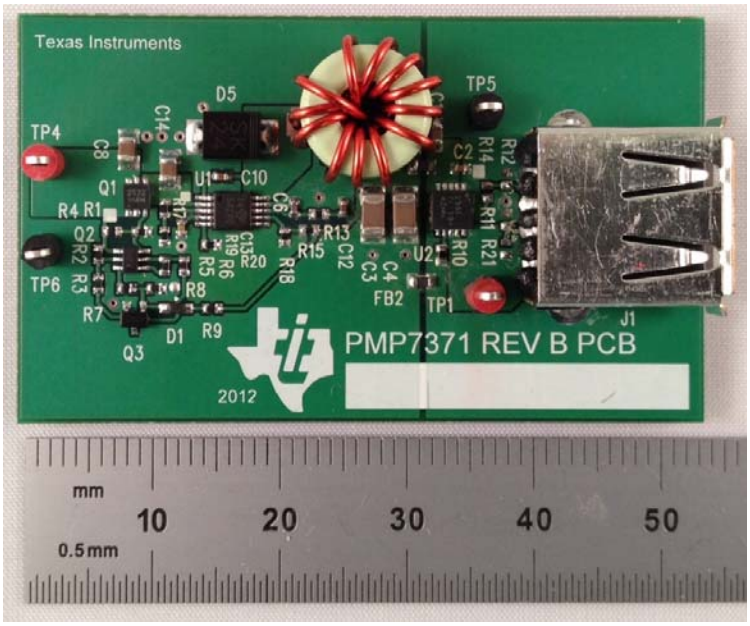
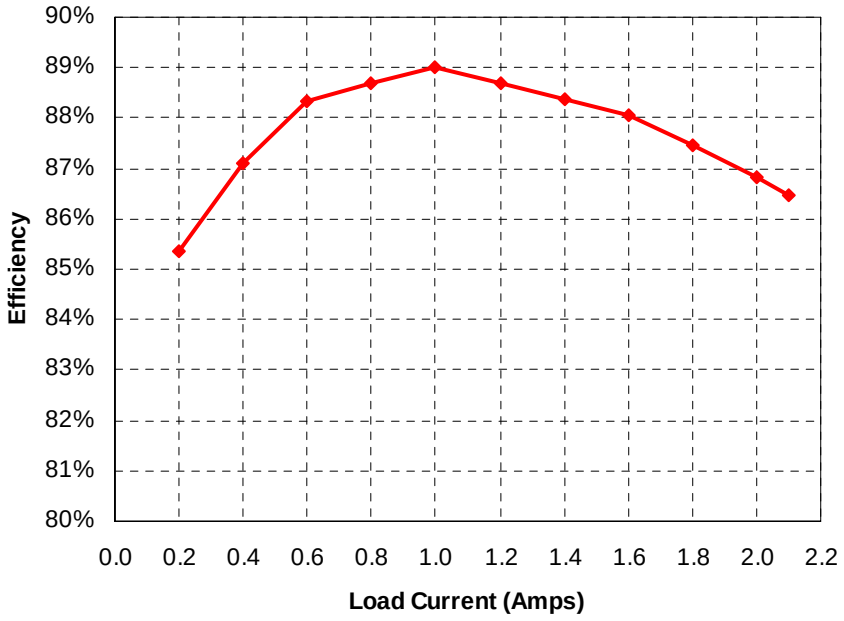
1 Photo

The image below shows a photo of the PMP7371 Rev B demo board.



2 Efficiency

The efficiency data is shown in the graph and table below.



Iout	Vout	Vin	Iin	Pout	Losses	Efficiency
0.000	4.971	12.01	0.002	0.00	0.024	0.0%
0.200	4.964	11.99	0.097	0.99	0.170	85.4%
0.400	4.956	11.98	0.190	1.98	0.294	87.1%
0.600	4.947	11.96	0.281	2.97	0.393	88.3%
0.800	4.939	12.01	0.371	3.95	0.505	88.7%
1.000	4.930	11.99	0.462	4.93	0.609	89.0%
1.200	4.922	11.98	0.556	5.91	0.754	88.7%
1.402	4.914	12.03	0.648	6.89	0.906	88.4%
1.602	4.905	12.01	0.743	7.86	1.066	88.1%
1.800	4.897	12.00	0.840	8.81	1.265	87.4%
2.000	4.889	11.98	0.940	9.78	1.483	86.8%
2.100	4.885	11.97	0.991	10.26	1.604	86.5%

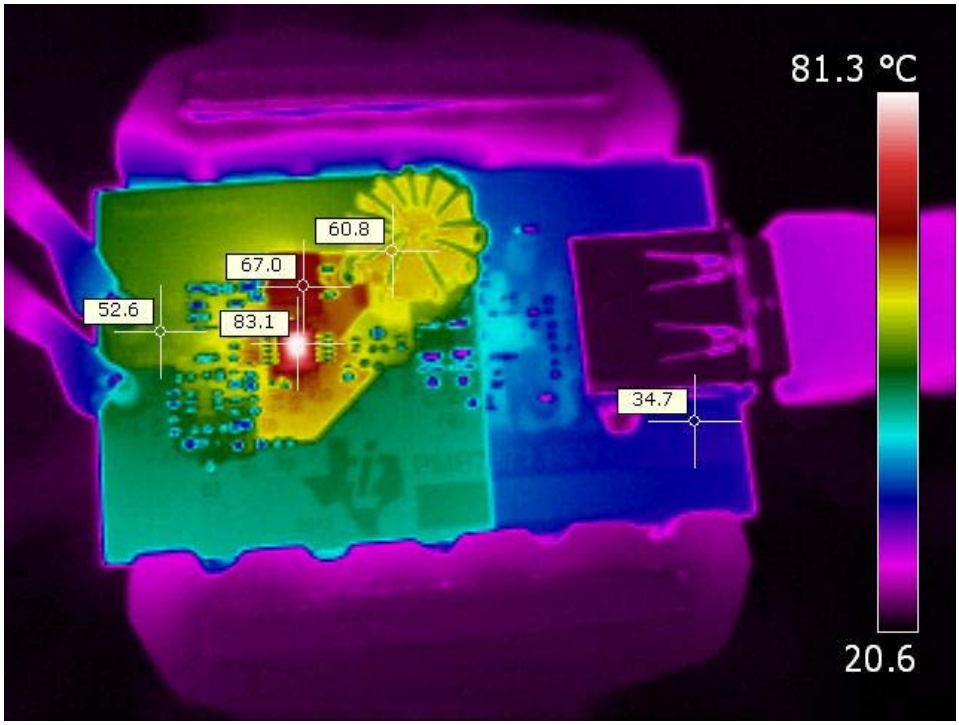
3 Regulation

The output voltage measured at TP1 and TP5 for various loading conditions is shown below.

