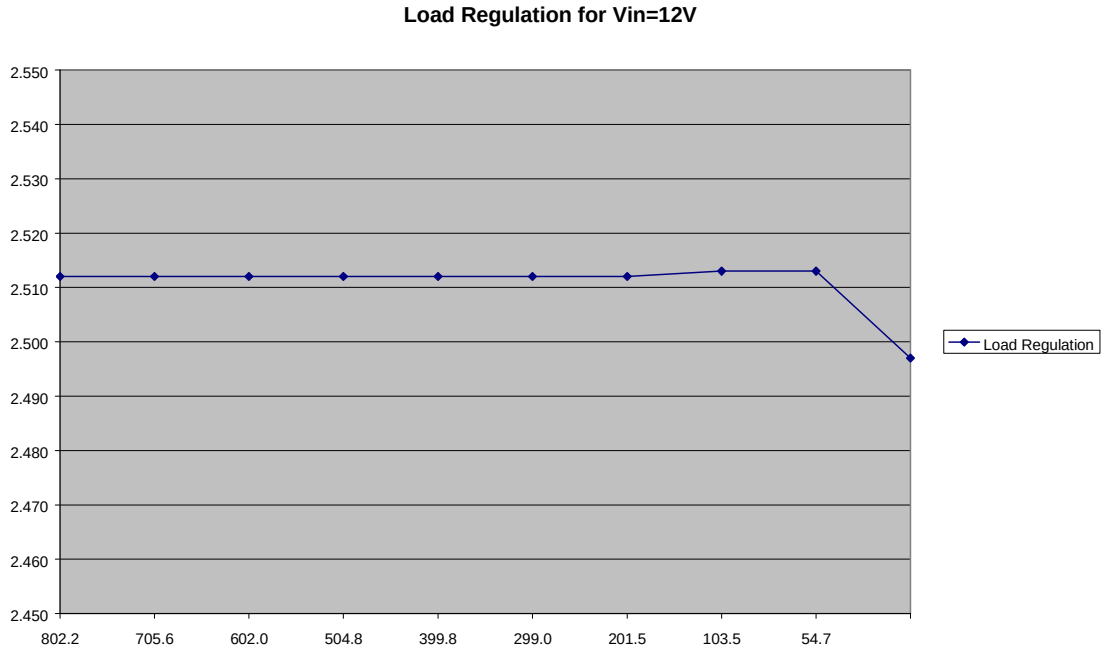
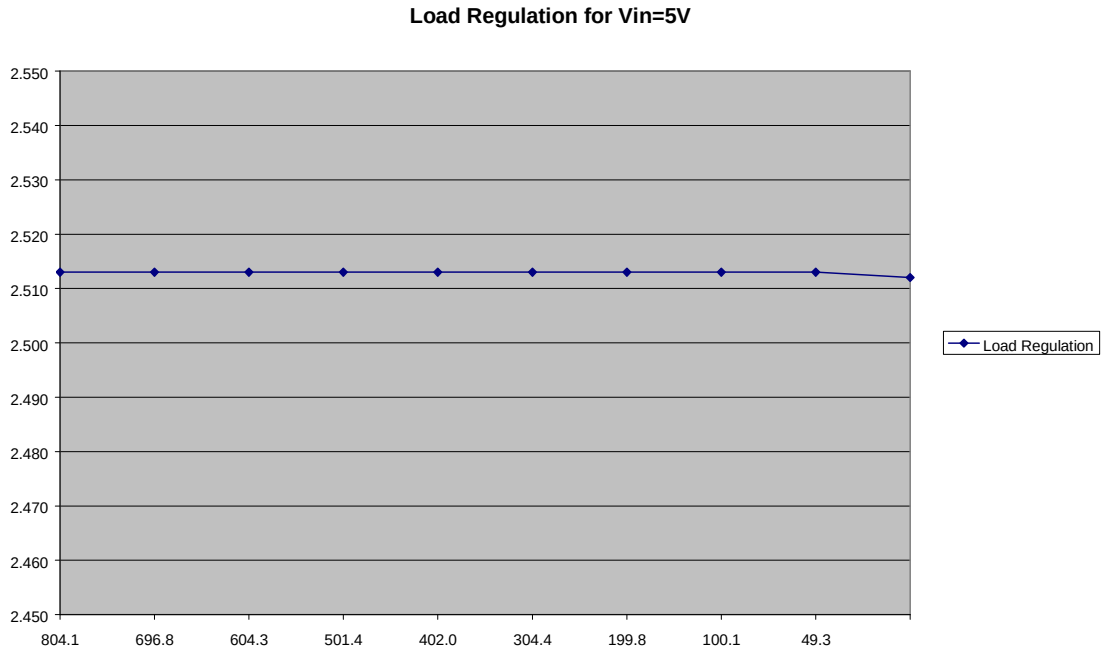
1 Load Regulation

