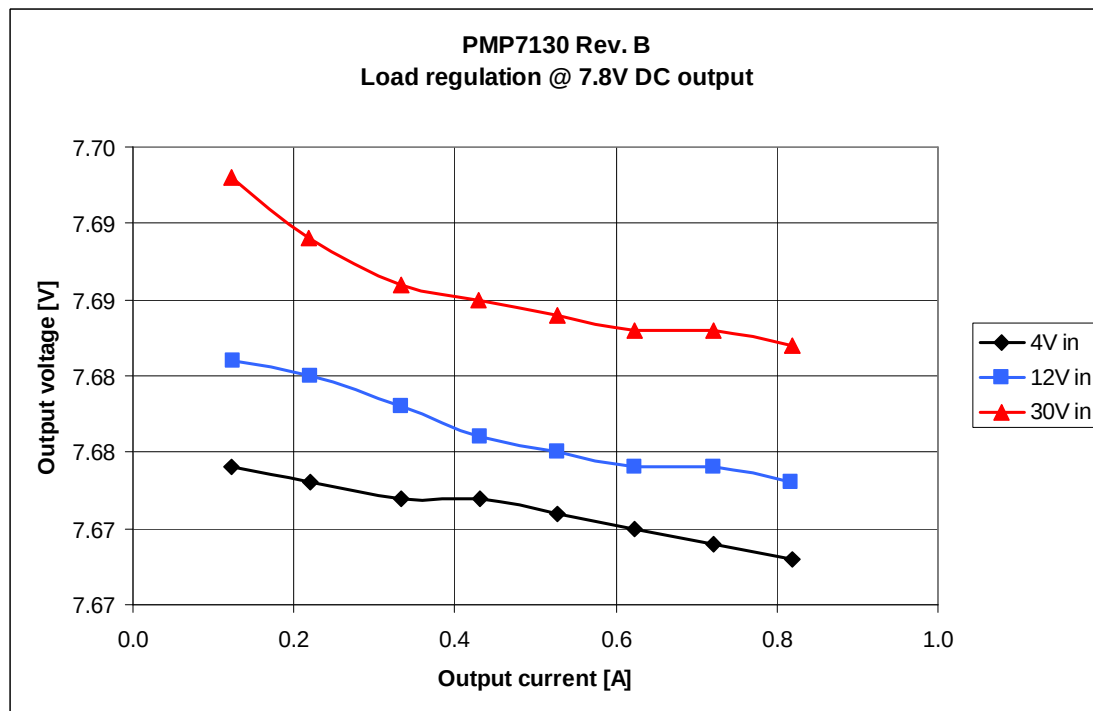


Figure 4

5 Output ripple voltage

The output ripple voltage at 0.8A load and 4V, 12V and 30V input voltage is shown in Figure 5.

Channel M1: **Output voltage**, 4V input, 86mV peak-peak
50mV/div, 5 μ s/div, AC coupled

Channel M2: **Output voltage**, 12V input, 80mV peak-peak
50mV/div, 5 μ s/div, AC coupled

Channel M3: **Output voltage**, 32V input, 70mV peak-peak
50mV/div, 5 μ s/div, AC coupled