	10Vin	12Vin	14Vin
Load (A)	Vout	Vout	Vout
0.00	4.97	4.97	4.97
0.25	4.96	4.96	4.96
0.50	4.95	4.95	4.95
0.70	4.94	4.94	4.94
1.00	4.93	4.93	4.93
1.50	4.91	4.91	4.91
2.10	4.89	4.89	4.88

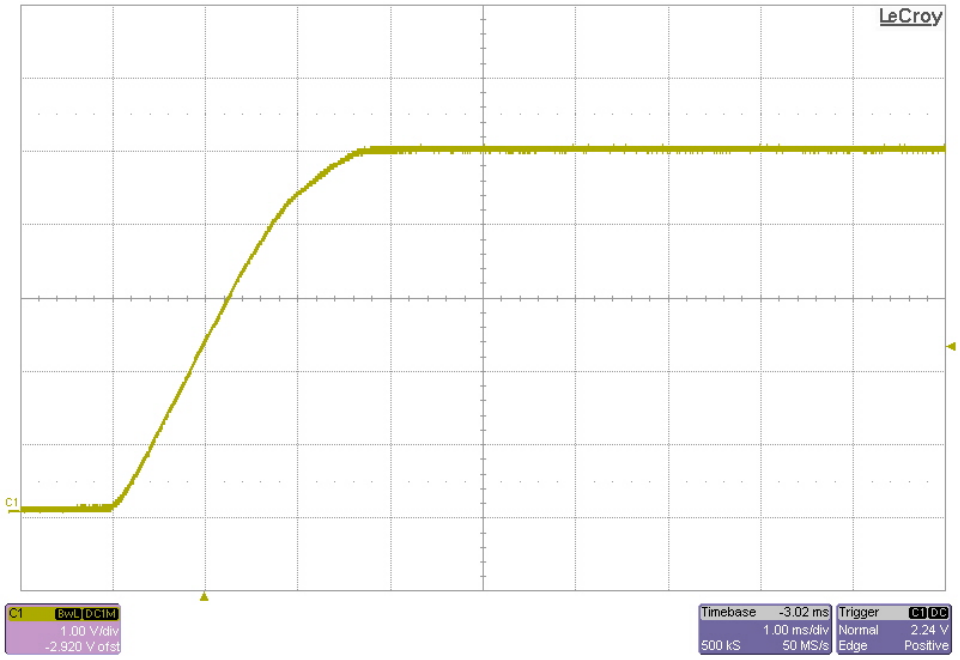
4 Thermal

The thermal image below shows the circuit board with a 12V input and 2.1A load. The ambient temperature was 25C with no air flow.

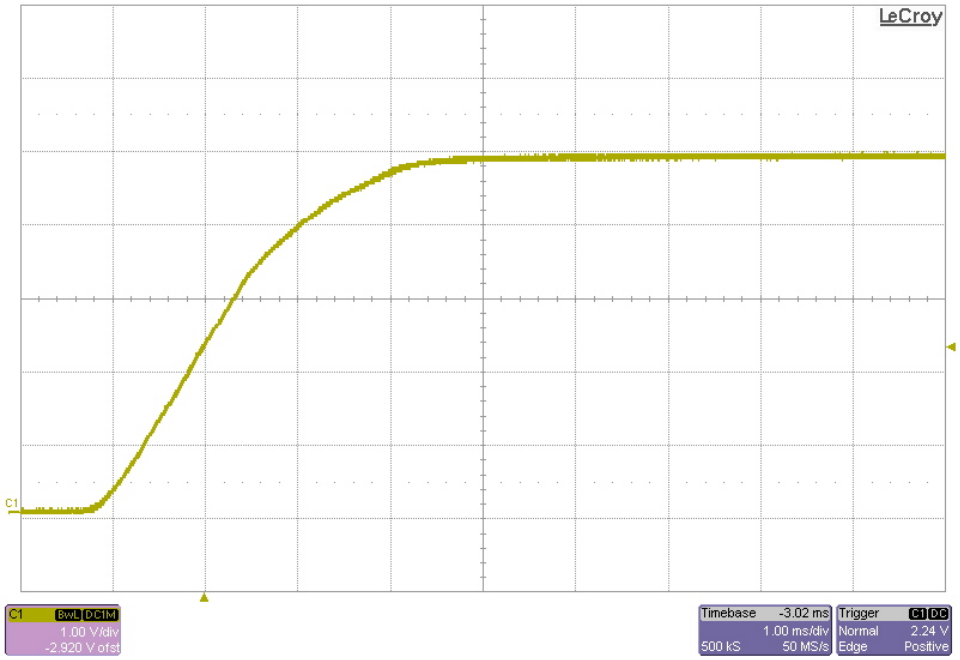


5 Startup

5.1 12V Input – No Load



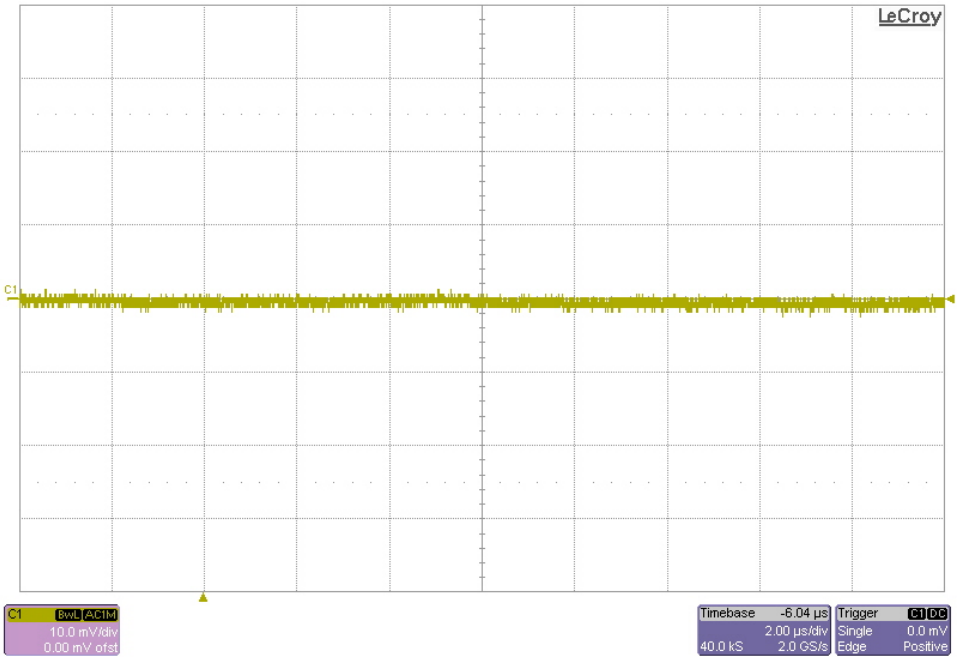
5.2 12V Input – 2Ω Load



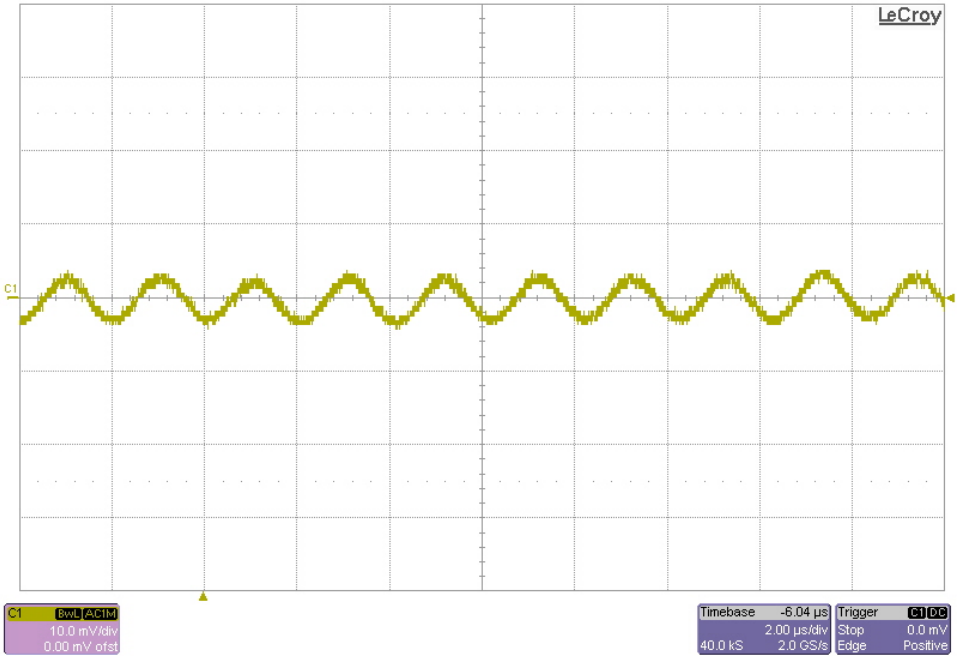
6 Output Ripple Voltage

The output ripple voltage is shown in the plots below. The input was 12V. The ripple voltage was measured on TP1.

