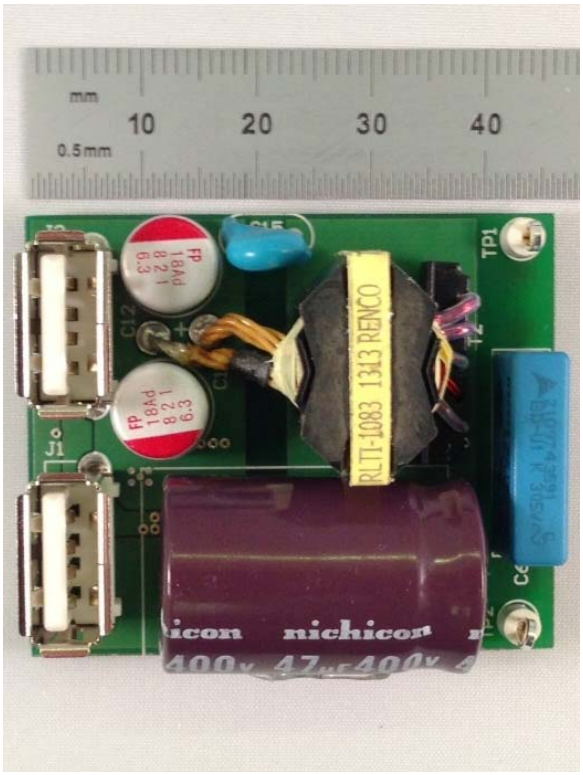
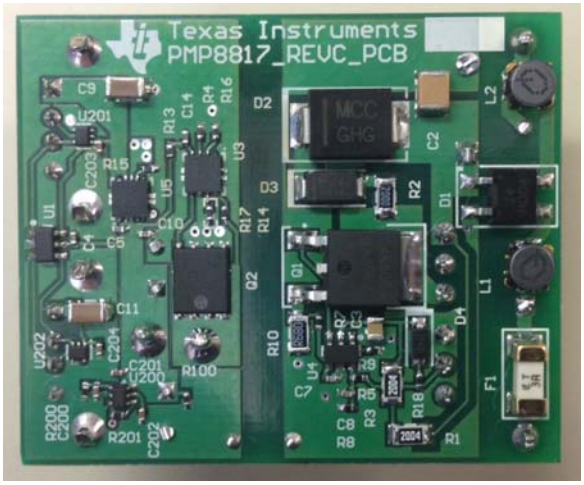
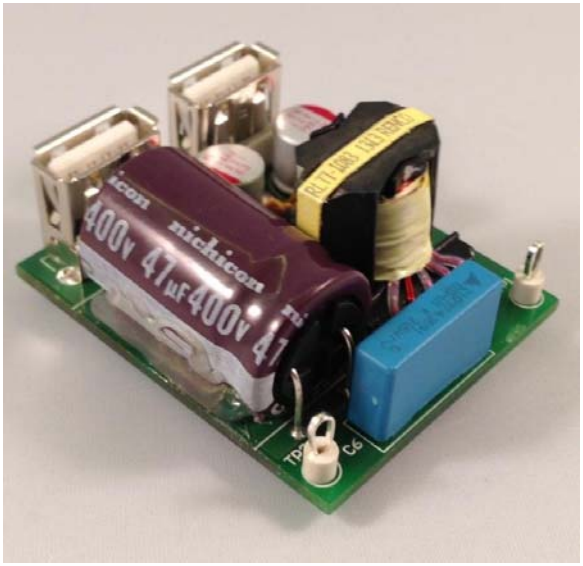
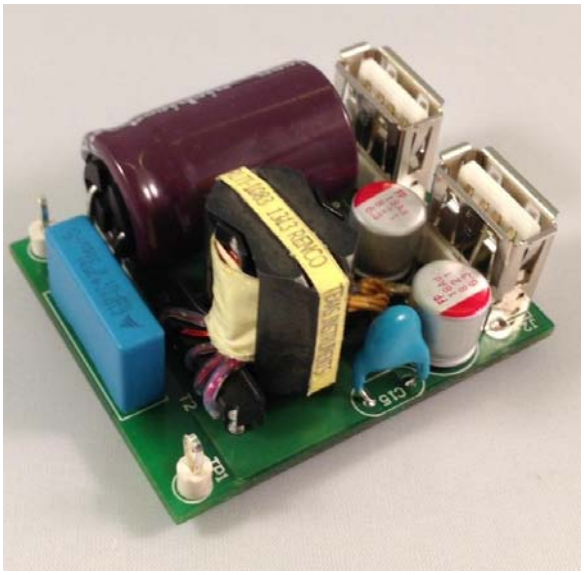
1 Photos

The photographs below show the PMP8817 Rev C prototype assembly.







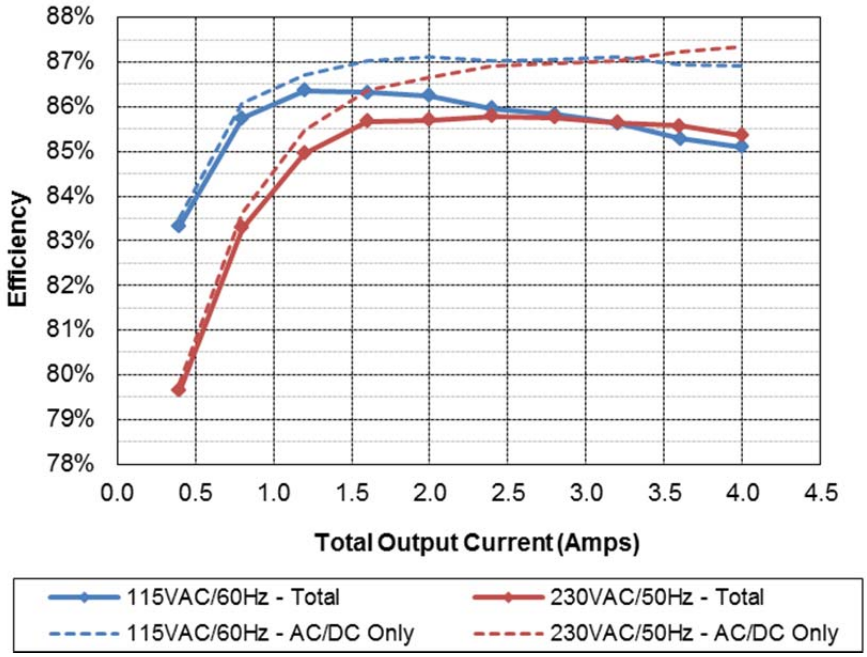


2 Standby Power

With no load attached to the output of the supply, the unit draws 65mW of input power with an 115VAC/60Hz input, and 127mW with a 230VAC/50Hz input.

3 Efficiency

The efficiency data is shown in the table and graph below. The currents on both ports were stepped simultaneously from no load to full load in 10% increments.