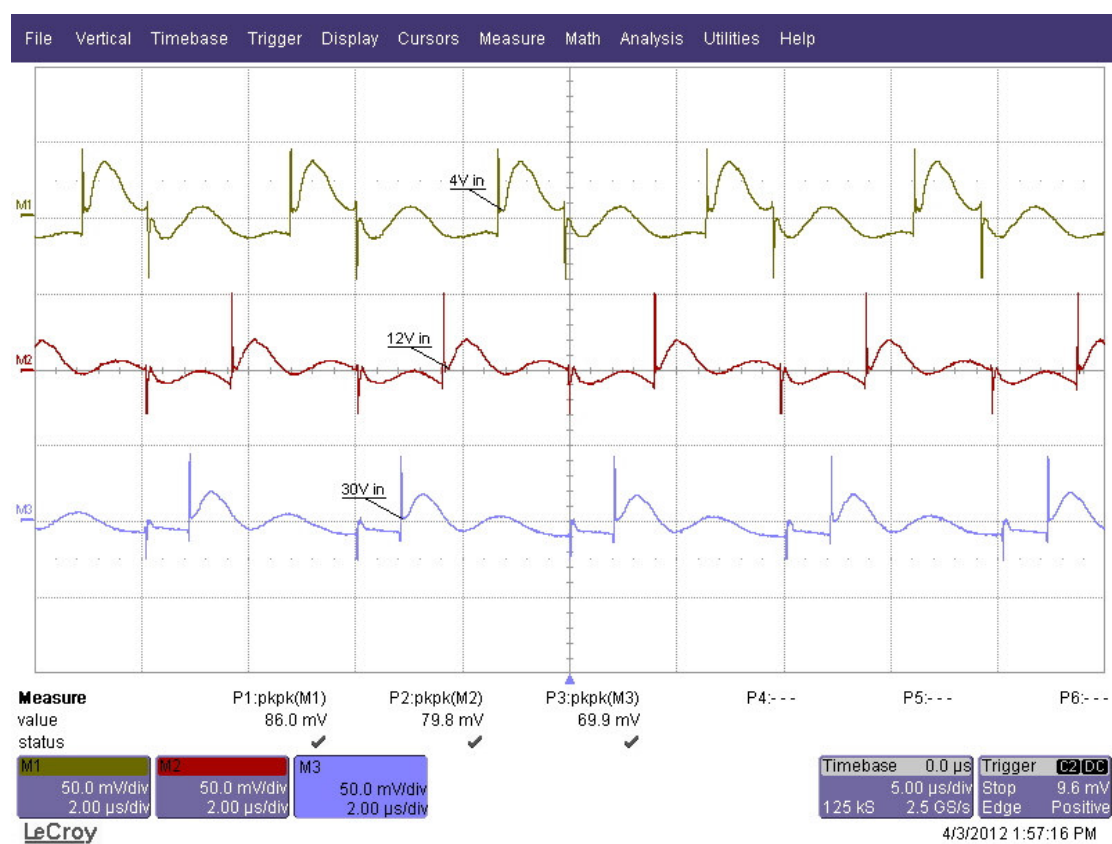


Figure 5

6 Load transients

The response to a load step and a load dump at an input voltage of 12V is shown in Figure 6.

Channel C2: **Output voltage**, -192mV undershoot, +191mV overshoot
200mV/div, 1ms/div, AC coupled

Channel C1: **Load current**, load step 400mA to 800mA
500mA/div, 1ms/div

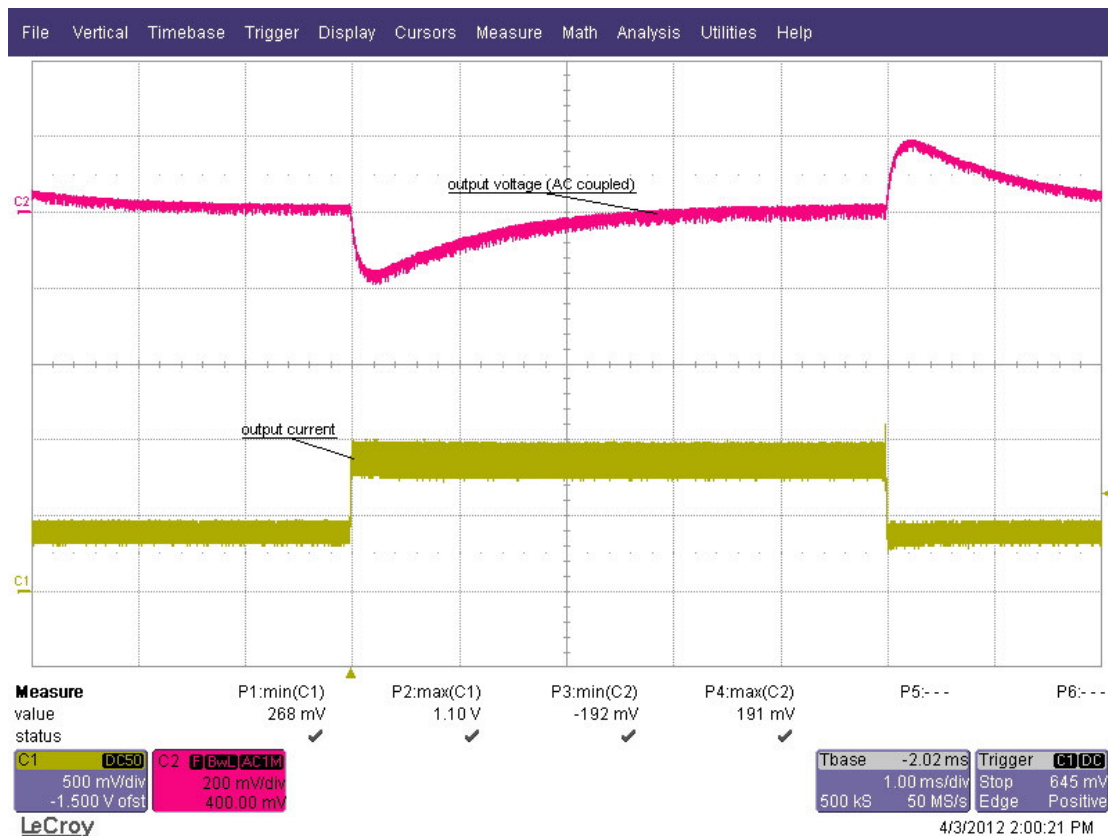


Figure 6

7 Frequency response

Figure 7 shows the loop response of the 7.8V output with 4V, 12V and 30V input and a 0.8A load.