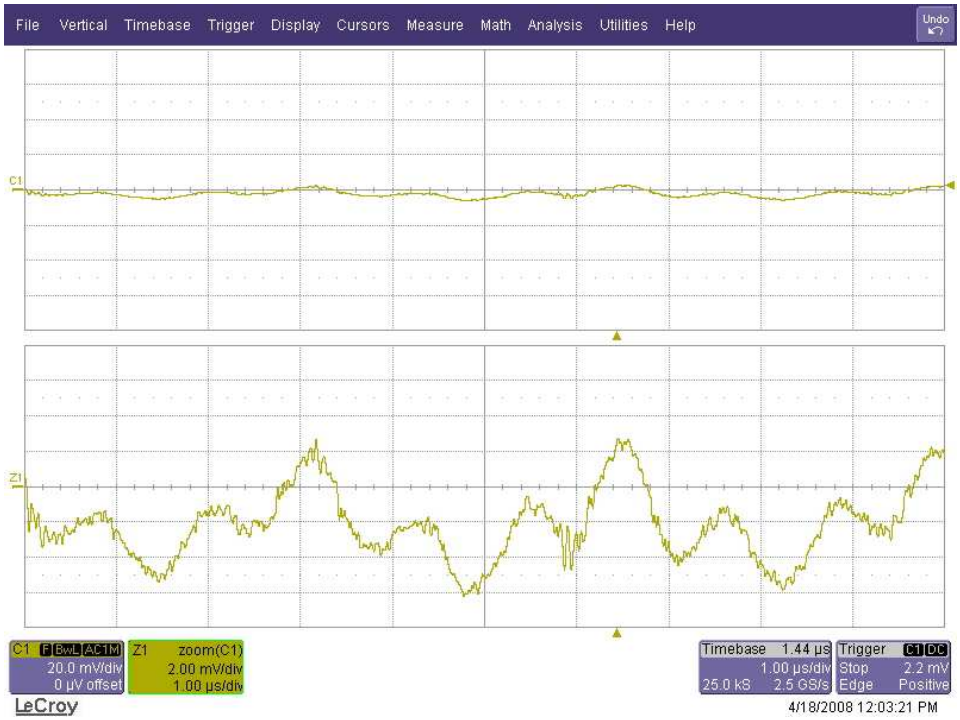
The load regulation of the output is shown in the graphs below, for the two different nominal input voltages.





2 Output Ripple Voltage

The output ripple voltages are shown in the figures below, for the two different nominal input voltages.