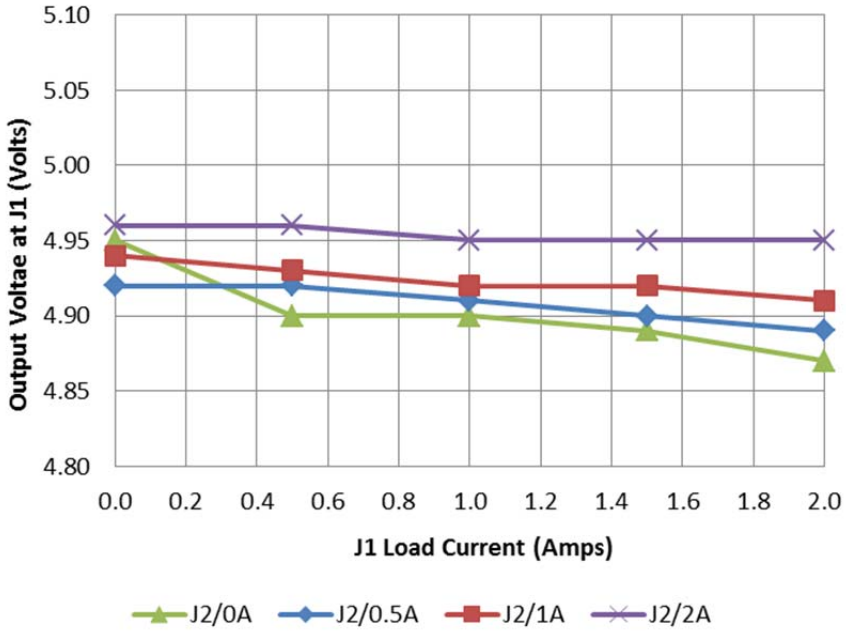
115VAC/60Hz

J1 Port		J2 Port		AC/DC (J1 + J2)						Total			AC/DC Only		
Iout	Vout	Iout	Vout	Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency	Pout	Losses	Efficiency
0.000	4.95	0.000	4.98	0.000	4.98	114.9	0.007	0.065						0.07	
0.198	4.92	0.200	4.92	0.398	4.93	114.9	0.060	2.35	0.34	1.96	0.39	83.3%	1.96	0.39	83.5%
0.400	4.93	0.400	4.93	0.800	4.95	114.9	0.104	4.60	0.38	3.94	0.66	85.7%	3.96	0.64	86.1%
0.600	4.93	0.600	4.93	1.200	4.95	114.9	0.144	6.85	0.41	5.92	0.93	86.4%	5.94	0.91	86.7%
0.800	4.92	0.800	4.92	1.600	4.96	114.9	0.182	9.12	0.44	7.87	1.25	86.3%	7.94	1.18	87.0%
1.000	4.92	1.000	4.92	2.000	4.97	114.9	0.218	11.41	0.46	9.84	1.57	86.2%	9.94	1.47	87.1%
1.199	4.92	1.200	4.92	2.399	4.98	114.9	0.253	13.73	0.47	11.80	1.93	86.0%	11.95	1.78	87.0%
1.400	4.92	1.400	4.92	2.800	4.99	114.9	0.287	16.05	0.49	13.78	2.27	85.8%	13.97	2.08	87.1%
1.599	4.93	1.600	4.92	3.199	5.01	114.9	0.320	18.40	0.50	15.76	2.64	85.6%	16.03	2.37	87.1%
1.800	4.93	1.802	4.92	3.602	5.02	114.9	0.354	20.80	0.51	17.74	3.06	85.3%	18.08	2.72	86.9%
2.000	4.94	2.002	4.93	4.002	5.04	114.9	0.387	23.21	0.52	19.75	3.46	85.1%	20.17	3.04	86.9%

230VAC/50Hz

J1 Port		J2 Port		AC/DC (J1 + J2)						Total			AC/DC Only		
Iout	Vout	Iout	Vout	Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency	Pout	Losses	Efficiency
0.000	4.94	0.000	4.94	0.000	4.94	230.0	0.011	0.127						0.13	
0.199	4.91	0.200	4.91	0.399	4.92	230.0	0.042	2.46	0.25	1.96	0.50	79.6%	1.96	0.50	79.8%
0.399	4.92	0.400	4.92	0.799	4.94	230.0	0.071	4.72	0.29	3.93	0.79	83.3%	3.95	0.77	83.6%
0.600	4.92	0.600	4.92	1.200	4.95	230.0	0.097	6.95	0.31	5.90	1.05	84.9%	5.94	1.01	85.5%
0.801	4.92	0.801	4.92	1.602	4.96	230.0	0.122	9.20	0.33	7.88	1.32	85.7%	7.95	1.25	86.4%
1.000	4.92	1.000	4.91	2.000	4.97	230.0	0.146	11.47	0.34	9.83	1.64	85.7%	9.94	1.53	86.7%
1.200	4.92	1.200	4.91	2.400	4.98	230.0	0.169	13.75	0.36	11.80	1.95	85.8%	11.95	1.80	86.9%
1.401	4.92	1.400	4.92	2.801	4.99	230.0	0.191	16.07	0.37	13.78	2.29	85.8%	13.98	2.09	87.0%
1.601	4.92	1.600	4.92	3.201	5.00	230.0	0.212	18.39	0.38	15.75	2.64	85.6%	16.01	2.39	87.0%
1.797	4.93	1.803	4.92	3.600	5.02	230.0	0.233	20.72	0.39	17.73	2.99	85.6%	18.07	2.65	87.2%
2.000	4.93	2.002	4.92	4.002	5.04	230.0	0.254	23.09	0.40	19.71	3.38	85.4%	20.17	2.92	87.4%