4V input	83 deg phase margin @ crossover frequency 1.15 kHz -23 dB gain margin
12V input	88 deg phase margin @ crossover frequency 1.89 kHz -33 dB gain margin
30V input	90 deg phase margin @ crossover frequency 2.01 kHz -36 dB gain margin

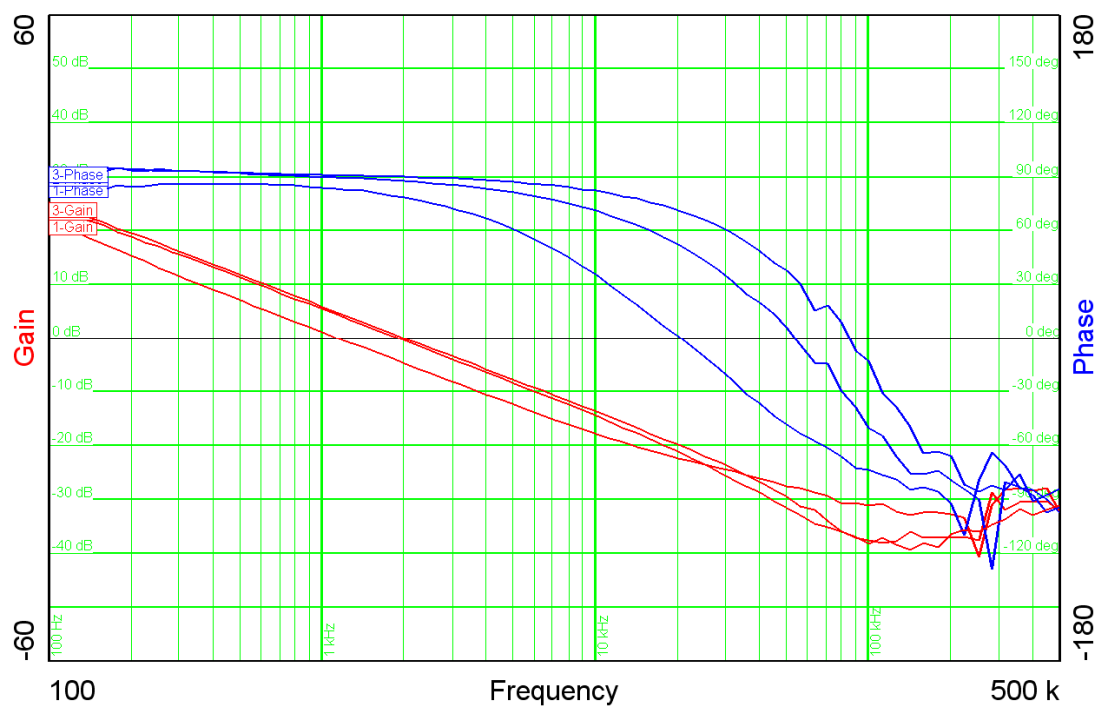


Figure 7

8 Miscellaneous waveforms

The drain-source voltage on the switching node is shown in Figure 8. The image was captured with 30V input and a 0.8A load.

Channel C2: **Drain-source voltage**, -2.2V minimum voltage, 41.0V maximum voltage
10V/div, 2 μ s/div