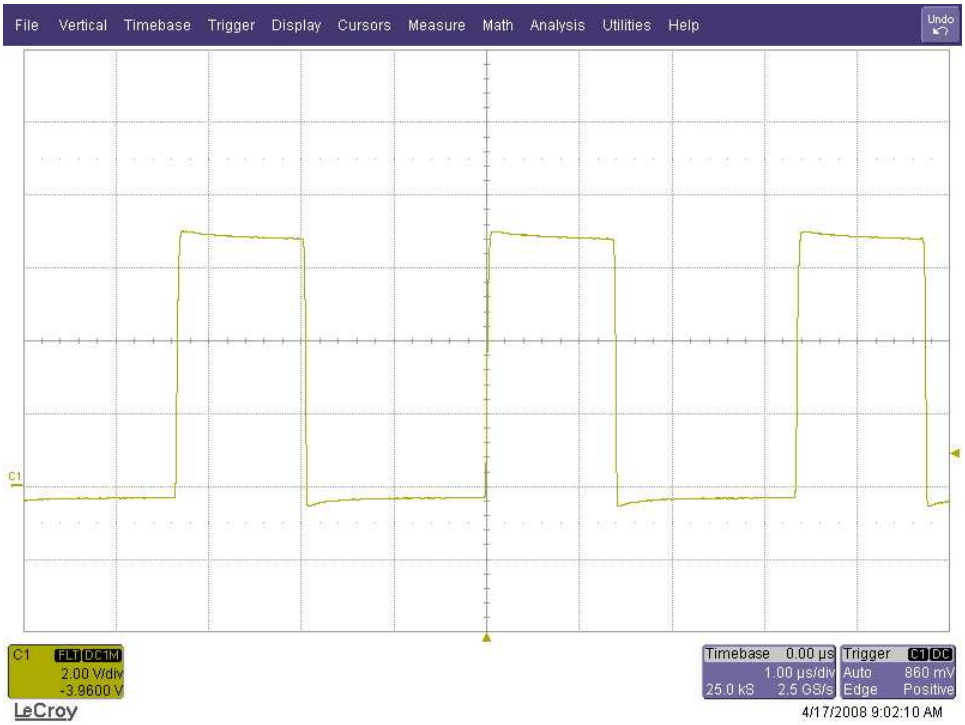
12V Input, 0.8A Output

5V Input, 0.8A Output

3 Switch Node Waveform

The figures below show the voltage on diode D1, for the two different nominal input voltages. The converter is switching at 300kHz.