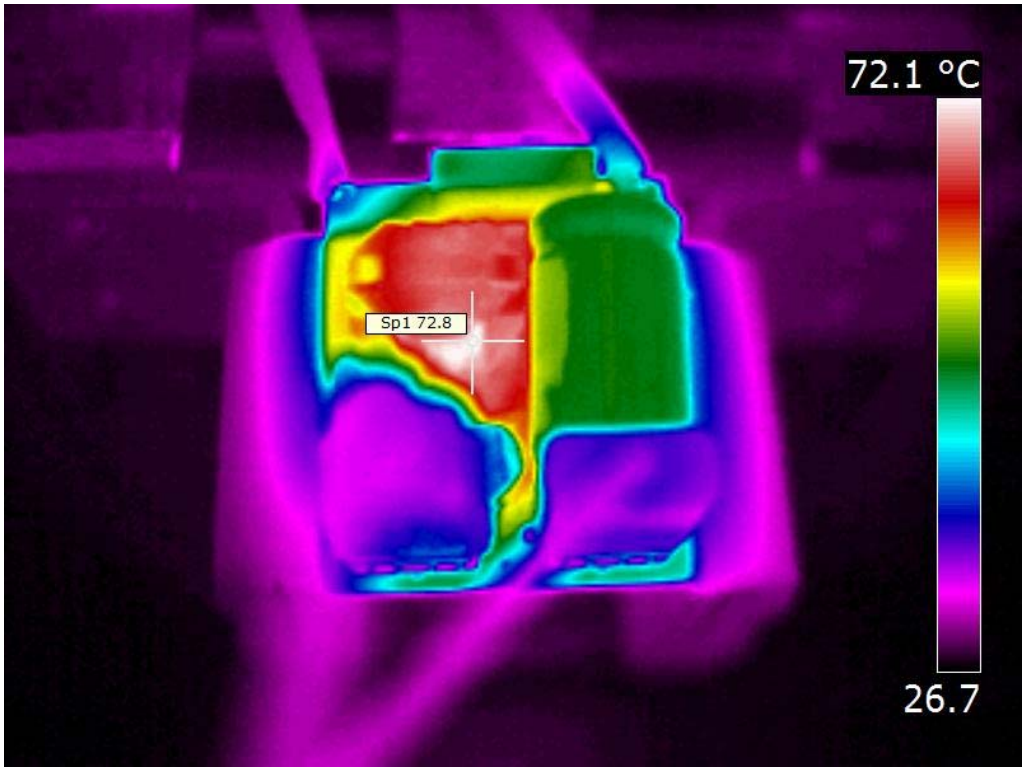
4 Cross-Regulation



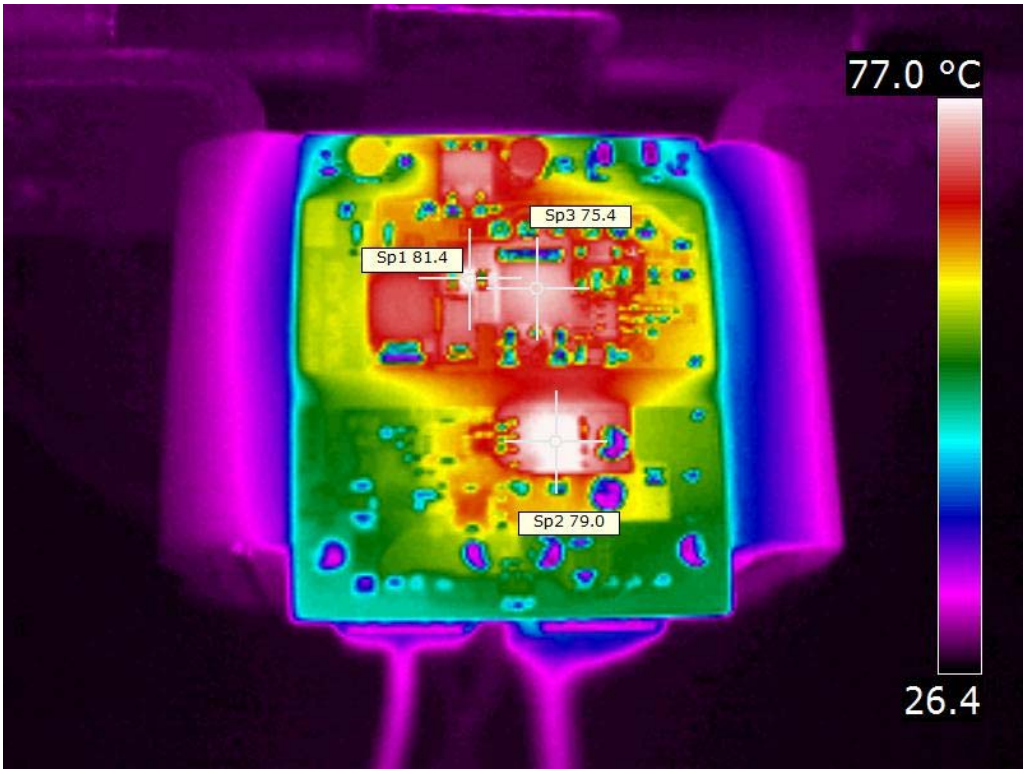
5 Thermal Images

The thermal images below show the assembly with both ports loaded with 2A each. The ambient temperature was 25ºC.