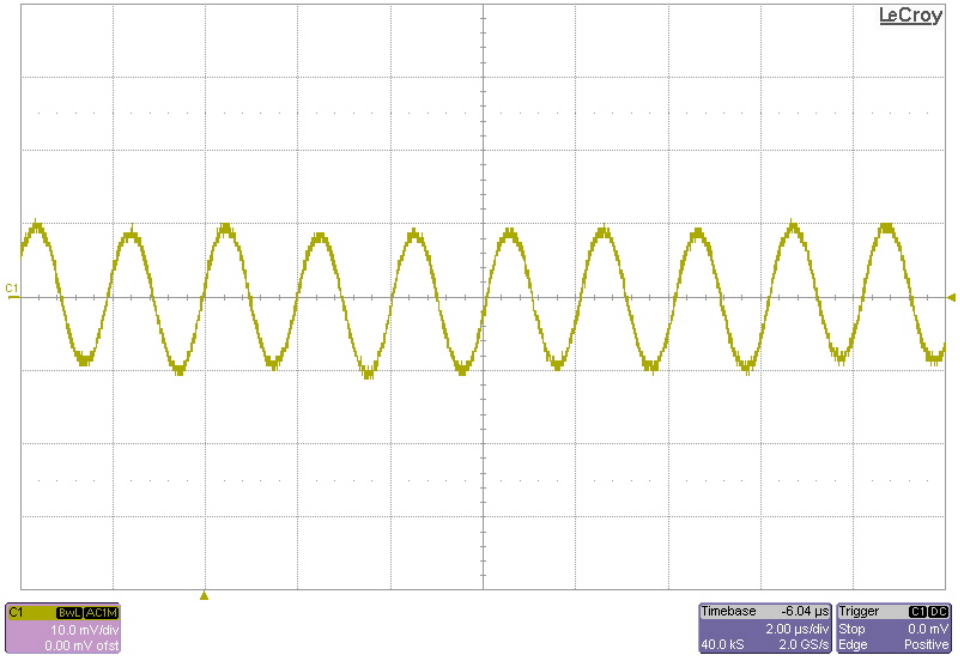
6.1 0A Load



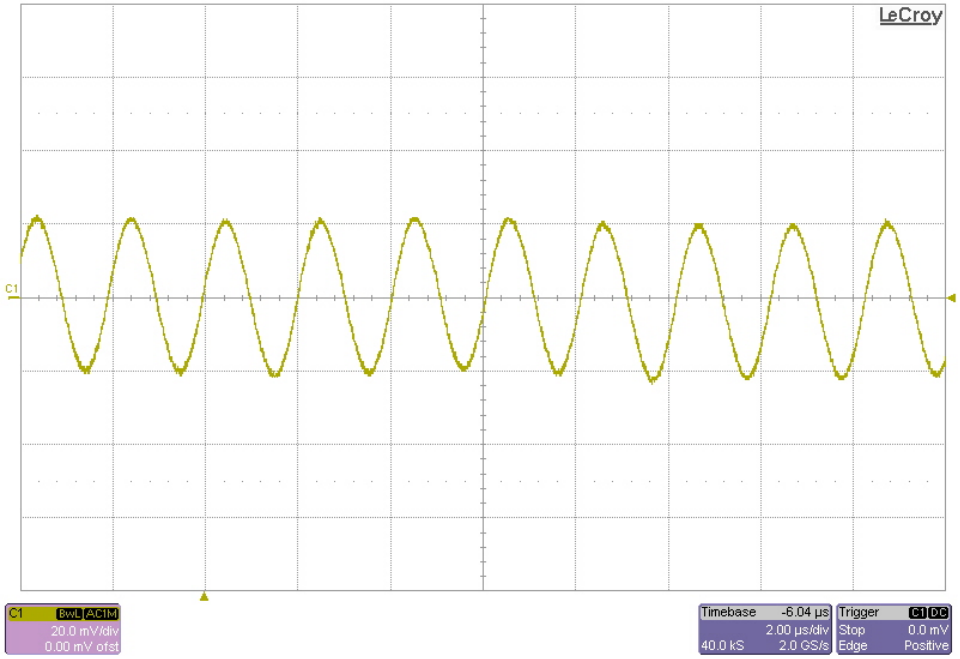
6.2 250mA Load



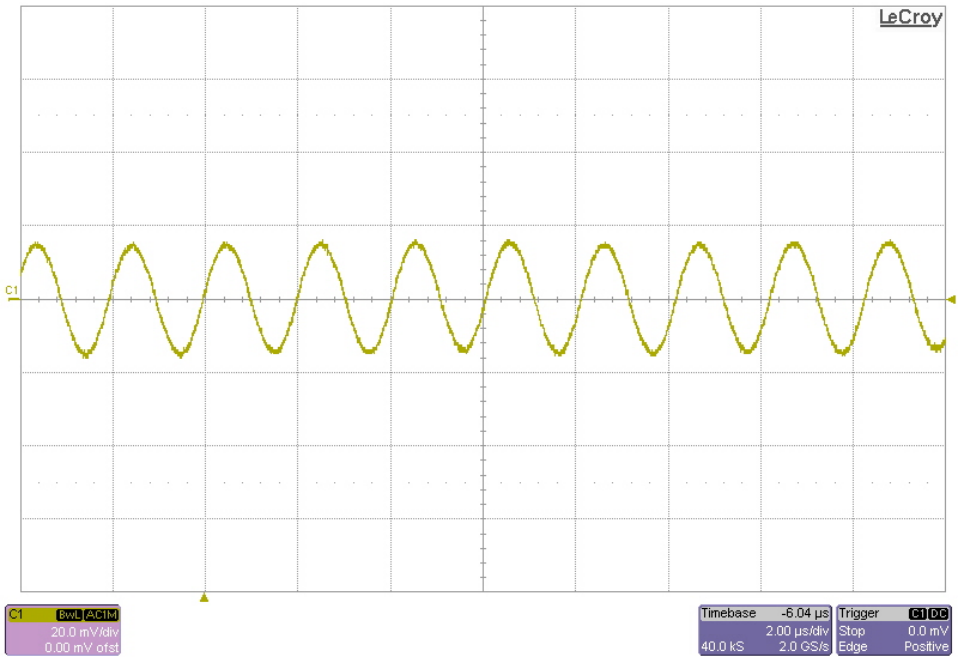
6.3 500mA Load



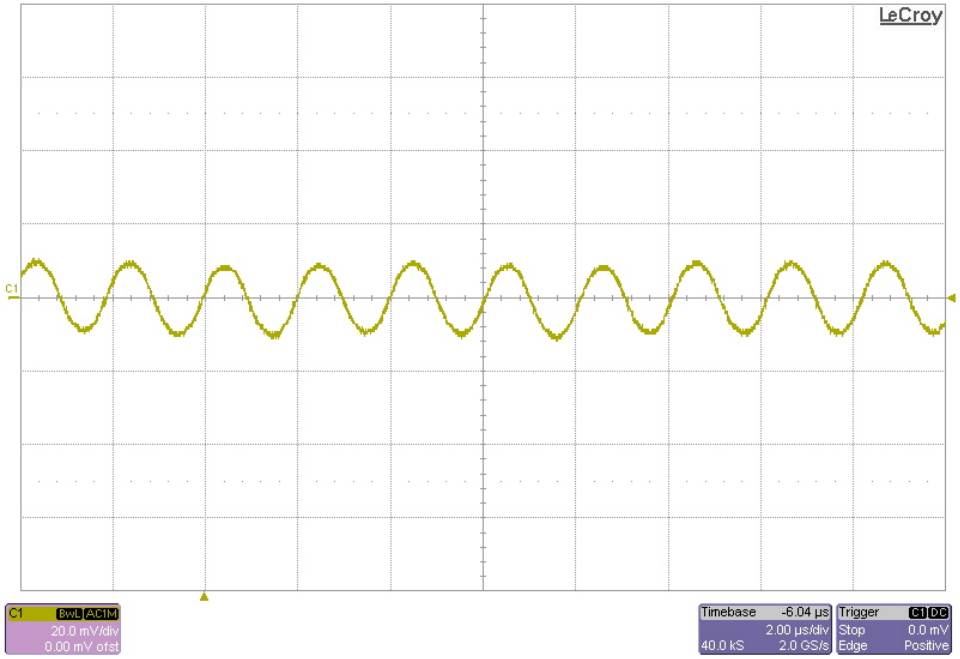
6.4 700mA Load



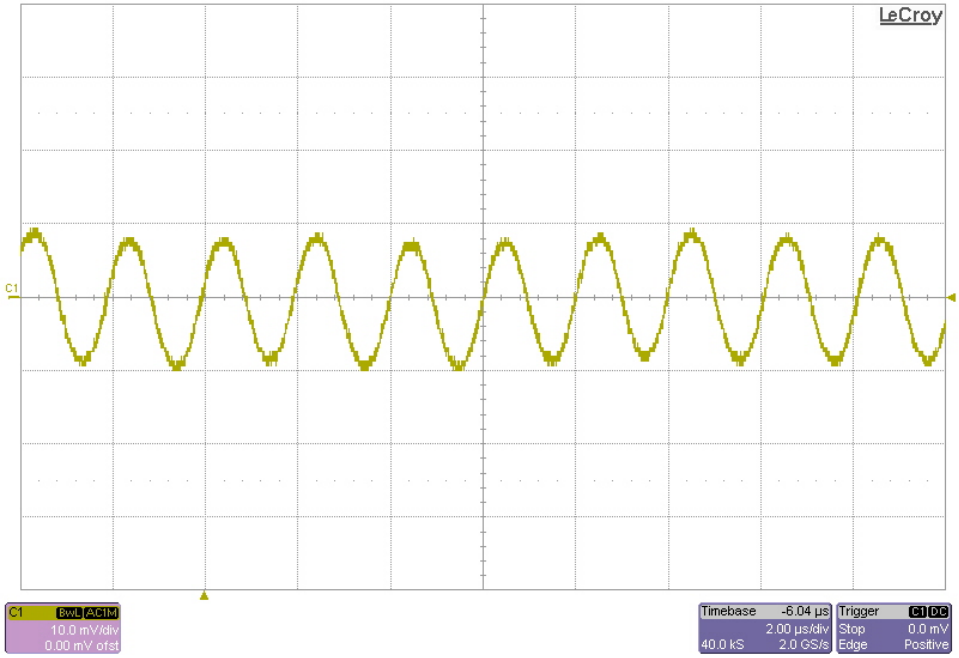