12V Input, 0.8A Output

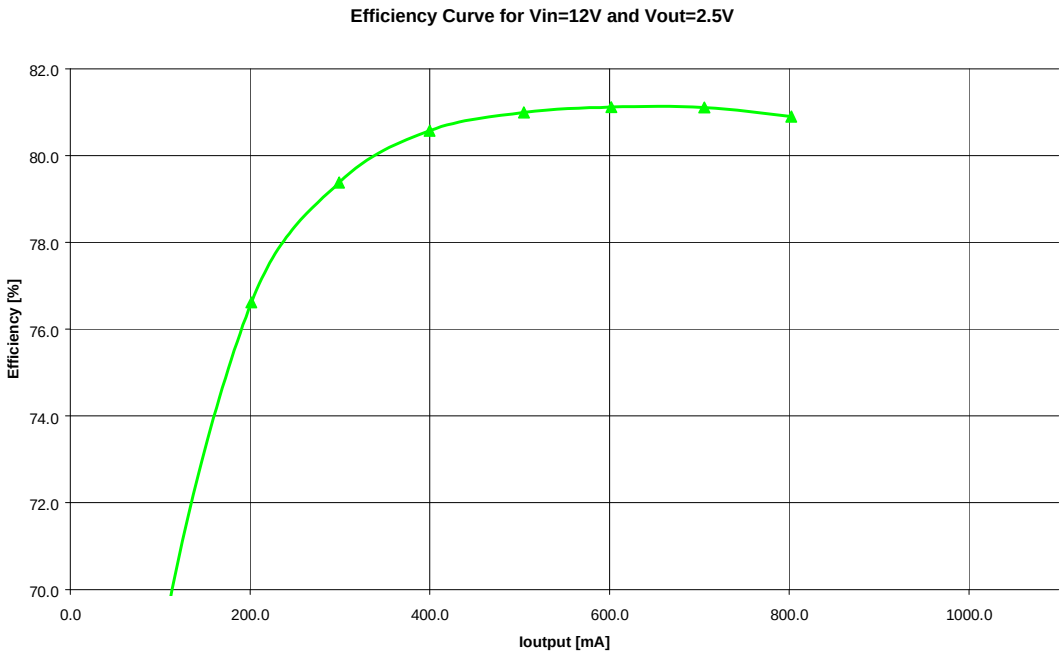


5V Input, 0.8A Output

4 Efficiency

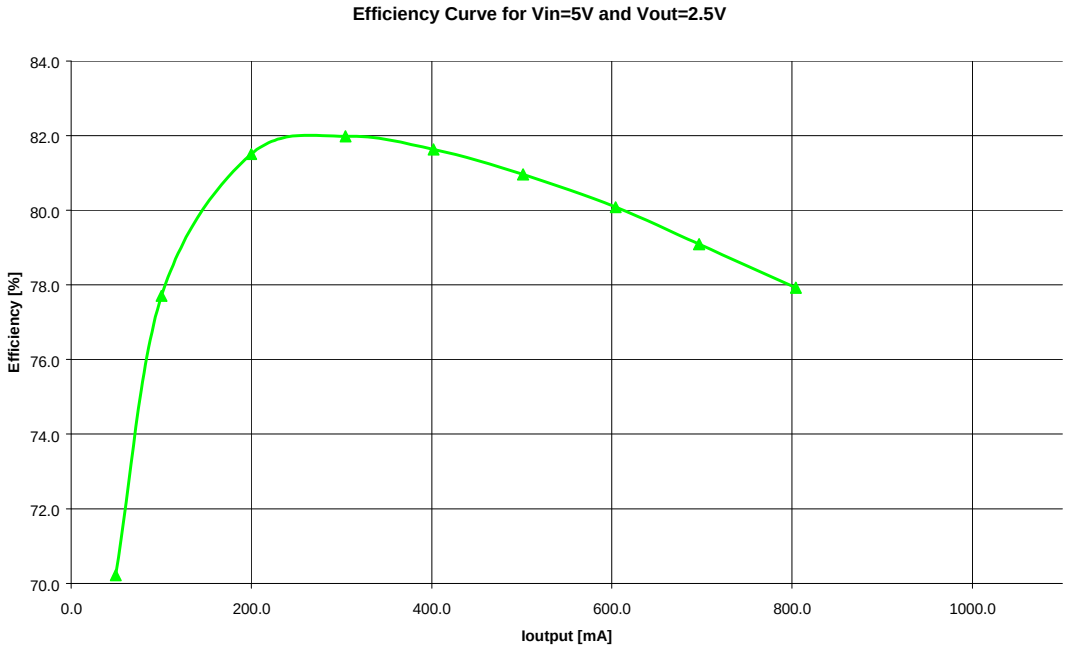
The efficiency diagrams are shown in the figures below for the two different nominal input voltages.

NOTE: ***the measured values are related to the assembly situation on the board, where diode D1 is MBRS340TR (3A) due to the unavailability of the selected diode MBRS540TE (5A) during laboratory tests . Therefore, an efficiency improvement of some percentage point is expected with the selected diode, especially at 5V input, for reduced conduction losses.***



The following table shows the measured values for **12V input**:

Vin[V]	Iin[mA]	Vout[V]	Iout[mA]	Pin[W]	Pout[W]	η/%
12.08	206.2	**2.512**	802.2	2.491	2.015	**80.9**
12.08	180.9	**2.512**	705.6	2.185	1.772	**81.1**
12.09	154.2	**2.512**	602.0	1.864	1.512	**81.1**
12.09	129.5	**2.512**	504.8	1.566	1.268	**81.0**
12.09	103.1	**2.512**	399.8	1.246	1.004	**80.6**
12.10	78.2	**2.512**	299.0	0.946	0.751	**79.4**
12.10	54.6	**2.512**	201.5	0.661	0.506	**76.6**
12.10	31.2	**2.513**	103.5	0.378	0.260	**68.9**
12.11	19.3	**2.513**	54.7	0.234	0.137	**58.8**
12.11	3.6	**2.497**	0.0	0.044	0.000	**0.0**

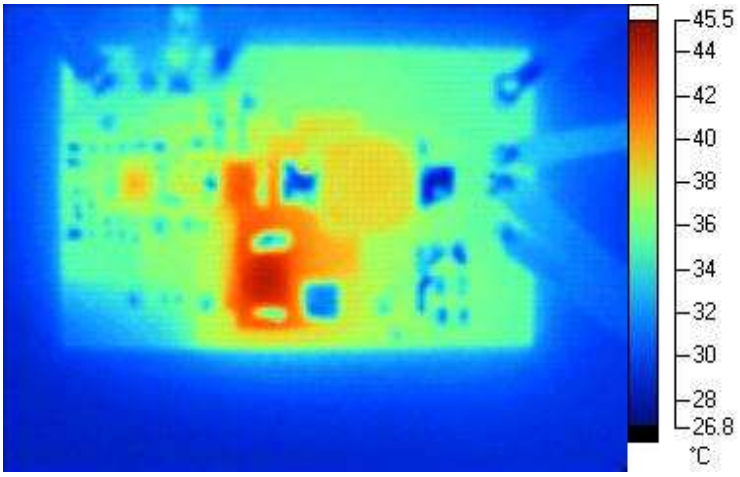


The following table shows the measured values for **5V Input**:

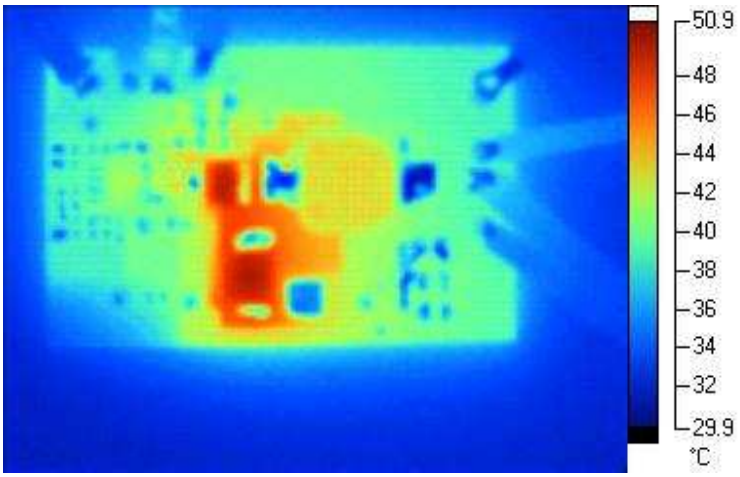
Vin[V]	Iin[mA]	Vout[V]	Iout[mA]	Pin[W]	Pout[W]	η%
5.01	517.3	**2.513**	804.1	2.593	2.021	**77.9**
5.02	441.3	**2.513**	696.8	2.214	1.751	**79.1**
5.02	377.6	**2.513**	604.3	1.896	1.519	**80.1**
5.03	309.3	**2.513**	501.4	1.556	1.260	**81.0**
5.04	245.5	**2.513**	402.0	1.238	1.010	**81.6**
5.05	184.8	**2.513**	304.4	0.933	0.765	**82.0**
5.06	121.8	**2.513**	199.8	0.616	0.502	**81.5**
5.07	63.9	**2.513**	100.1	0.324	0.252	**77.7**
5.07	34.8	**2.513**	49.3	0.176	0.124	**70.2**
5.07	6.4	**2.512**	0.0	0.032	0.000	**0.0**

5 Thermal Analysis

The figures below show the IR thermal images of the prototype board, for the two different nominal input voltages.