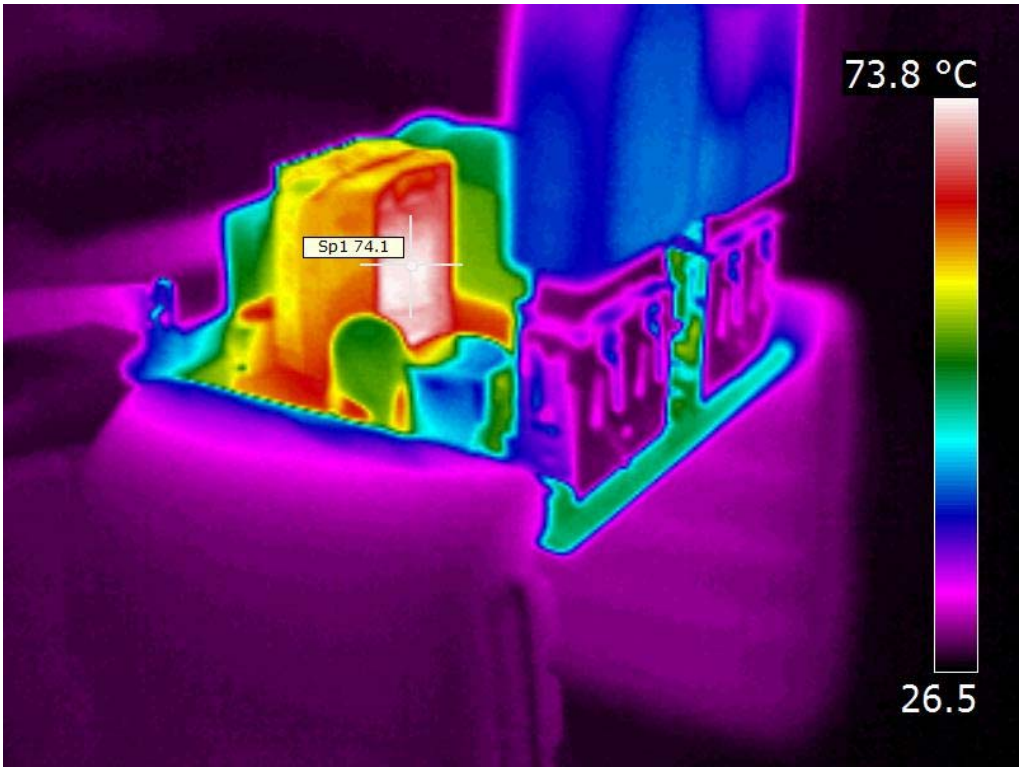
5.1 115VAC/60Hz – Top View



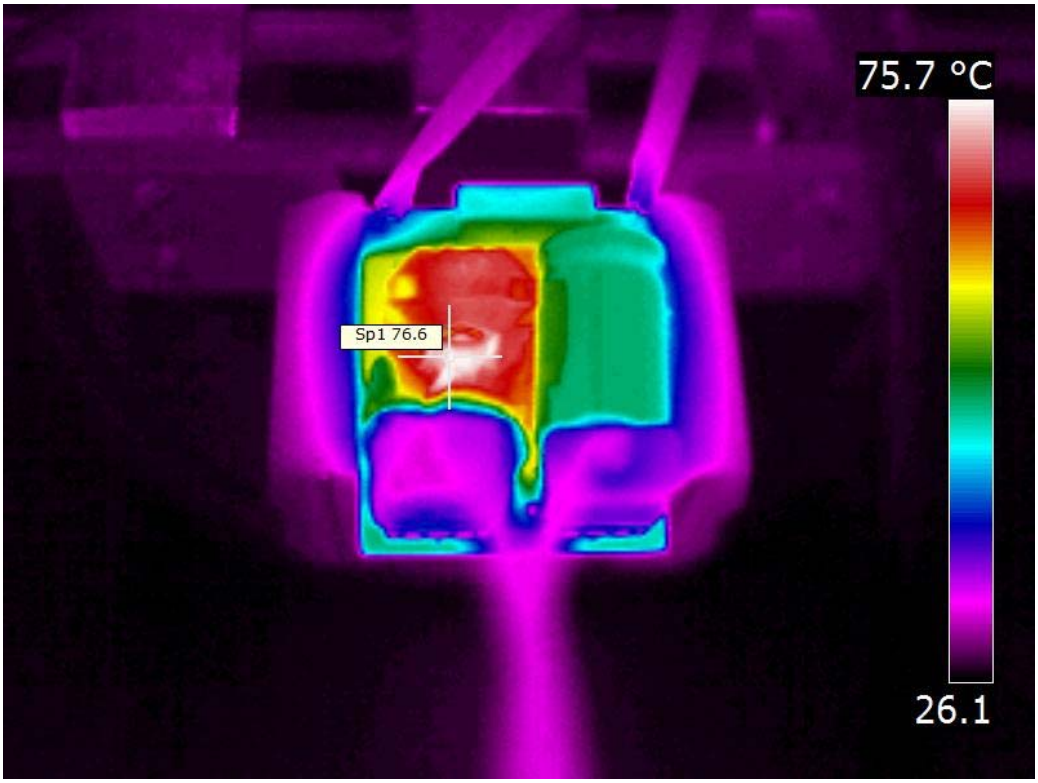
5.2 115VAC/60Hz – Bottom View



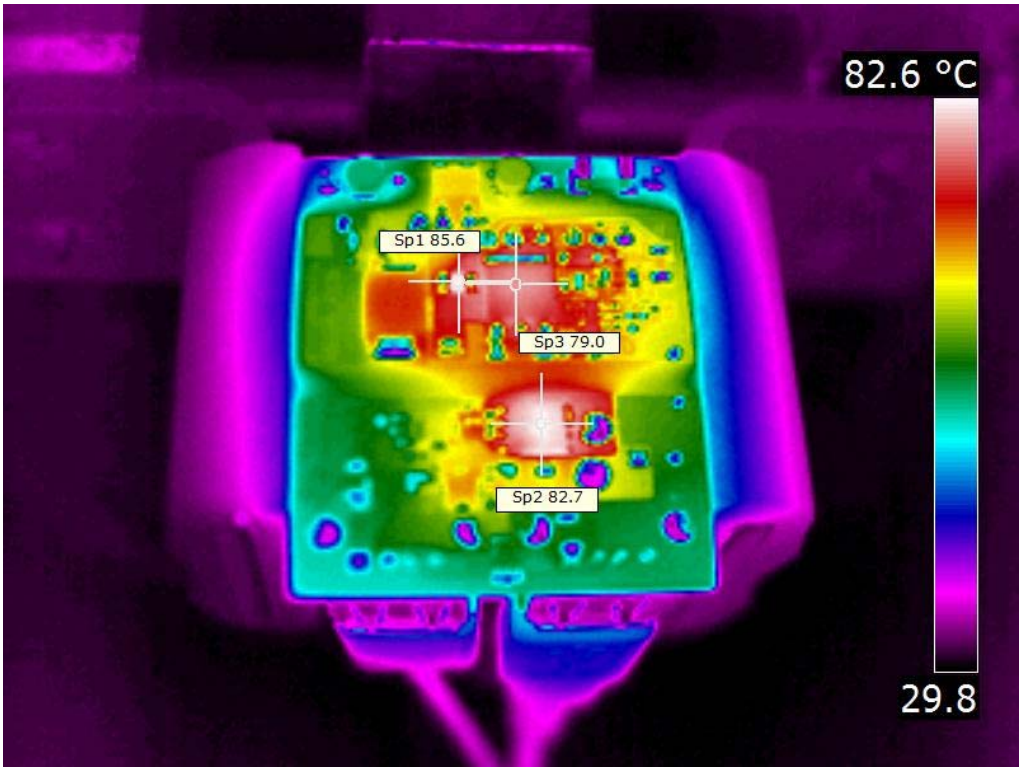
5.3 115VAC/60Hz – Transformer View



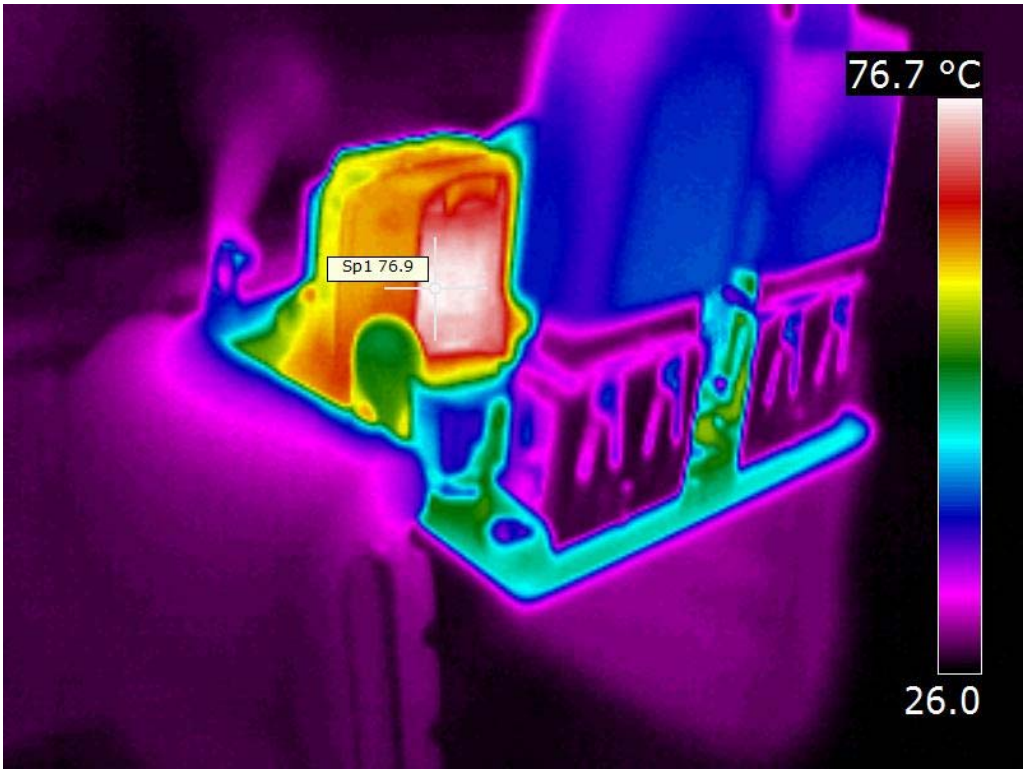
5.4 230VAC/50Hz – Top View



5.5 230VAC/50Hz – Bottom View

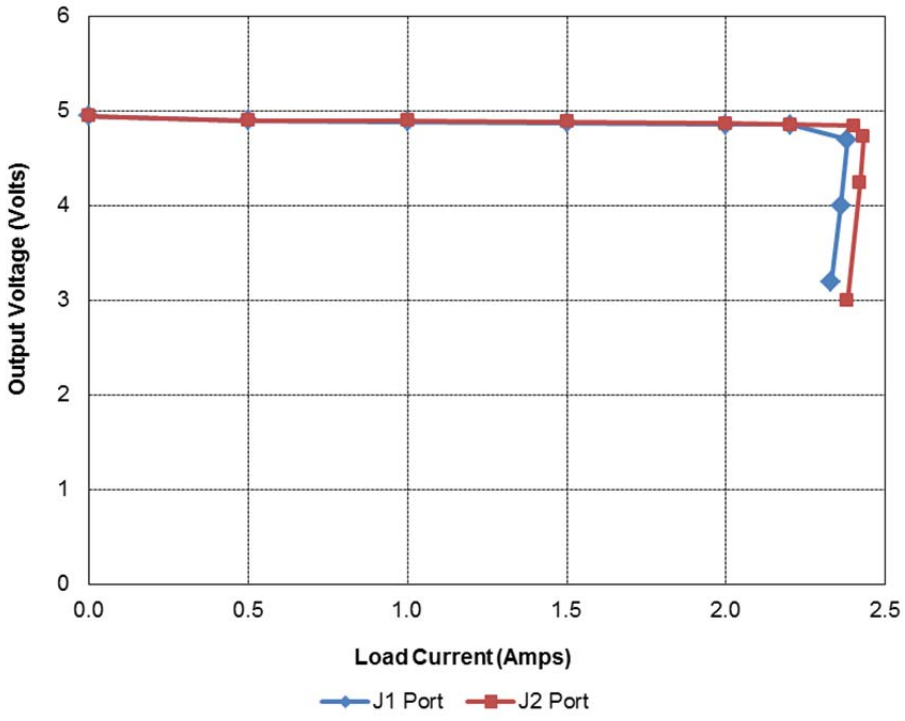


5.6 230VAC/50Hz – Transformer View



6 Current Limit