6.5 1A Load



6.6 1.5A Load

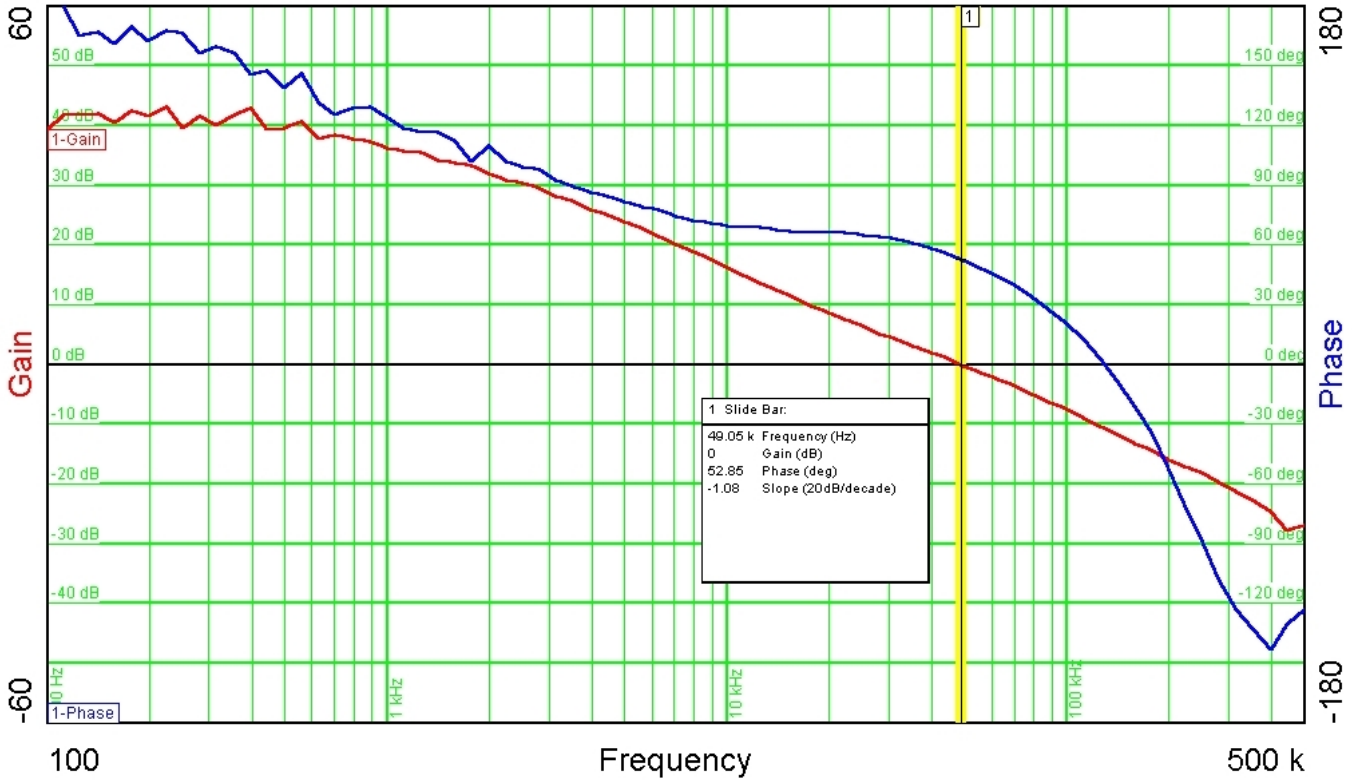


6.7 2.1A Load



7 Frequency Response

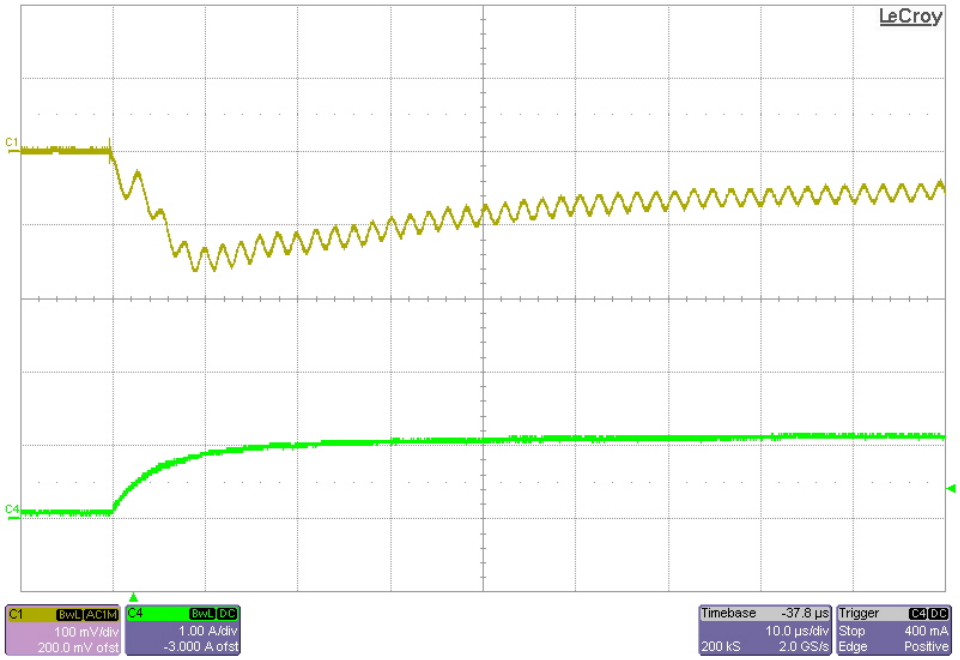
The frequency response of the feedback loop is shown below. The input was set to 