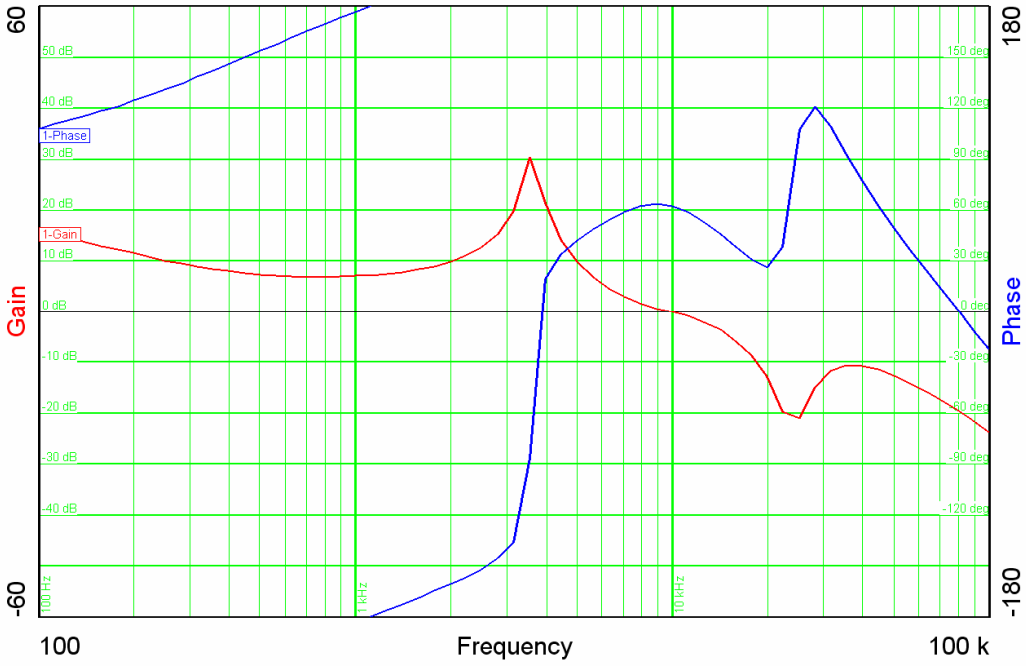
12V Input, 0.8A Output



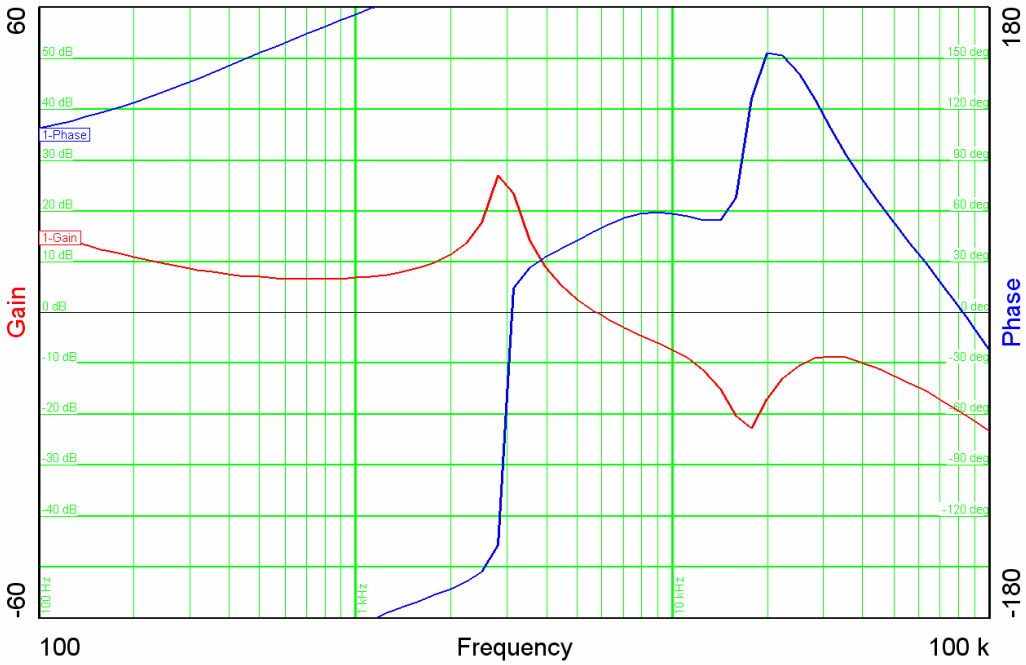
5V Input, 0.8A Output

6 Control Loop Frequency Response

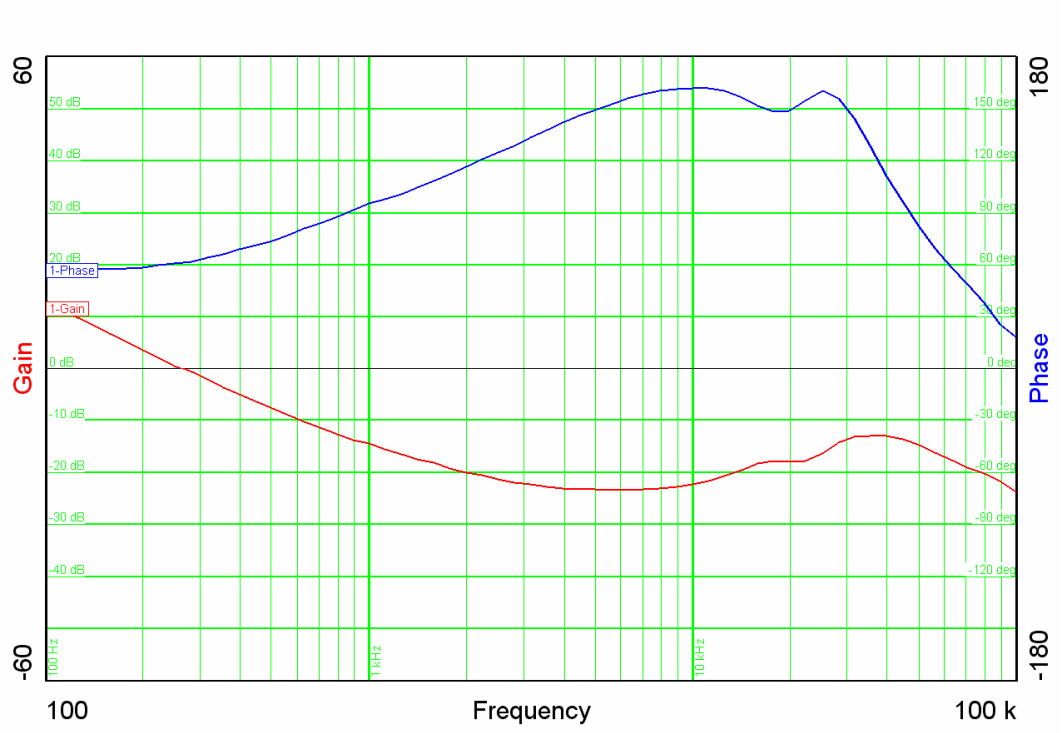
The figures below show the open loop response at full load 0.8A and after entering in the discontinuous mode, for the two different nominal input voltages.