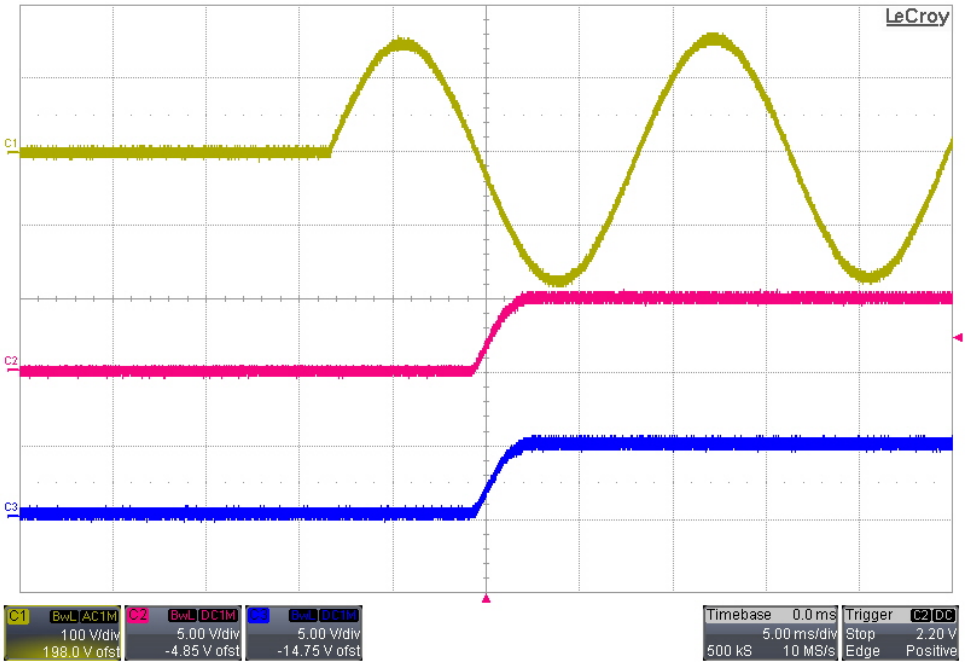
The plot below shows the output voltages on each port versus output current as the load is increased into current limit.



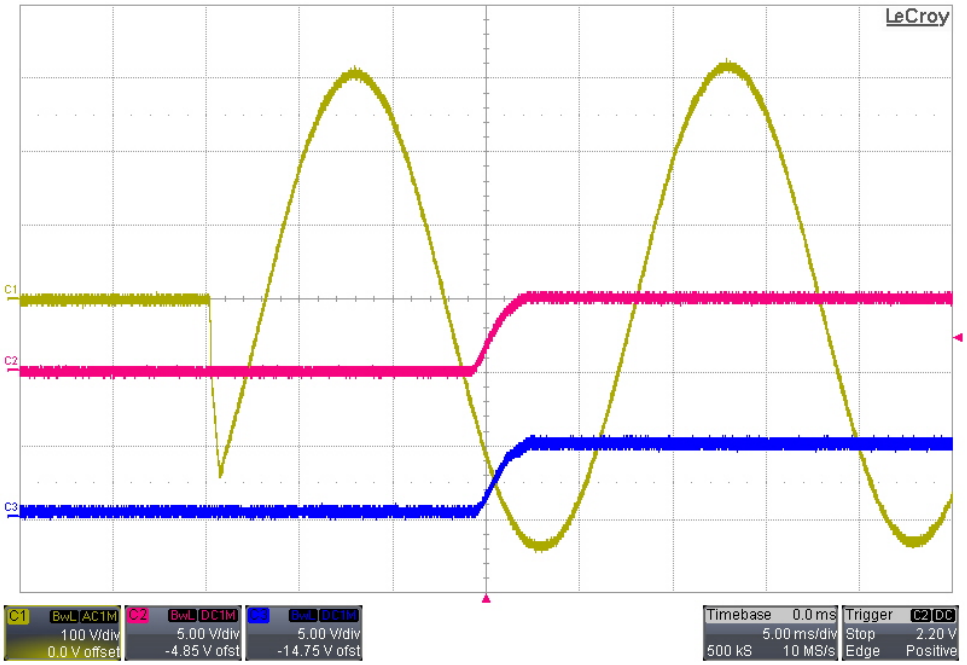
7 Startup

The output voltages at startup are shown in the images below. Channel 1 shows the AC input voltage. Channel 2 shows the voltage on charge port J1. Channel 3 shows the voltage on charge port J2.

