

1 Startup

The startup waveform with input voltage=5V is shown in Figure 1 to Figure 2.

The Load was set to full load.

- Channel C1: **input voltage**
- Channel C2: **output voltage 1.2V@4.9A**
- Channel C3: **output voltage 1.8V@2.9A**
- Channel C4: **output voltage 1.0V@2.0A**

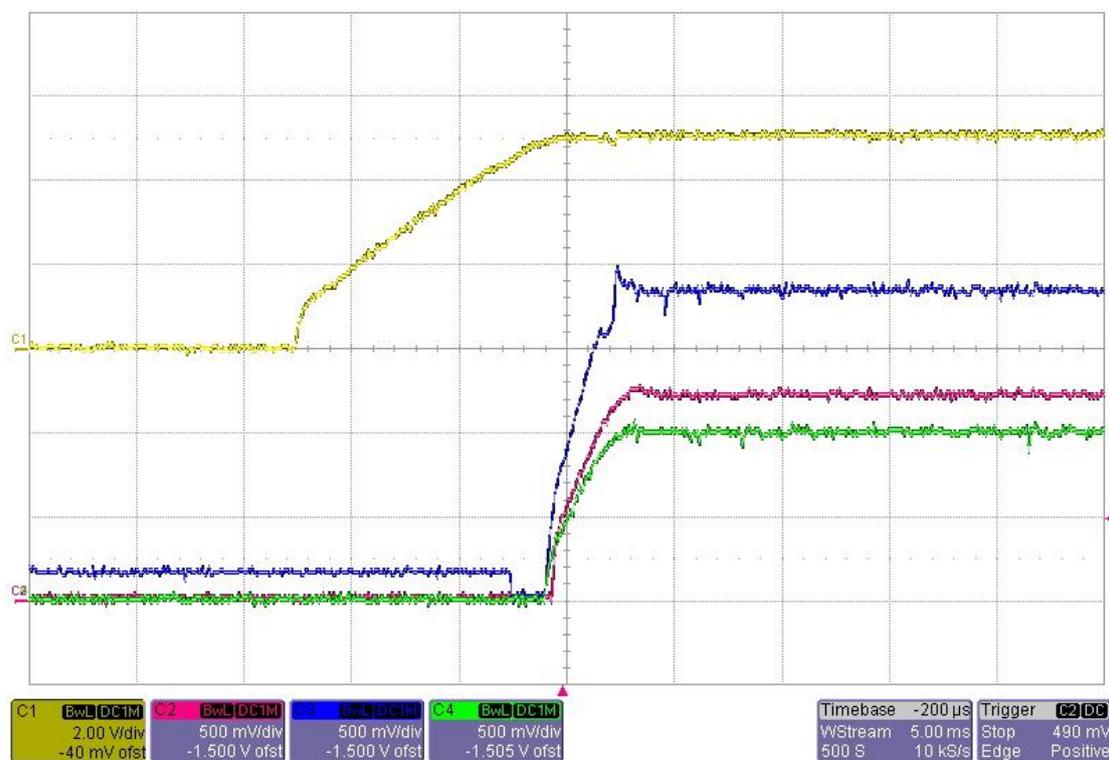


Figure 1

Startup with no load at the outputs.

- Channel C1: **input voltage**
- Channel C2: **output voltage 1.2V@0A**
- Channel C3: **output voltage 1.8V@0A**
- Channel C4: **output voltage 1.0V@0A**

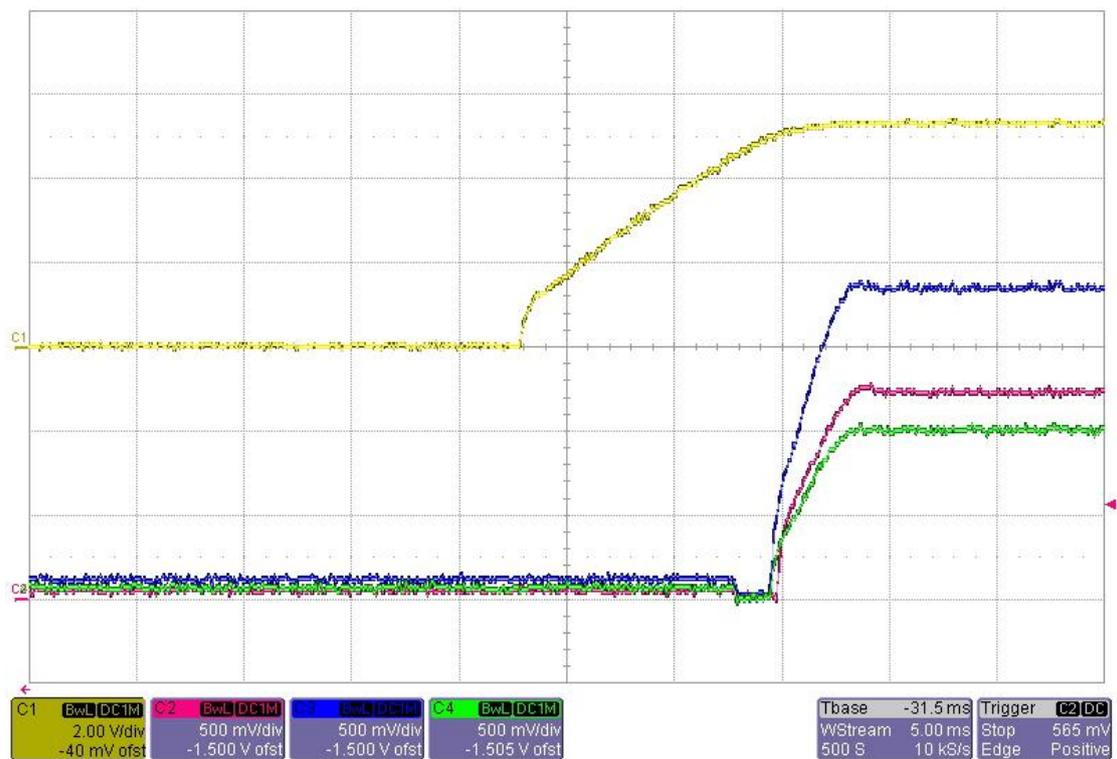


Figure 2

2 Shutdown

The shutdown waveform is shown in Figure 3.