12V, and the output was loaded with 2.1A.



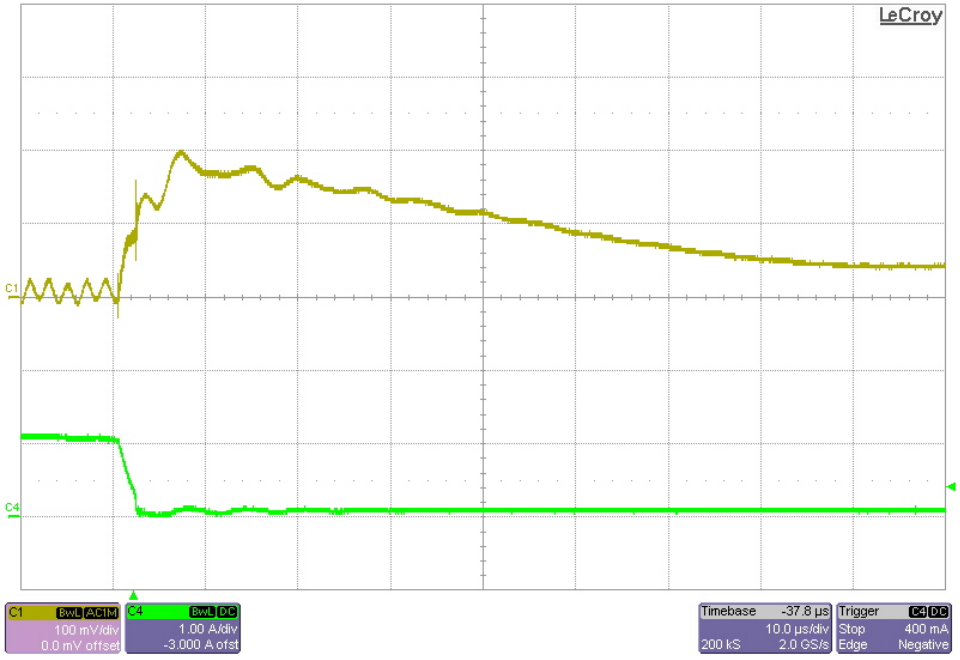
8 Load Transients

The responses to various load steps are shown in the images below. Channel 1: Vout (ac coupled); Channel 4: Iout. The output voltage was measured on TP1.