7.1 115VAC/60Hz



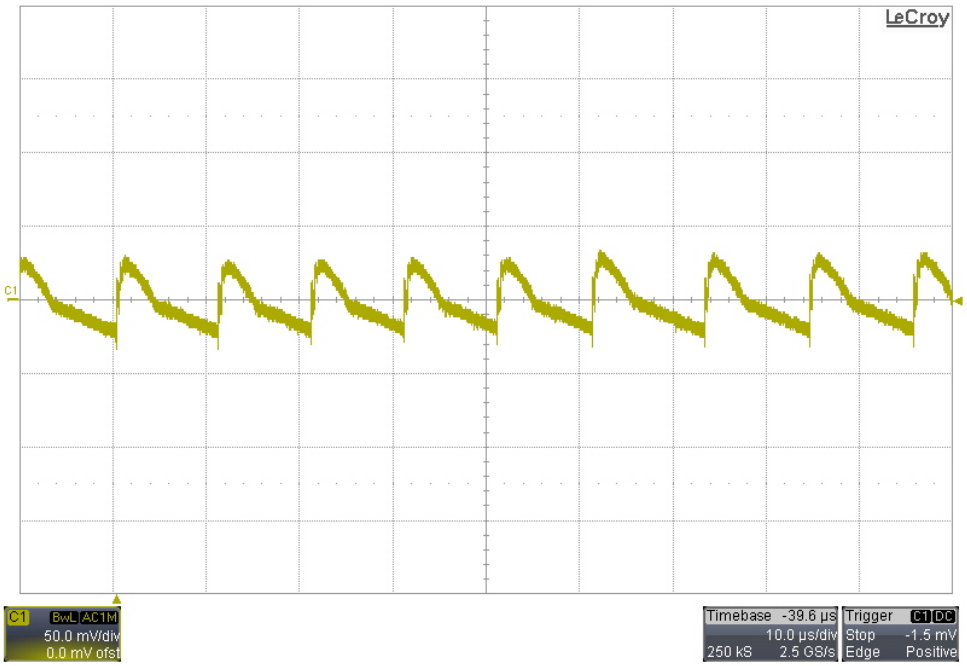
7.2 230VAC/50Hz



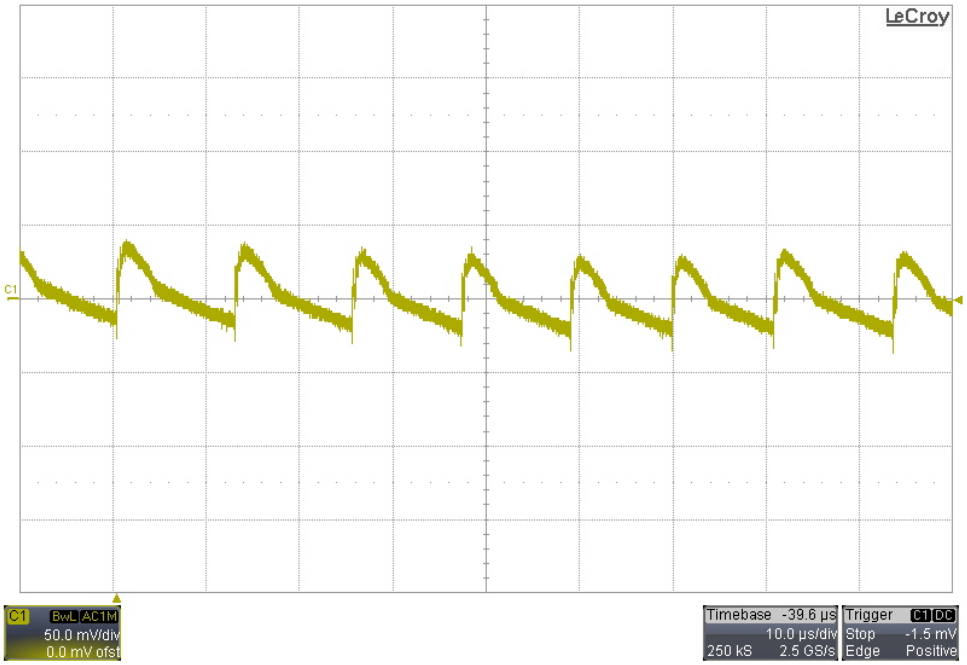
8 Output Ripple Voltage

The output was loaded with a total of 4A. Ripple was measured across C9.

8.1 115VAC/60Hz



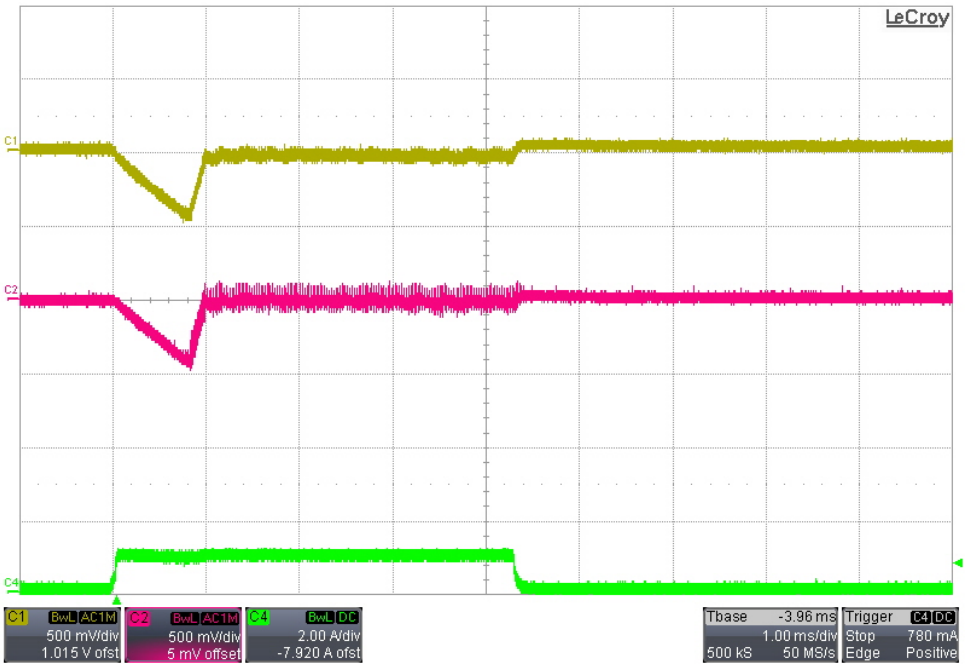
8.2 230VAC/50Hz



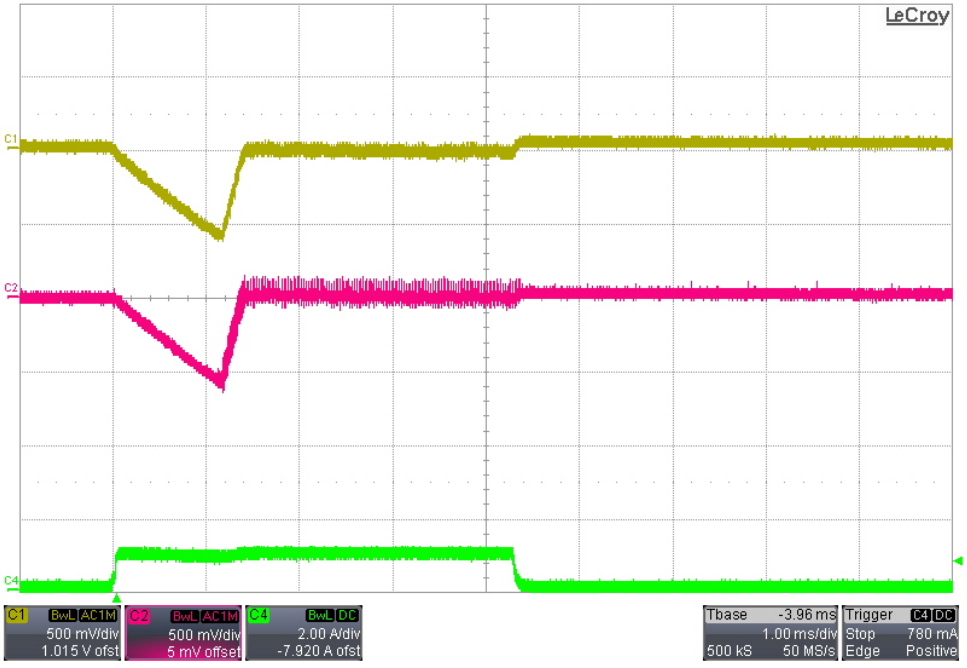
9 Load Transients

Channel 1 shows the voltage on charge port J1. Channel 2 shows the voltage on charge port J2. Channel 4 shows the load current on charge port J1.