The input voltage is set at 5V with full load at the outputs

- Channel C1: **input voltage**
- Channel C2: **output voltage 1.2V@4.9A**
- Channel C3: **output voltage 1.8V@2.9A**
- Channel C4: **output voltage 1.0V@2.0A**

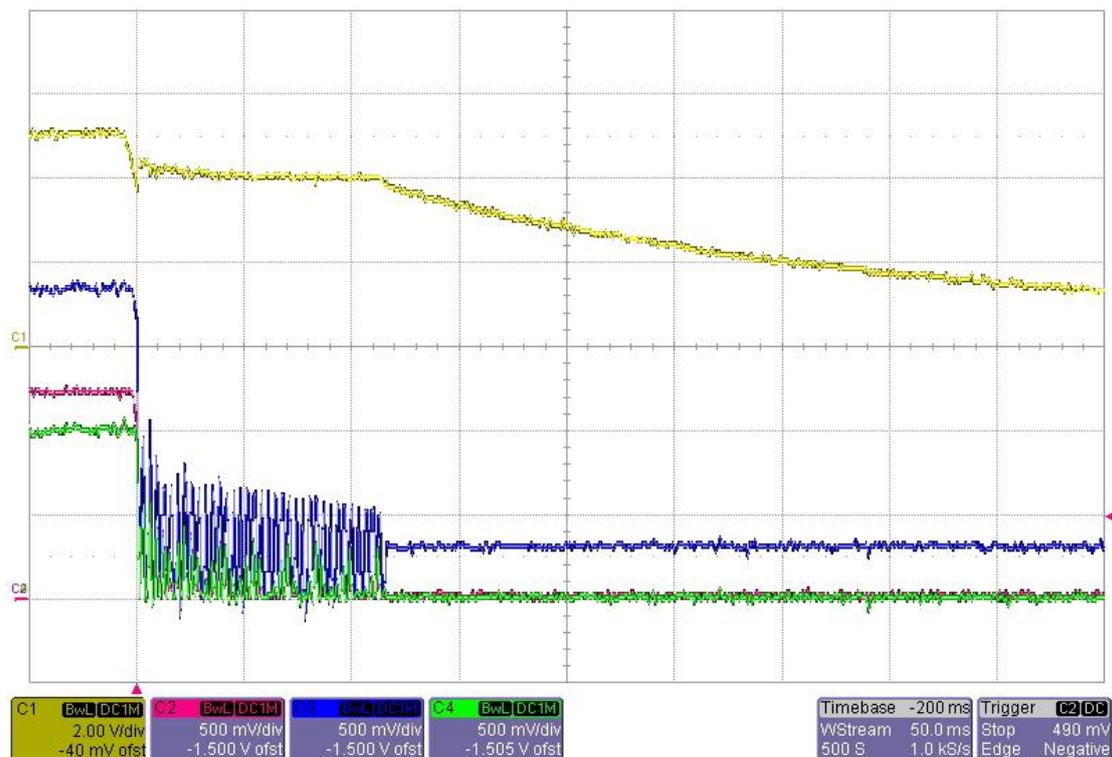


Figure 3

3 Efficiency

The efficiency with different input voltages is shown in Figure 4.

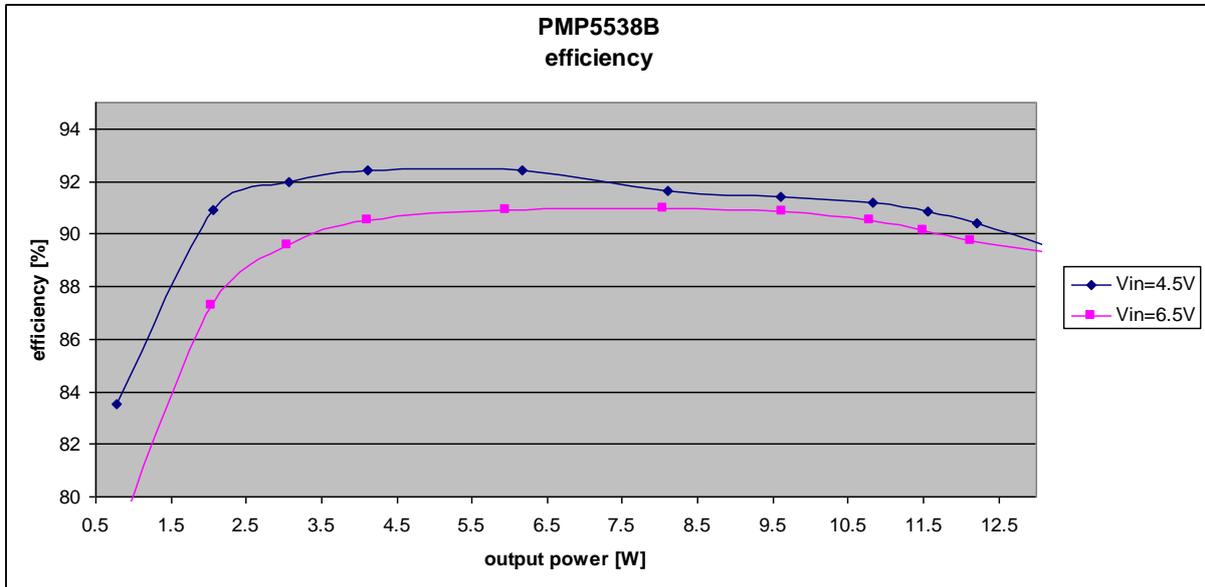


Figure 4

4 Load regulation

The load regulation with different input voltages is shown in Figure 5.