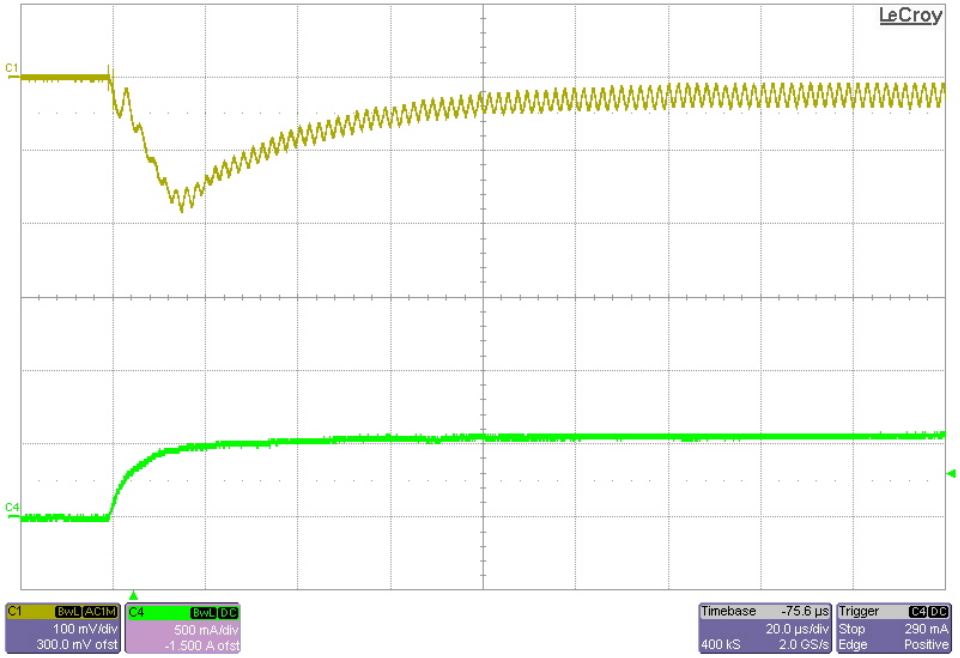
8.1 80mA to 1A



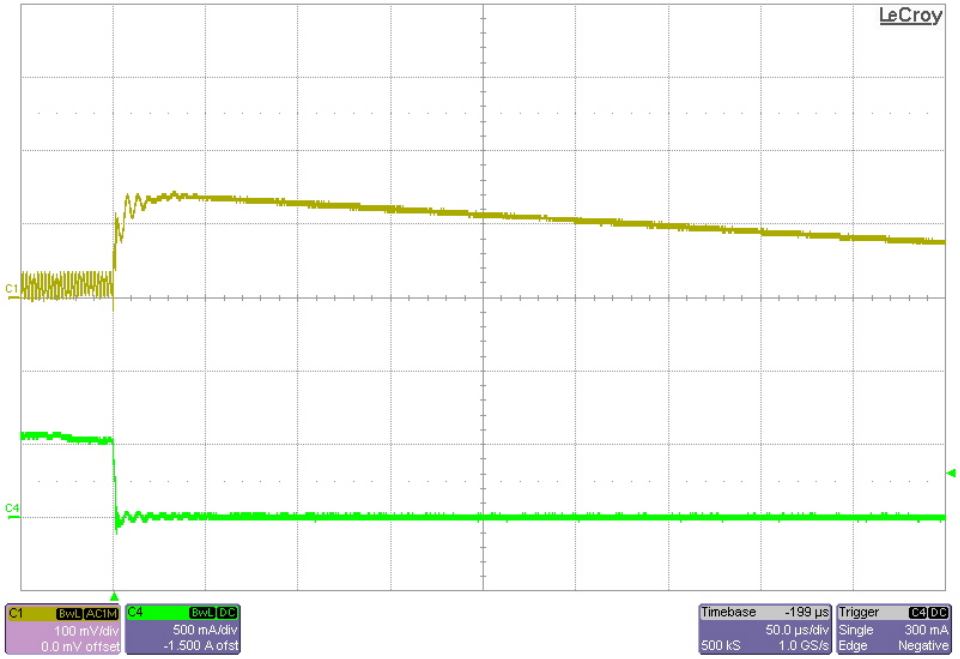
8.2 1A to 80mA



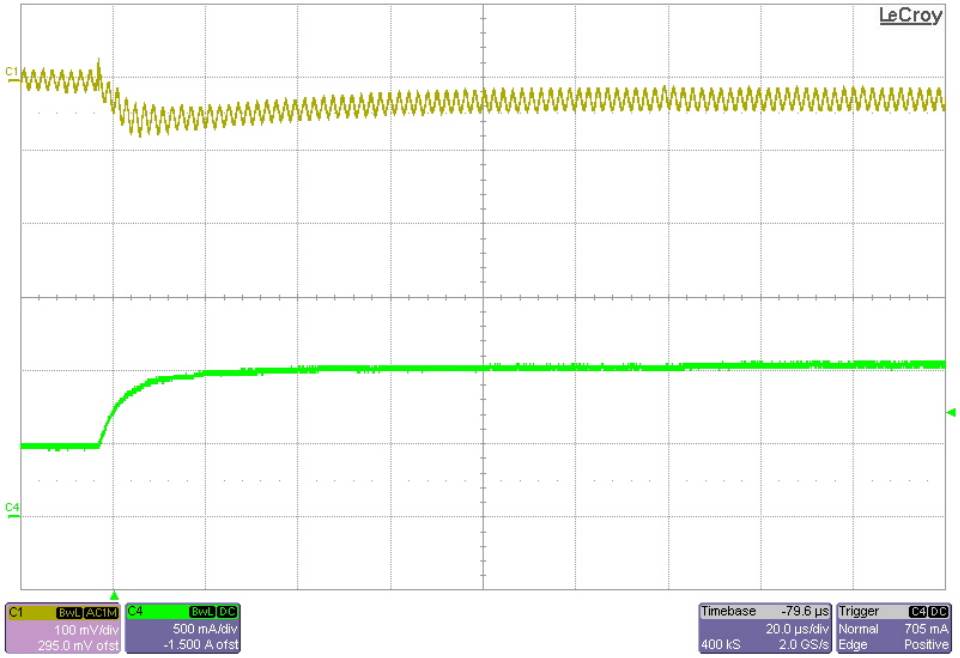
8.3 0A to 500mA



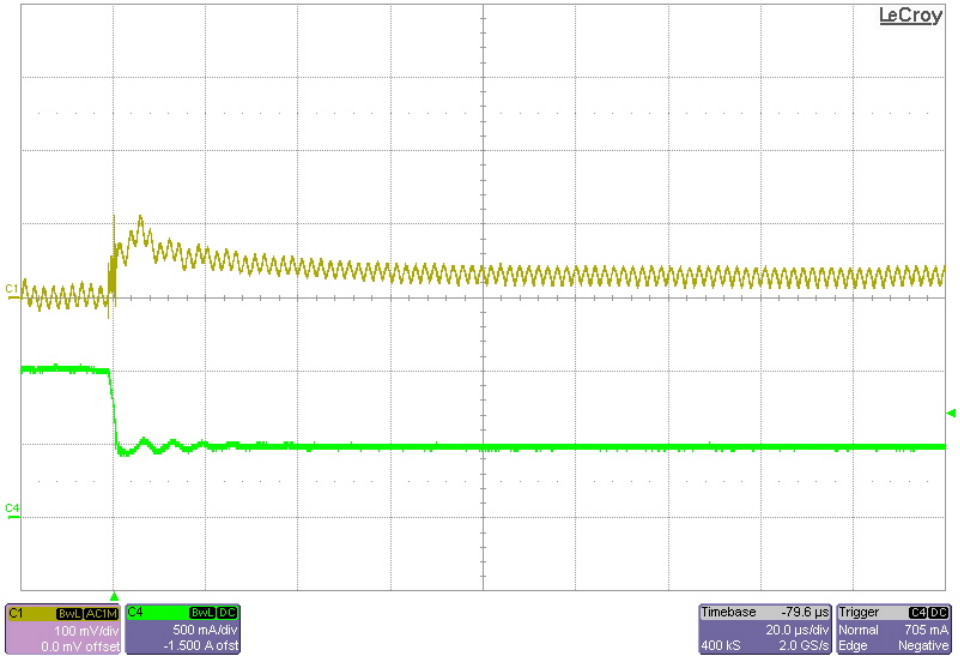
8.4 500mA to 0A



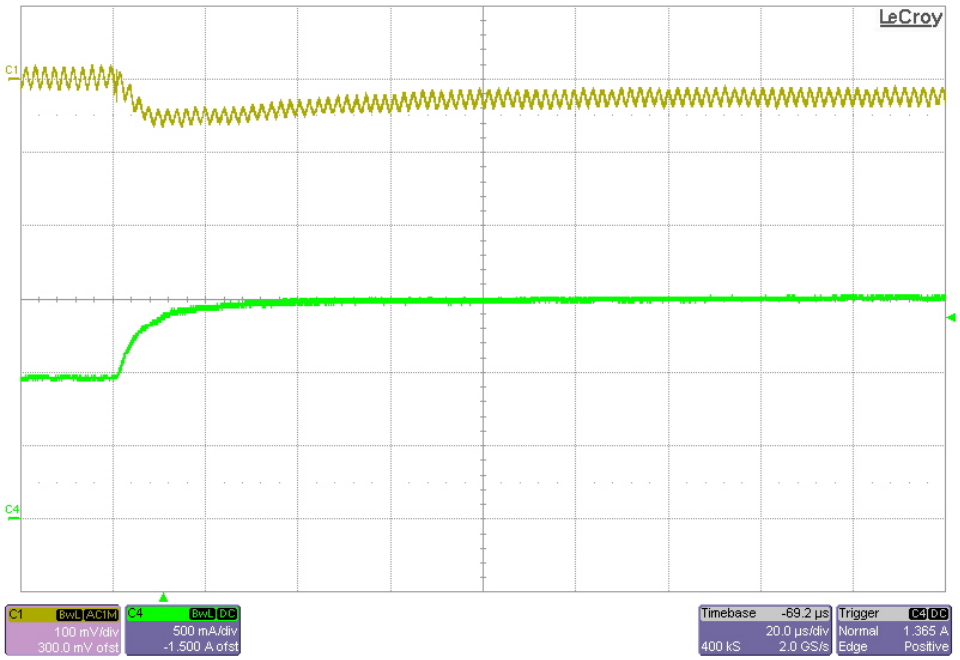
8.5 500mA to 1A



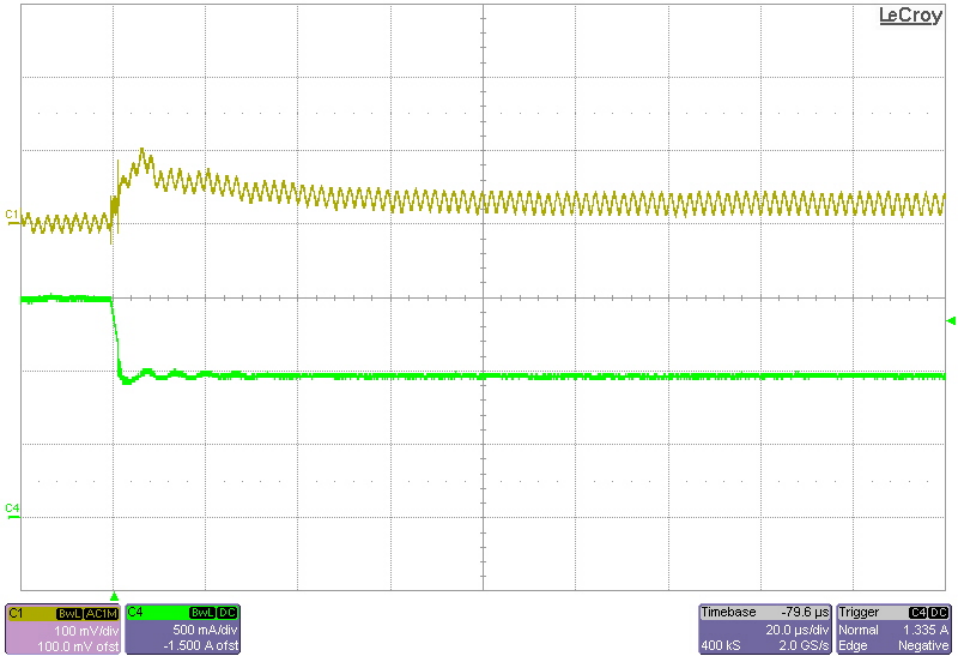
8.6 1A to 500mA



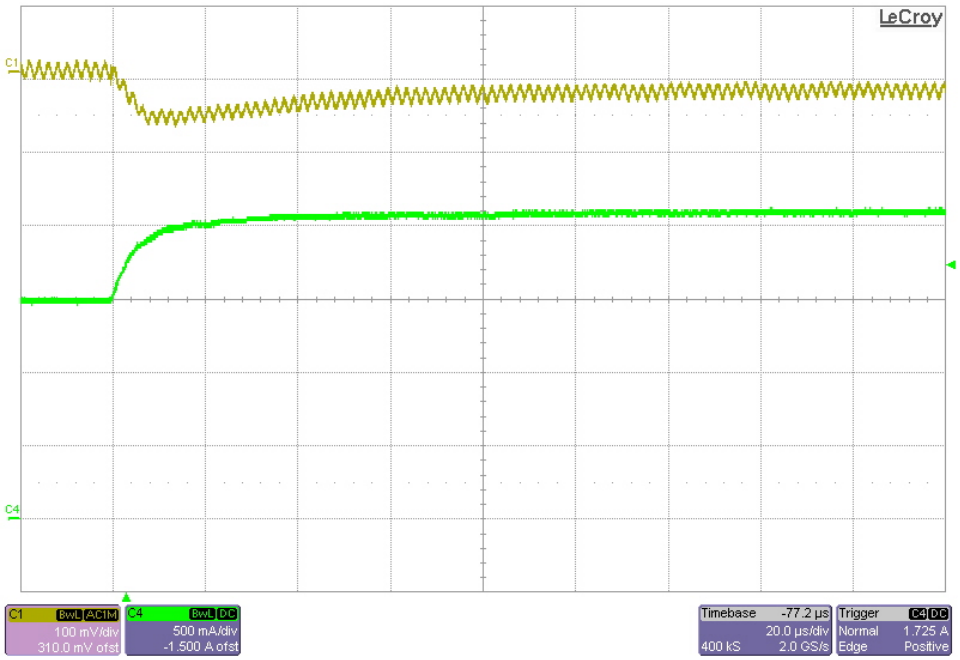
8.7 1A to 1.5A