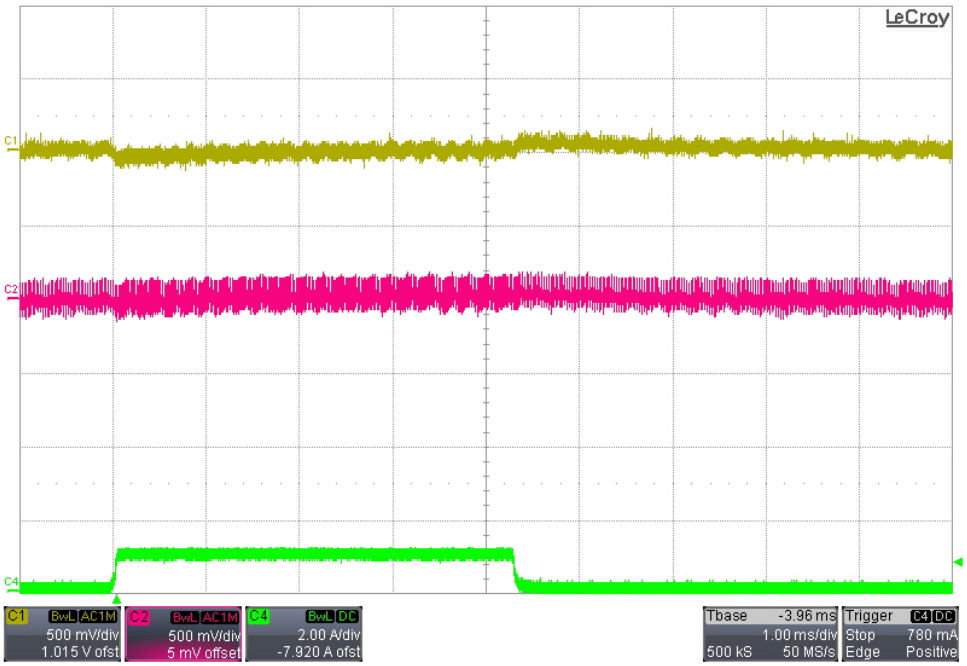
9.1 0A on J2; 0A to 1A Transient on J1; 115VAC/60Hz Input



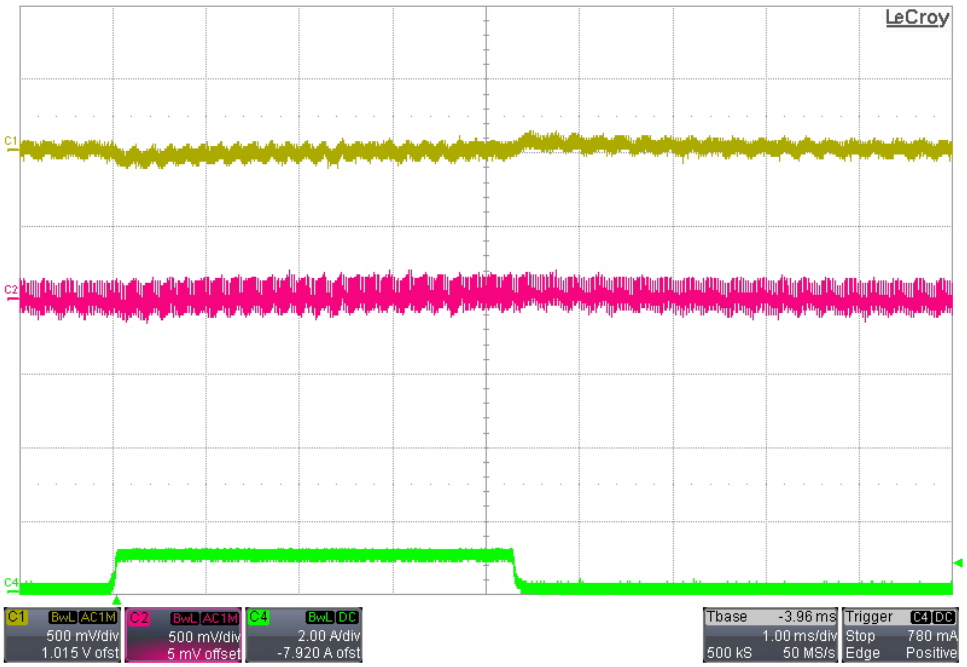
9.2 0A on J2; 0A to 1A Transient on J1; 230VAC/50Hz Input



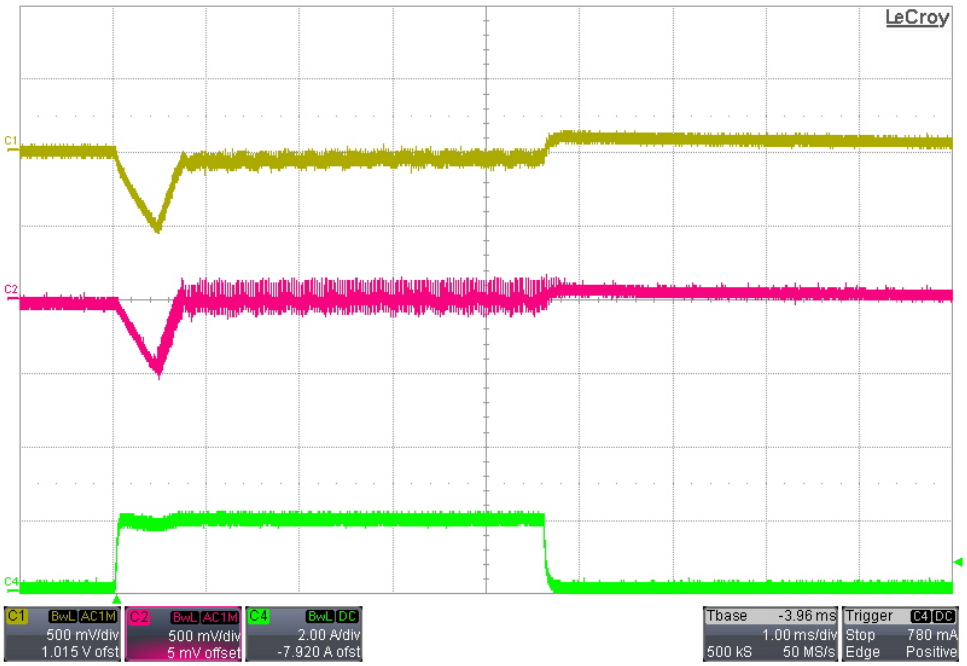
9.3 2A on J2; 0A to 1A Transient on J1; 115VAC/60Hz Input