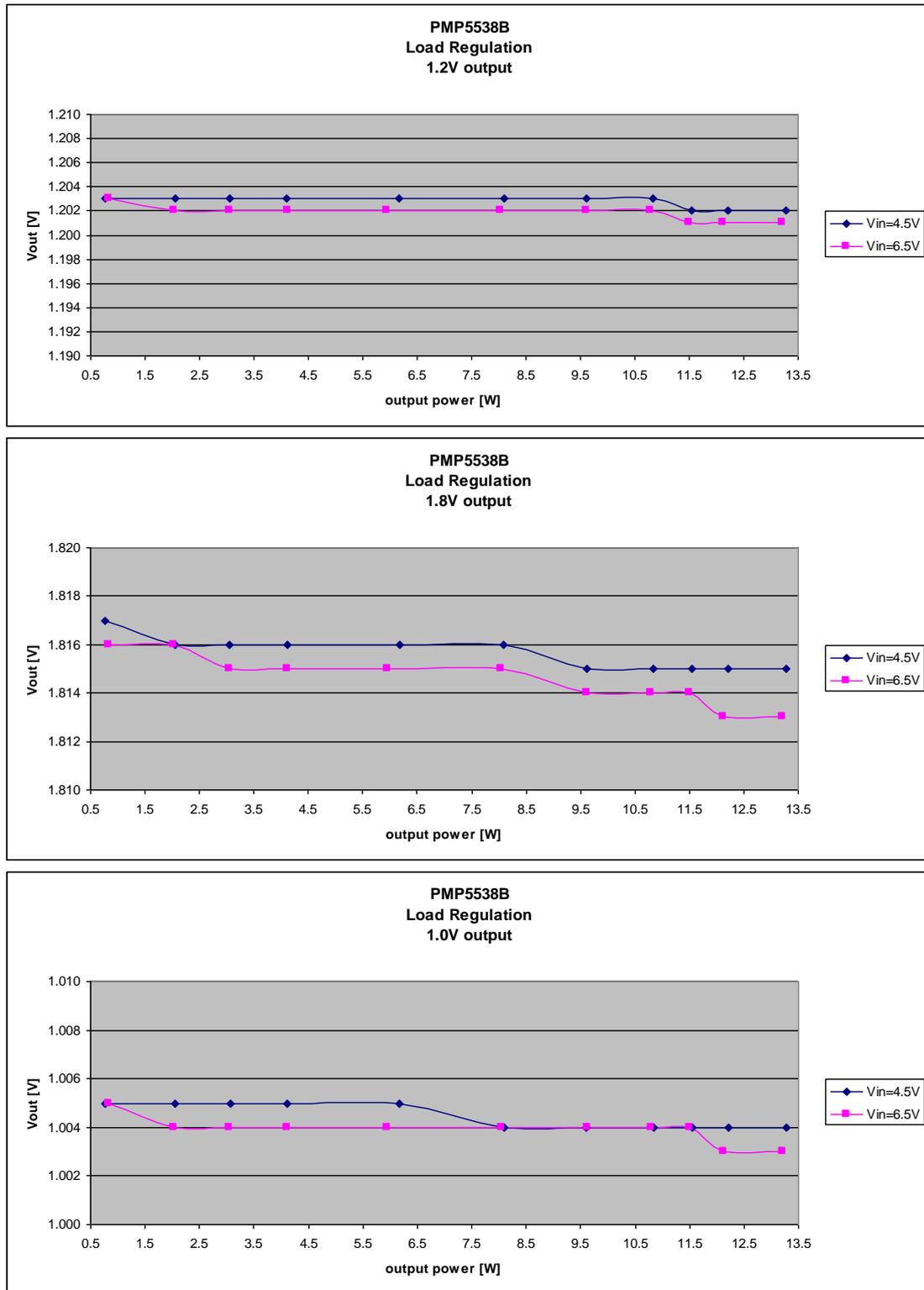


Figure 5

5 Output ripple voltage

The output ripple voltage at full load and 5V at the input shown is shown in Figure 6 to Figure 8.