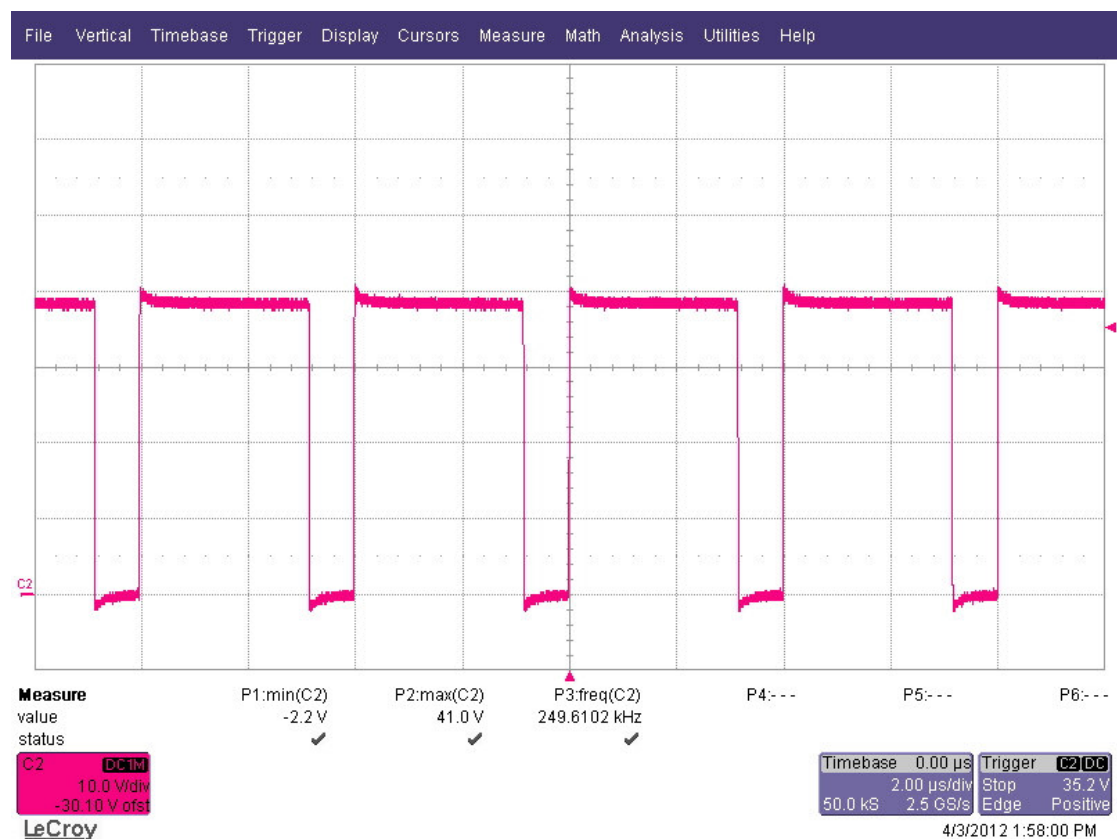


Figure 8

9 Thermal measurement

The thermal image (Figure 9) shows the circuit at an ambient temperature of 21 °C with an input voltage of 12.0V and a load of 0.8A.

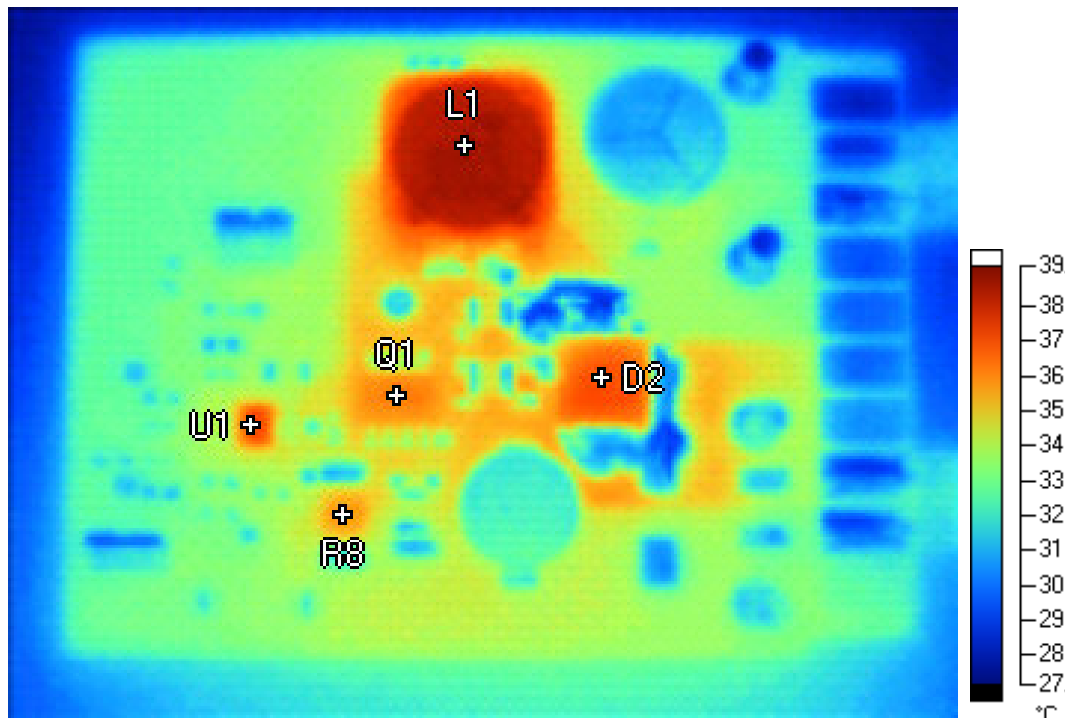


Figure 9

Markers

Label	Temperature	Emissivity	Background
L1	38.8 °C	0.95	21.0 °C
D2	37.2 °C	0.95	21.0 °C
Q1	36.2 °C	0.95	21.0 °C
R8	36.0 °C	0.95	21.0 °C
U1	37.1 °C	0.95	21.0 °C

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