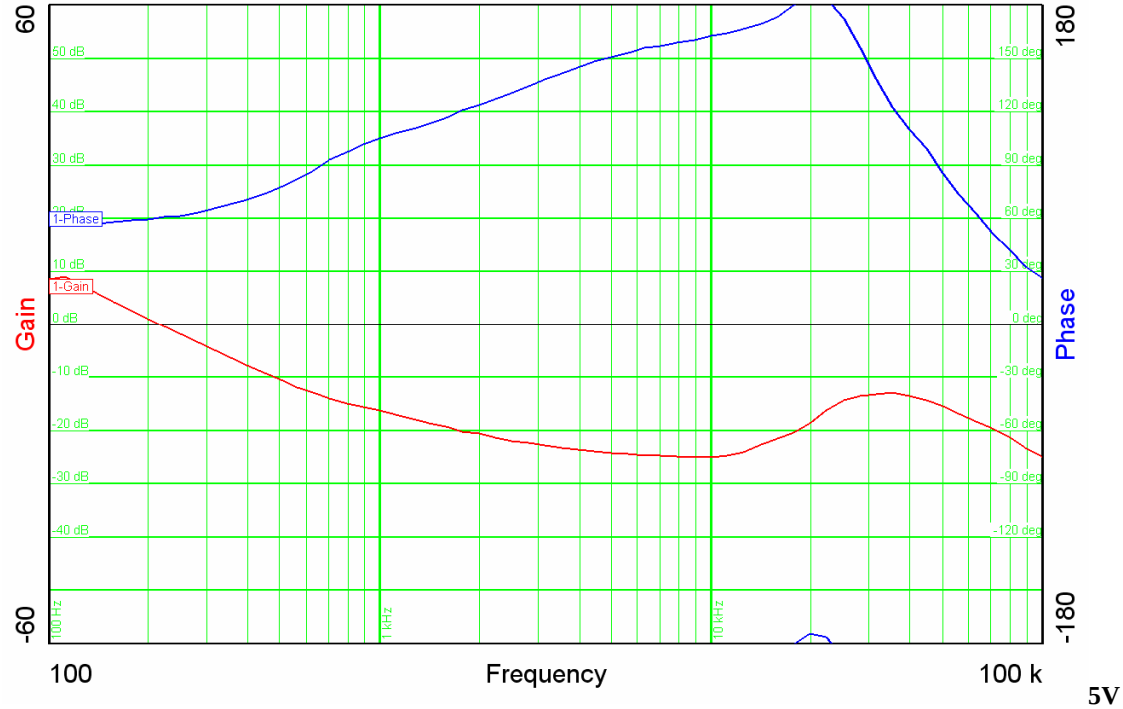
12V input, 0.8A Output



5V input, 0.8A Output



12V input, discontinuous output (discontinuous mode starts for output current less than 90mA)