Channel 4: output 1.2V

Input voltage = 5V

Load current = 4.9A

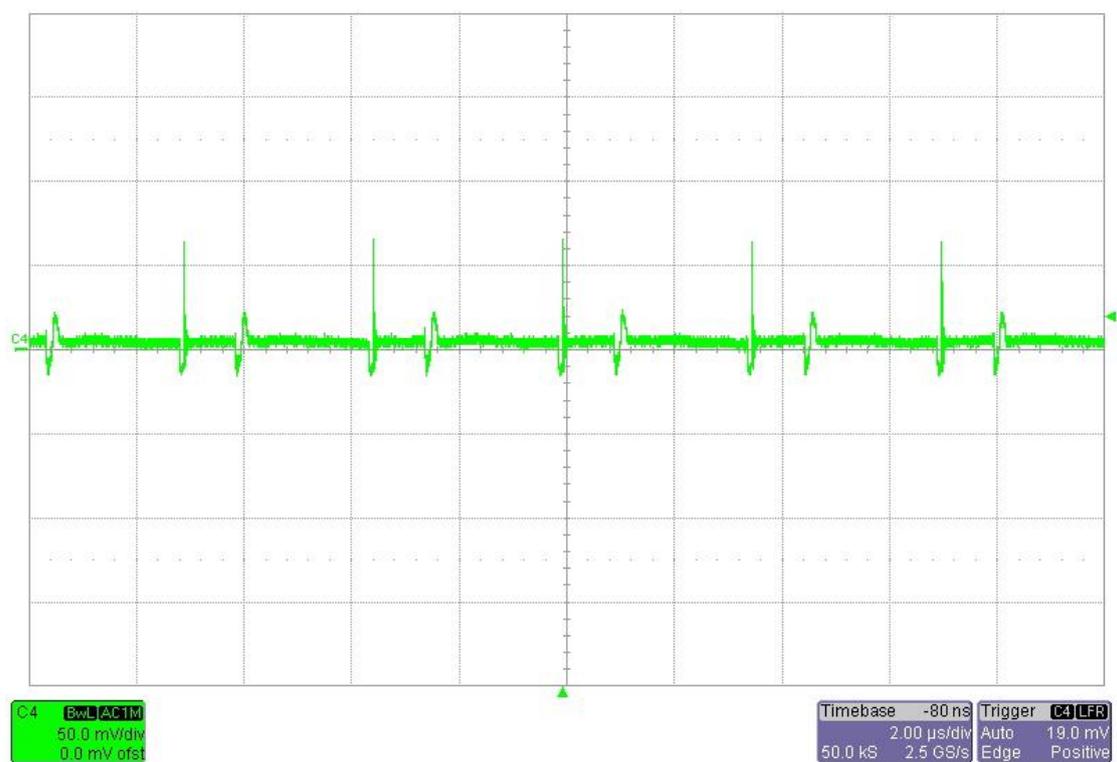


Figure 6

Channel 4: output 1.8V

Input voltage = 5V

Load current = 2.9A

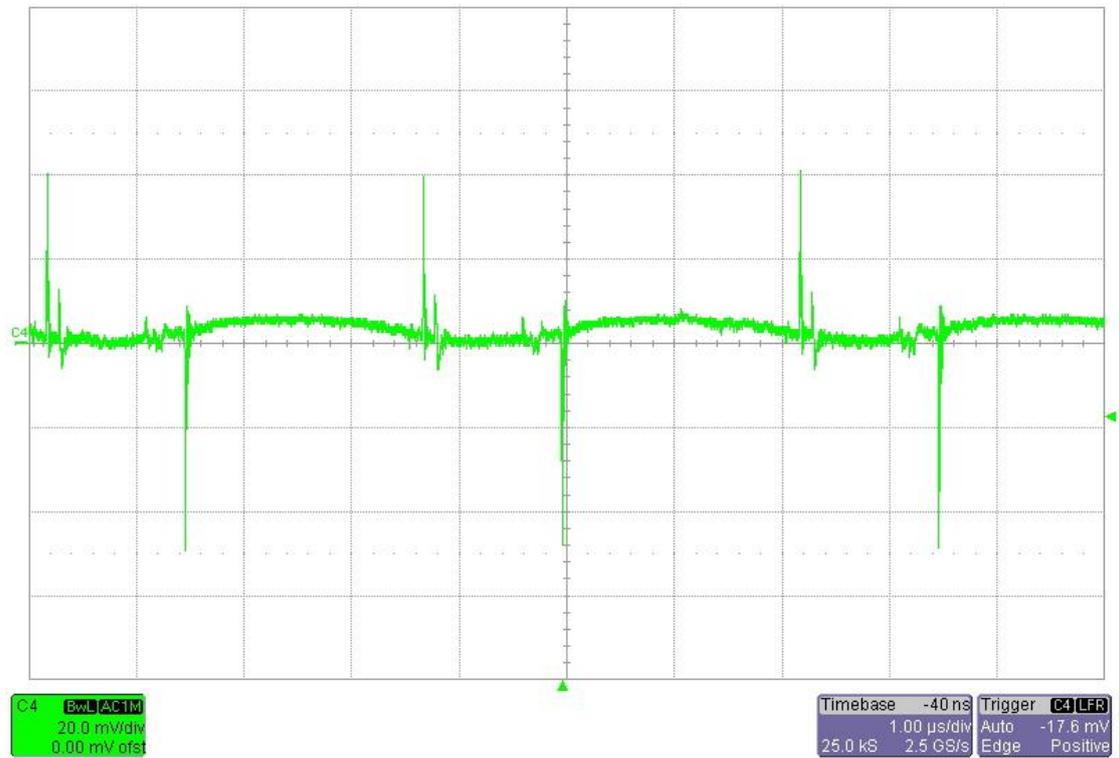


Figure 7

Channel 4: output 1.0V

Input voltage = 5V

Load current = 2.0A

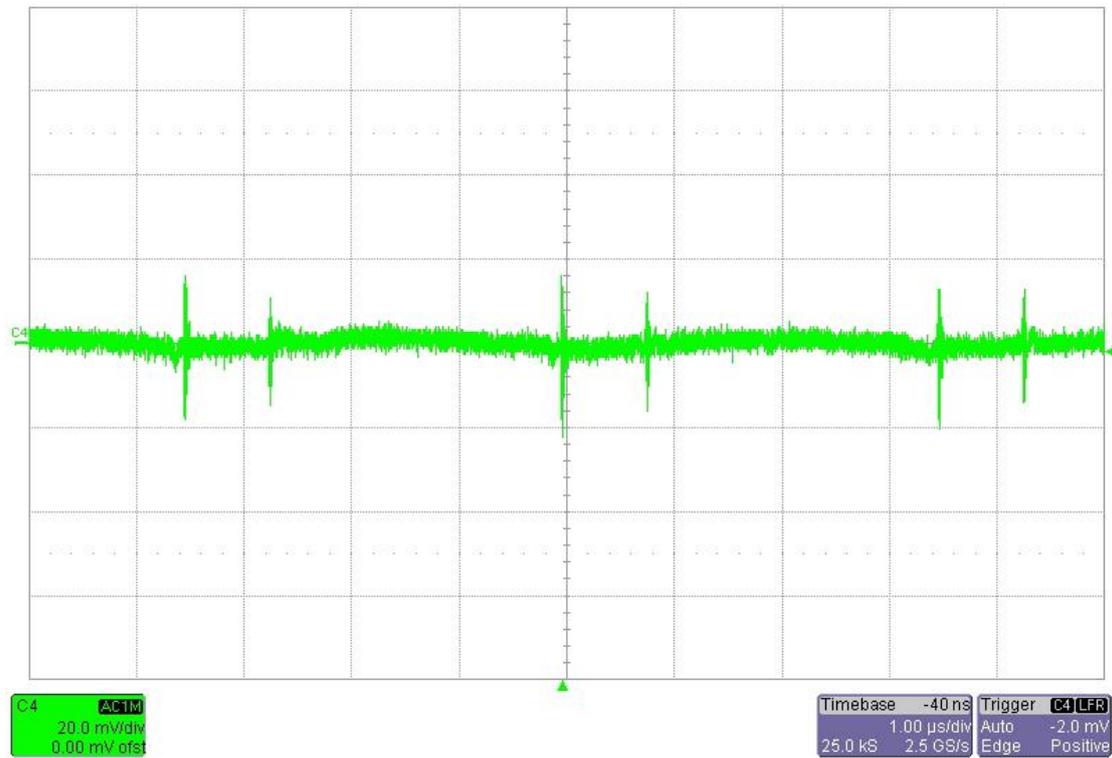


Figure 8

6 Load transients

The response to a load step and a load dump at an input voltage of 5V is shown in Figure 9 to Figure 11.