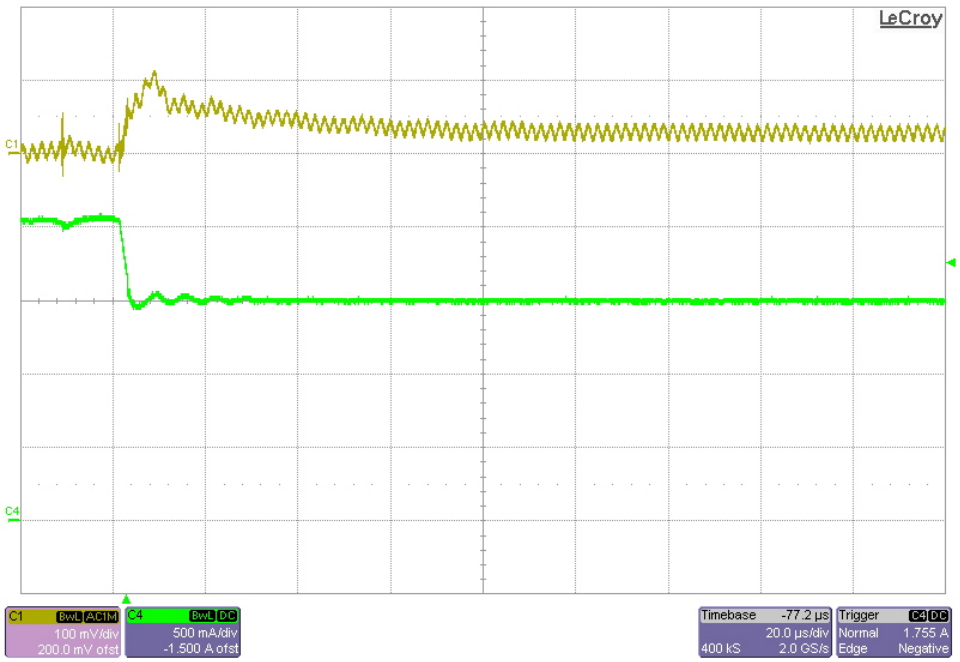
8.8 1.5A to 1A



8.9 1.5A to 2.1A

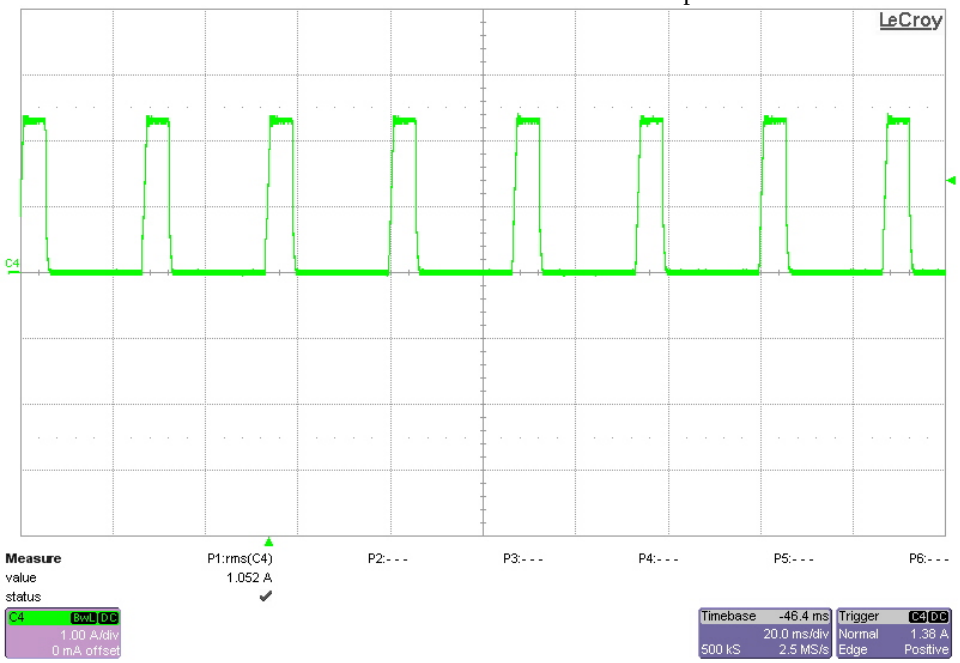


8.10 2.1A to 1.5A



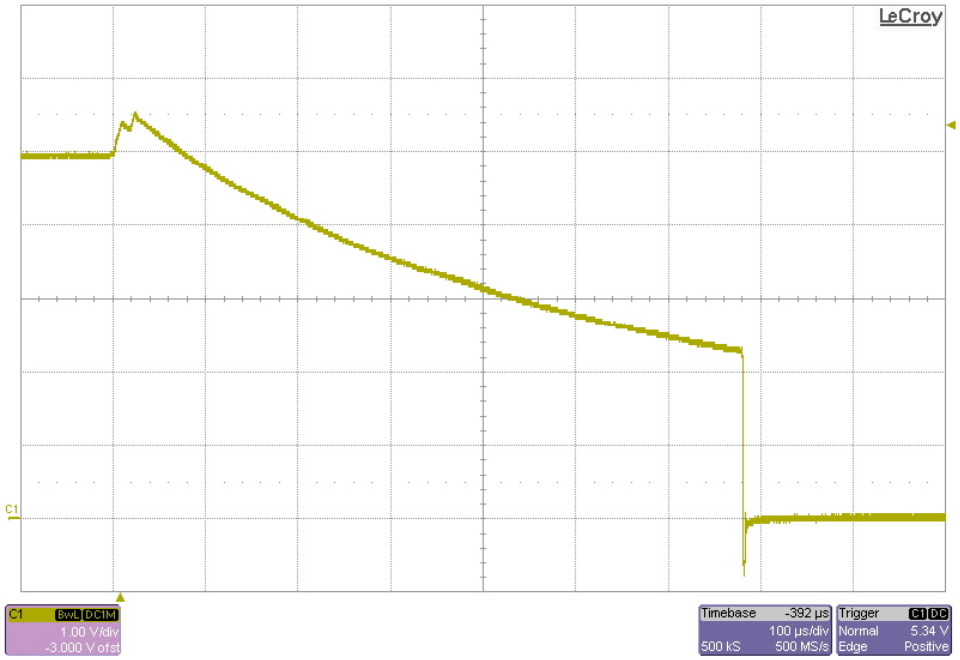
9 Short Circuit Protection

The output current waveform is shown below for an over-loaded condition. The input was 12V.



10 Output Over-Voltage

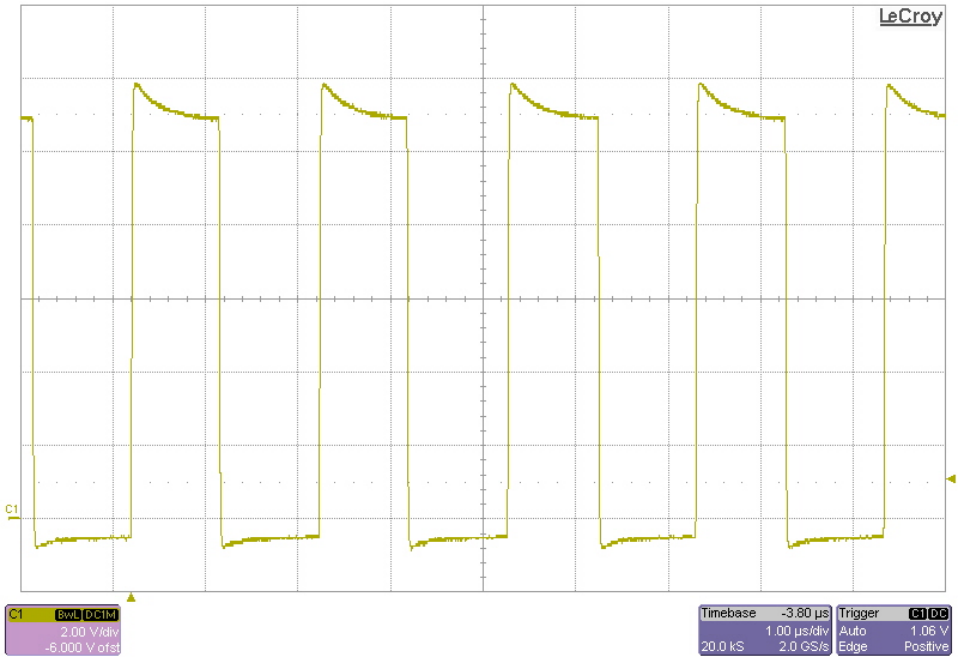
The image below shows the output voltage during an over voltage condition. The loop