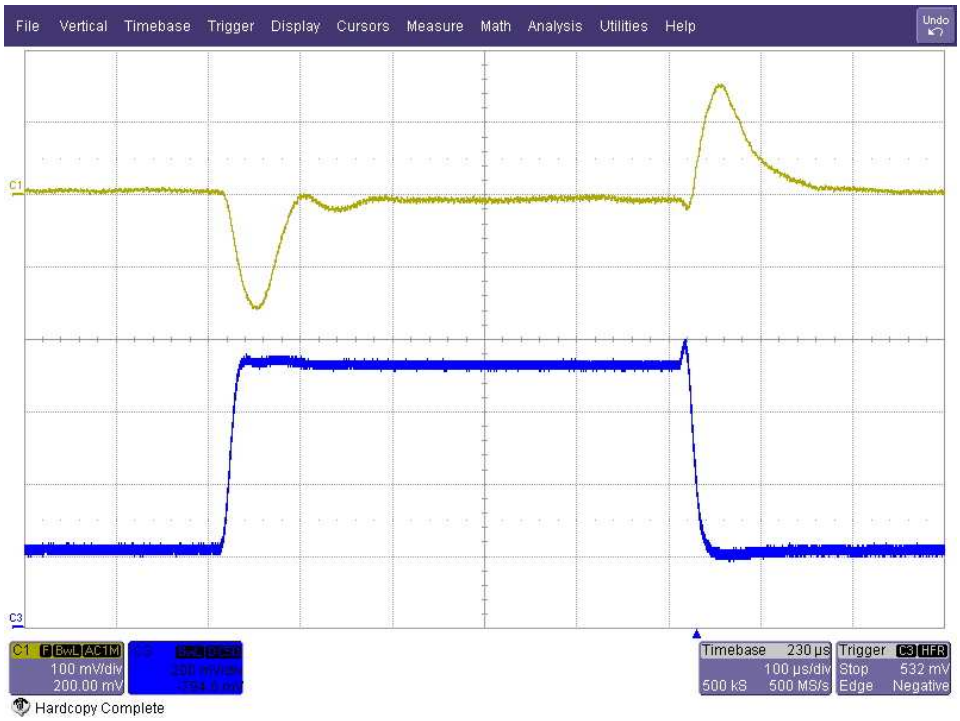


5V

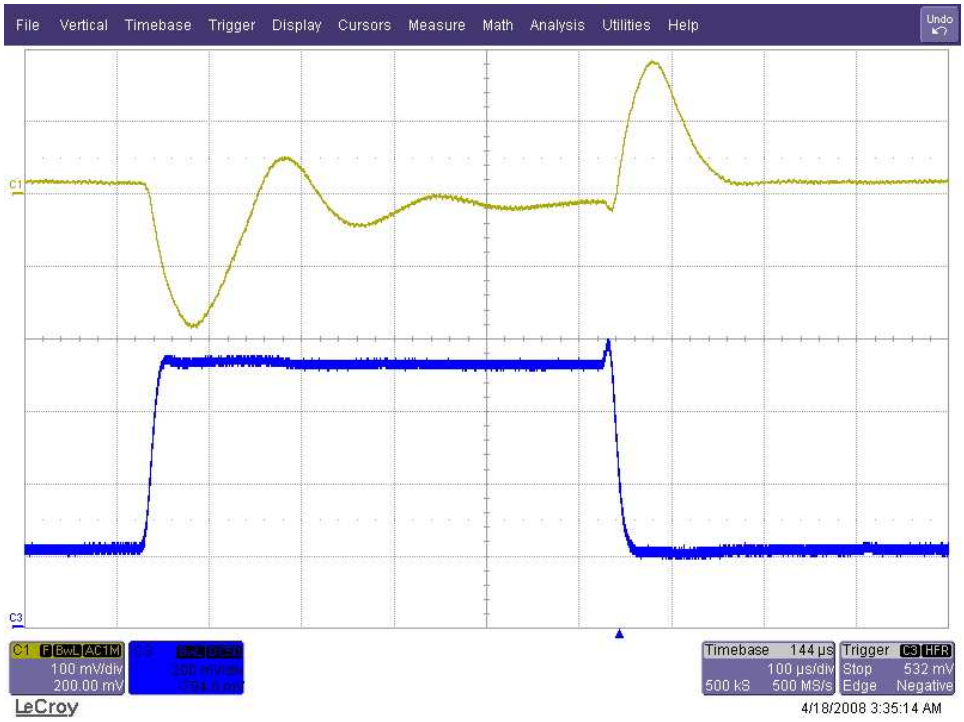
5V input, discontinuous output (discontinuous mode starts for output current less than 50mA)

7 Load Transients

The figures below show the response to load transients, for the two different nominal input voltages. The current is stepping from 0.2 A to 0.7 A. Channel 1: Vout (AC coupled), channel 2: Iout (0.2A/div)



12V Input



5V Input

8 Startup

The startup waveforms are shown in the figures below, for the two different nominal input voltages.

12V Input, 0.8A Output

5V Input, 0.8A Output

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