Channel C3: **load current**, load step 2.45A to 4.9A

Channel C4: **output 1.2V**, AC coupled

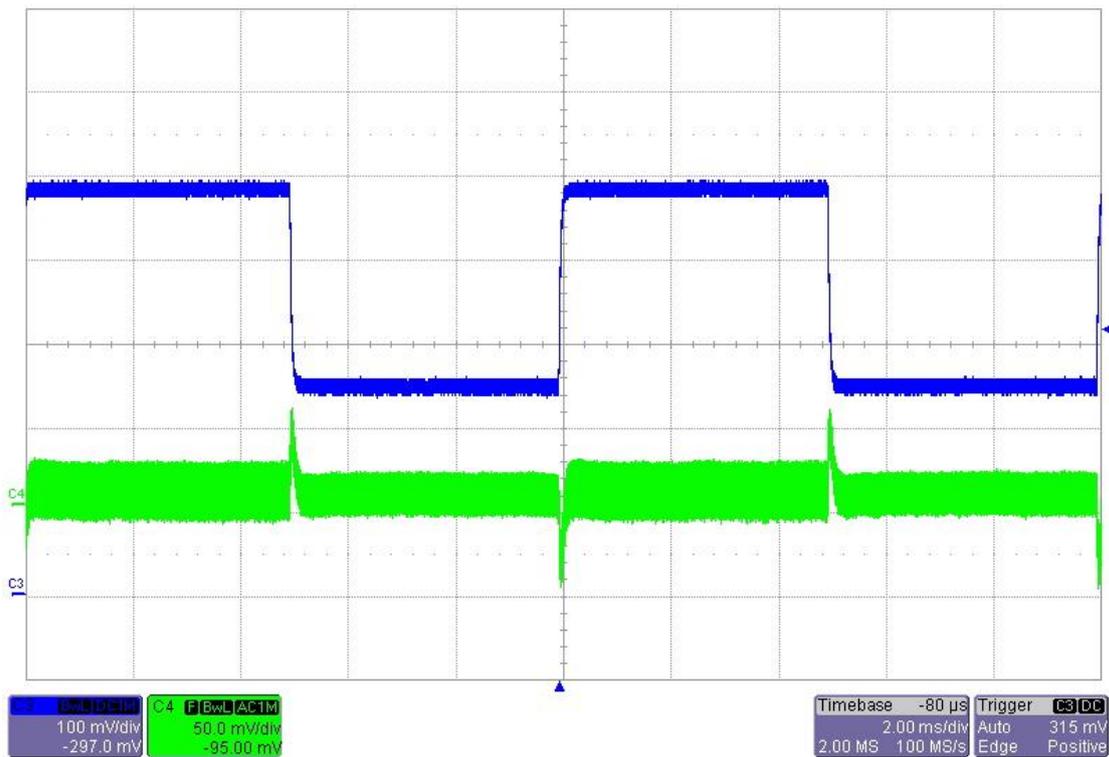


Figure 9

Channel C3: **load current**, load step 1.45A to 2.9A
Channel C4: **output 1.8V**, AC coupled

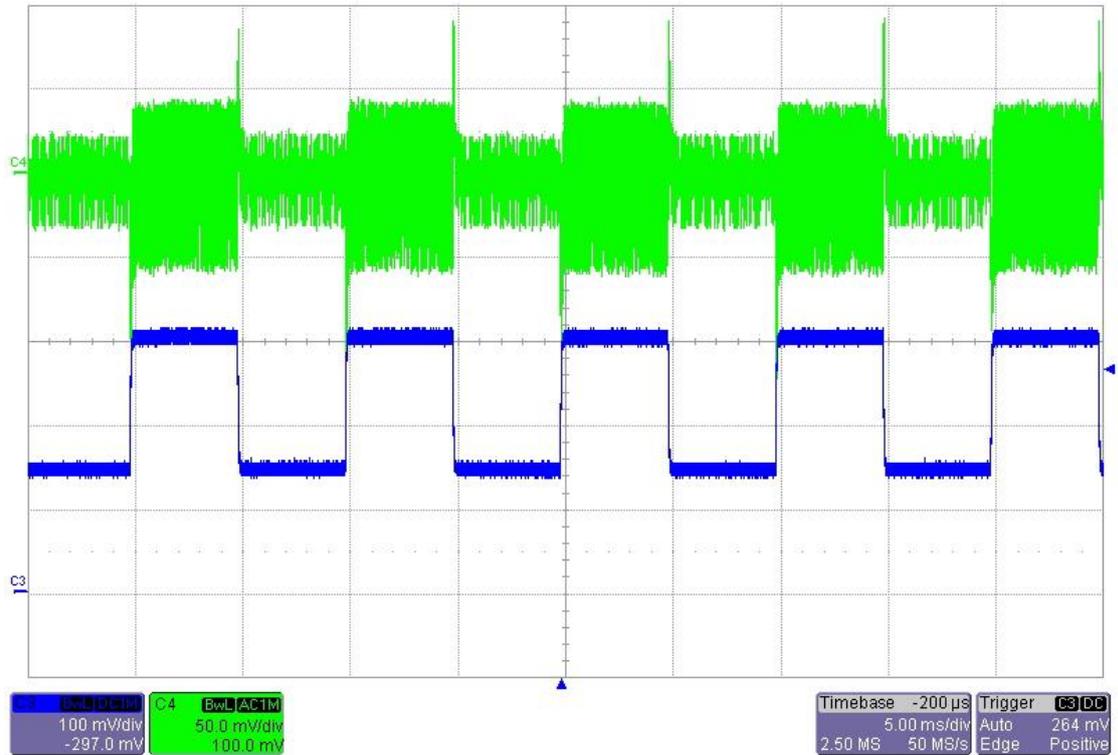


Figure 10

Channel C3: **load current**, load step 1.0A to 2.0A
Channel C4: **output 1.0V**, AC coupled

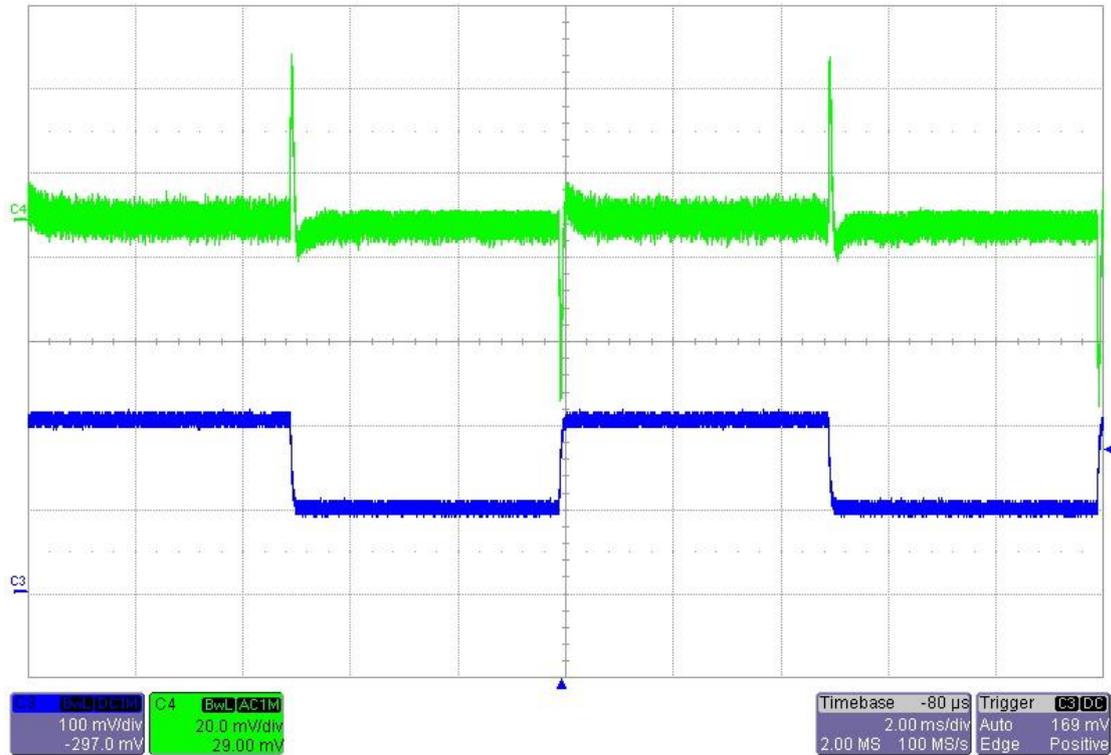


Figure 11

7 Frequency response

Figure 12 to Figure 14 show the loop response with 4.5V and 6.5V at the input and full load at the output.