was broken at R15 allowing the output voltage to rise uncontrolled. The converter was latched off when the output voltage reached 5.5V. Cycling the input power allowed the converter to restart.



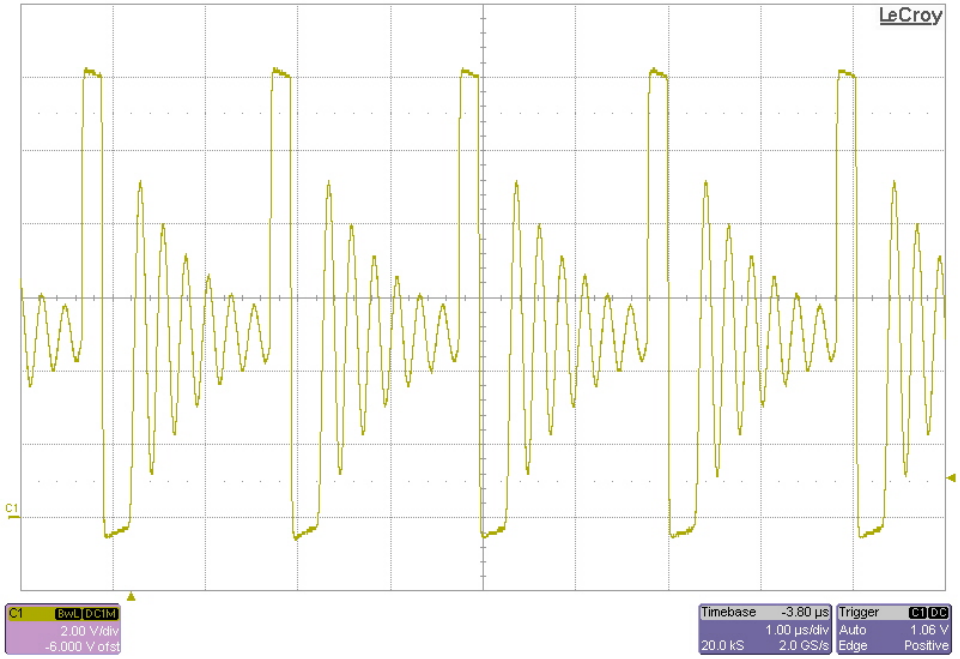
11 Switching Waveforms

The images below show the voltage waveform PH pin of the TPS54240. The input was 12V.

11.1 2.1A Load



11.2 No Load



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