Output 1.2V@4.9A:

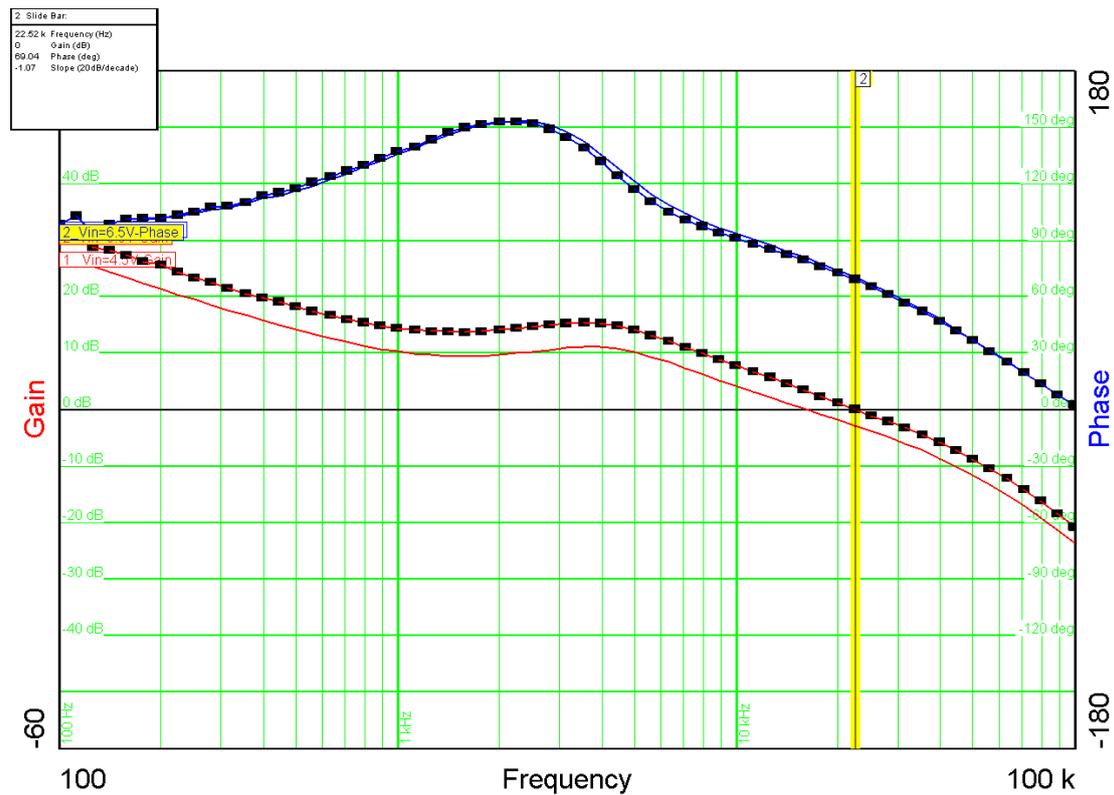


Figure 12

69.0° phase margin @ crossover frequency 22.5kHz (Vin=6.5V)

Output 1.8V@2.9A:

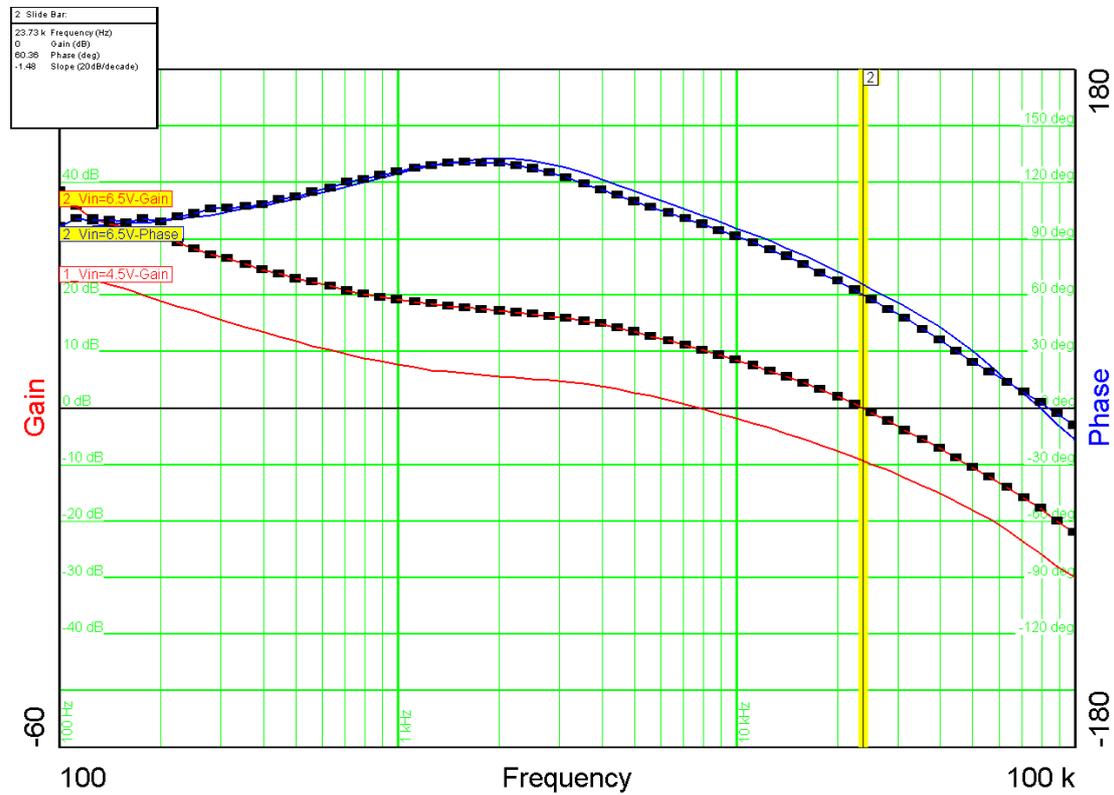


Figure 13

60.3° phase margin @ crossover frequency 23.7kHz (Vin=6.5V)

Output 1.0V@2.0A:

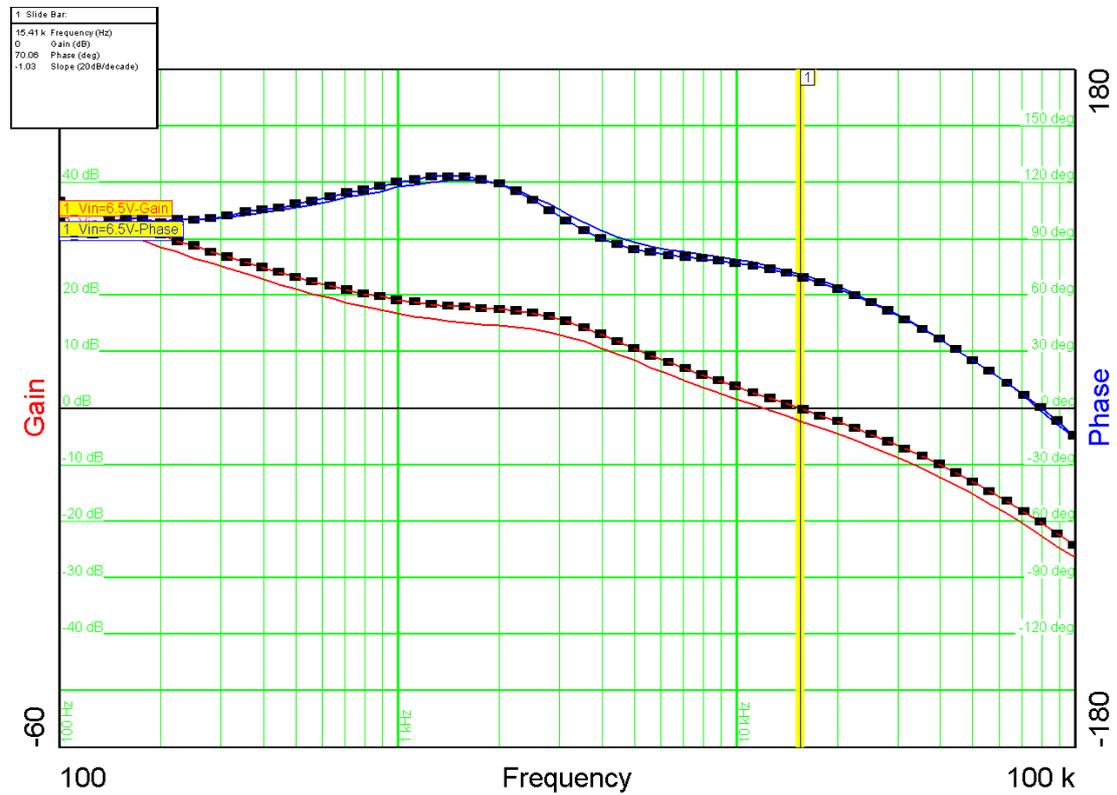


Figure 14

70.0° phase margin @ crossover frequency 15.4kHz (Vin=6.5V)

8 Miscellaneous waveforms

The drain-source voltages on the switch node are shown in Figure 15 to Figure 17. The input voltage was set to 5V.

Channel C4: switchnode 1.2V output

Load current = 4.9A

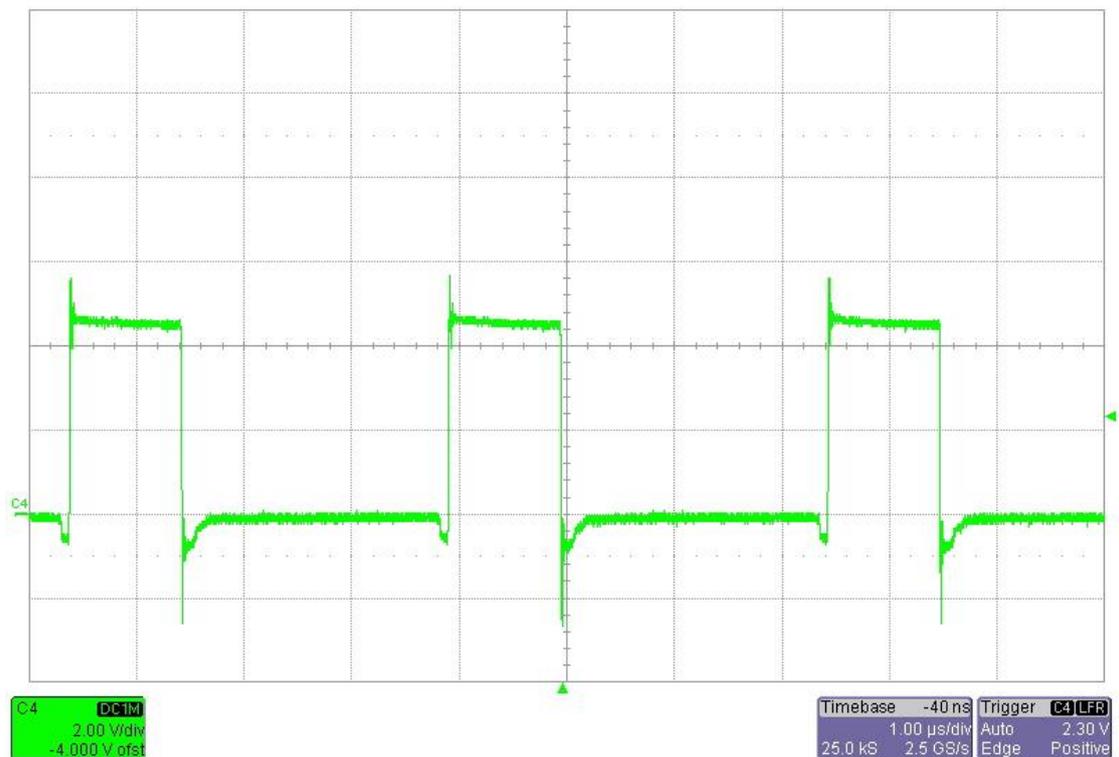


Figure 15

Channel C4: switchnode 1.8V output

Load current = 2.9A

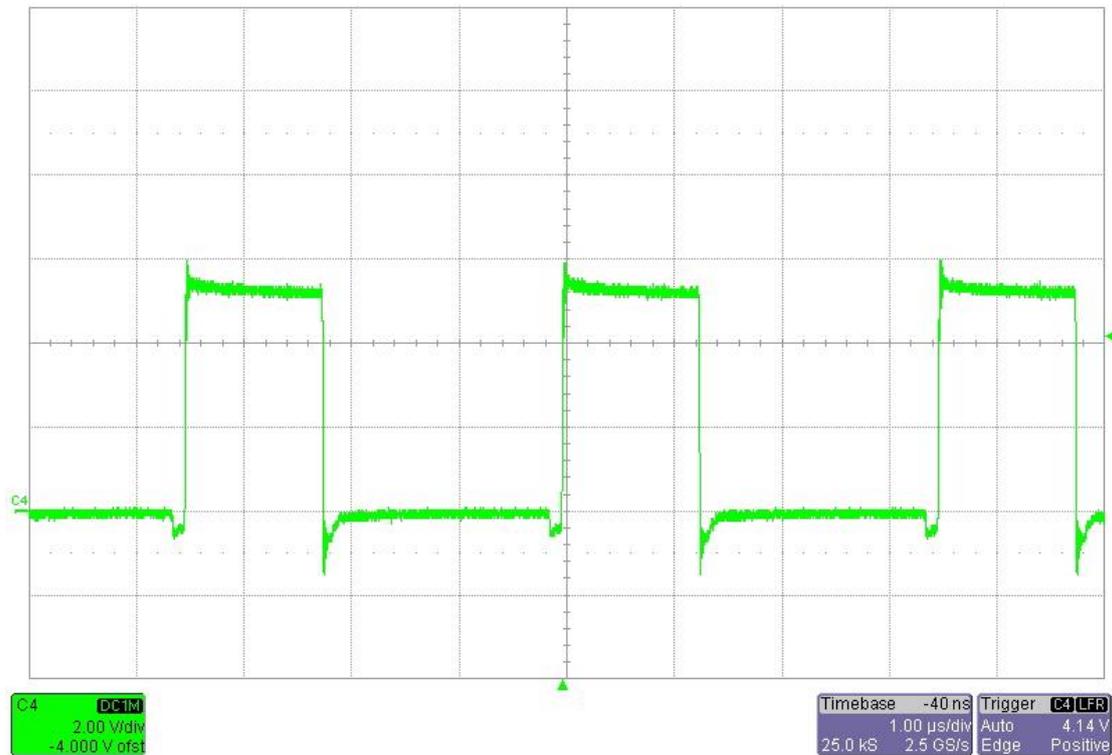


Figure 16

Channel C4: switchnode 1.0V output

Load current = 2.0A

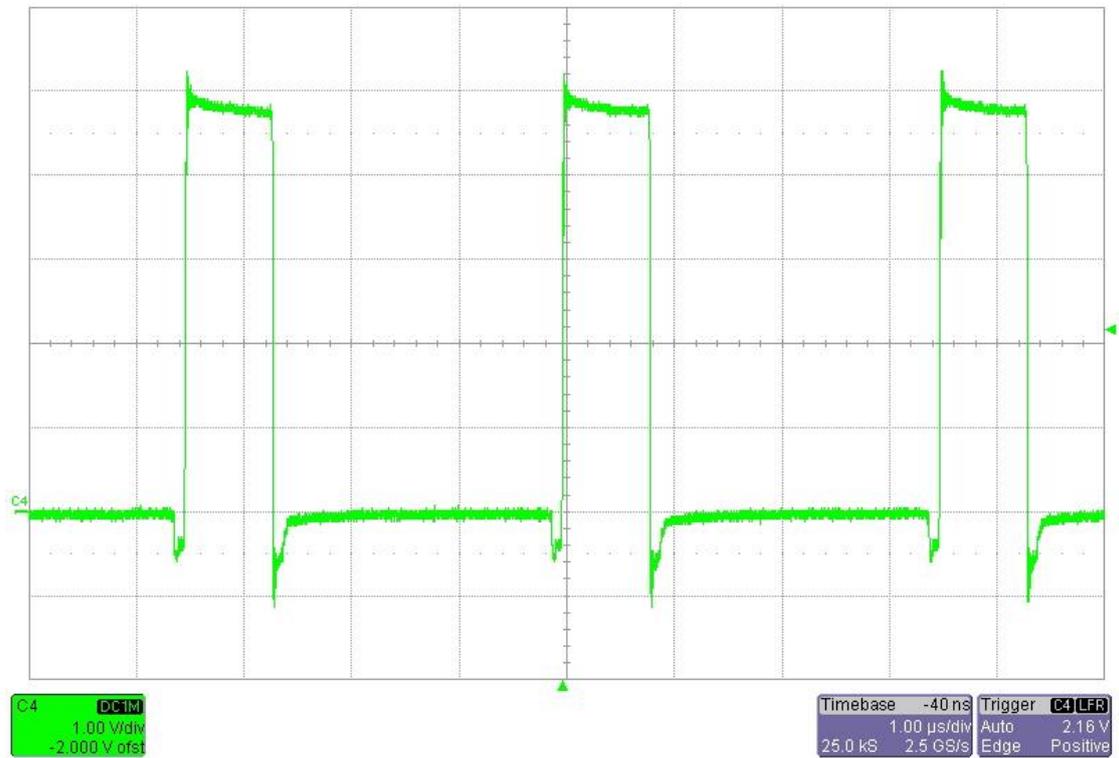
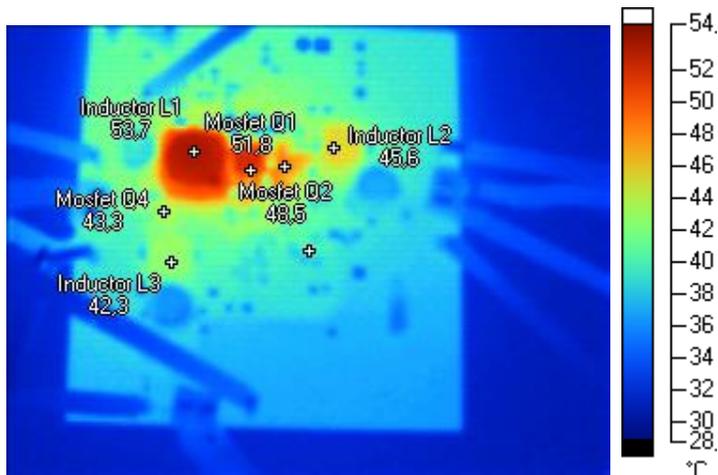


Figure 17

9 Thermal Picture

The thermal picture was taken with full load at all outputs.

1.2V@4.9A
 1.8V@2.9A
 1.0V@2.0A



Inductor L1	53,7 °C
Mosfet Q1	51,8 °C
Mosfet Q2	48,5 °C
Inductor L2	45,6 °C
Mosfet Q4	43,3 °C
Inductor L3	42,3 °C

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