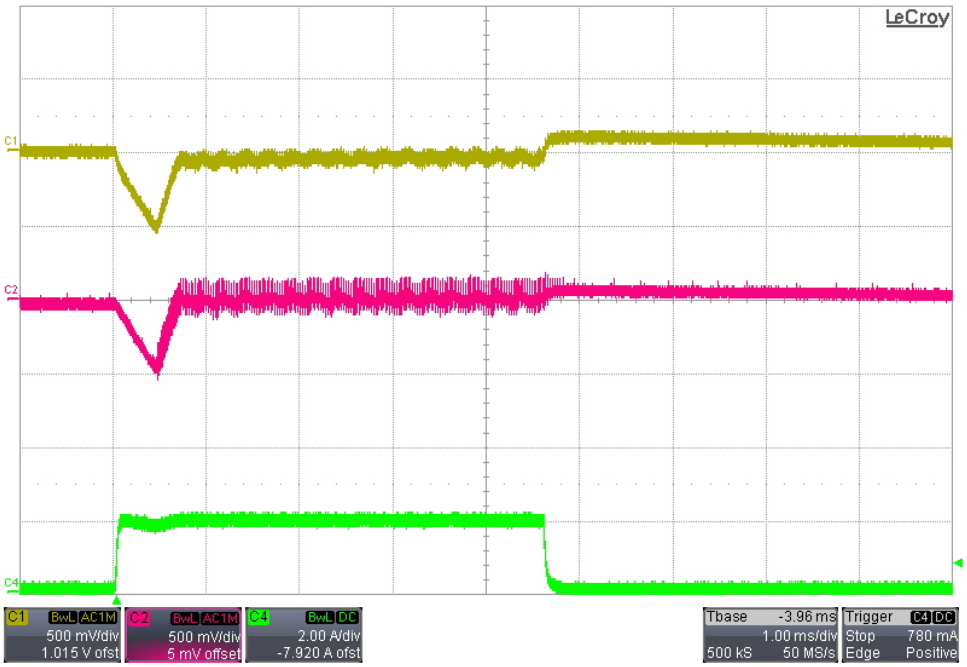
9.4 2A on J2; 0A to 1A Transient on J1; 230VAC/50Hz Input



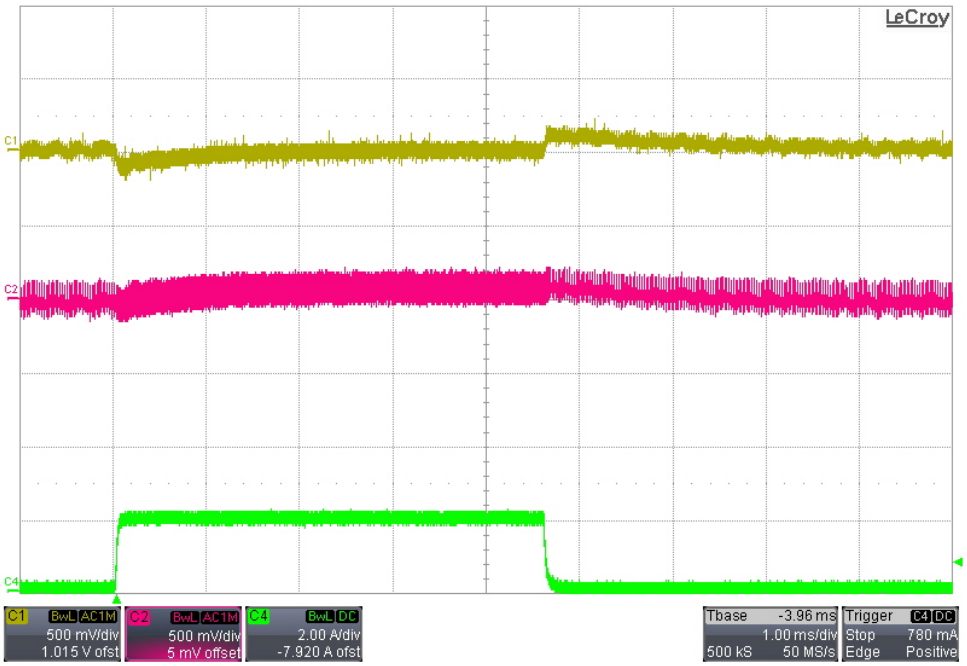
9.5 0A on J2; 20mA to 2A Transient on J1; 115VAC/60Hz Input



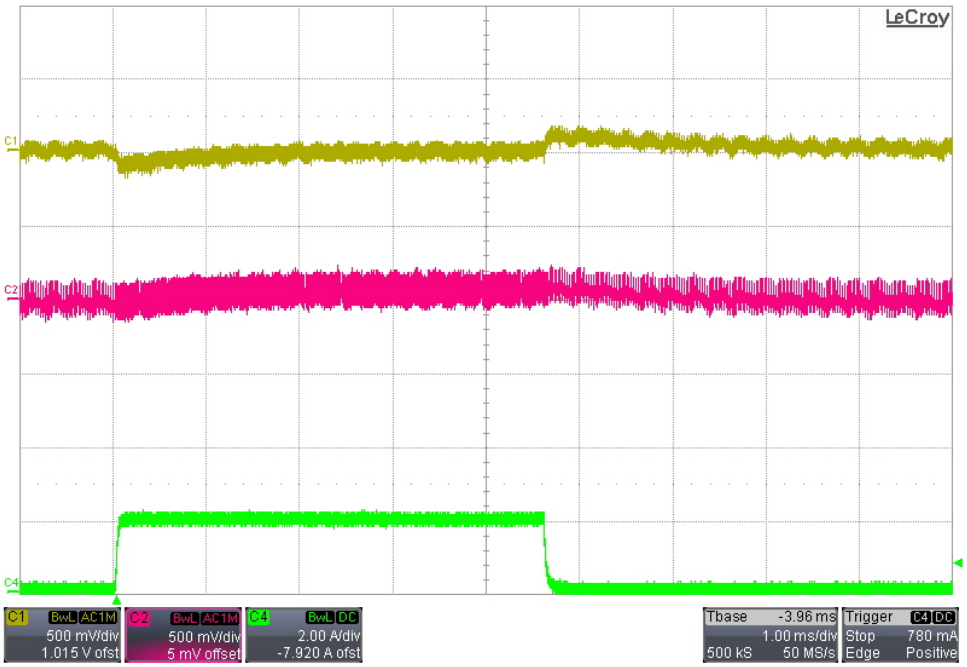
9.6 0A on J2; 20mA to 2A Transient on J1; 230VAC/50Hz Input



9.7 2A on J2; 20mA to 2A Transient on J1; 115VAC/60Hz Input

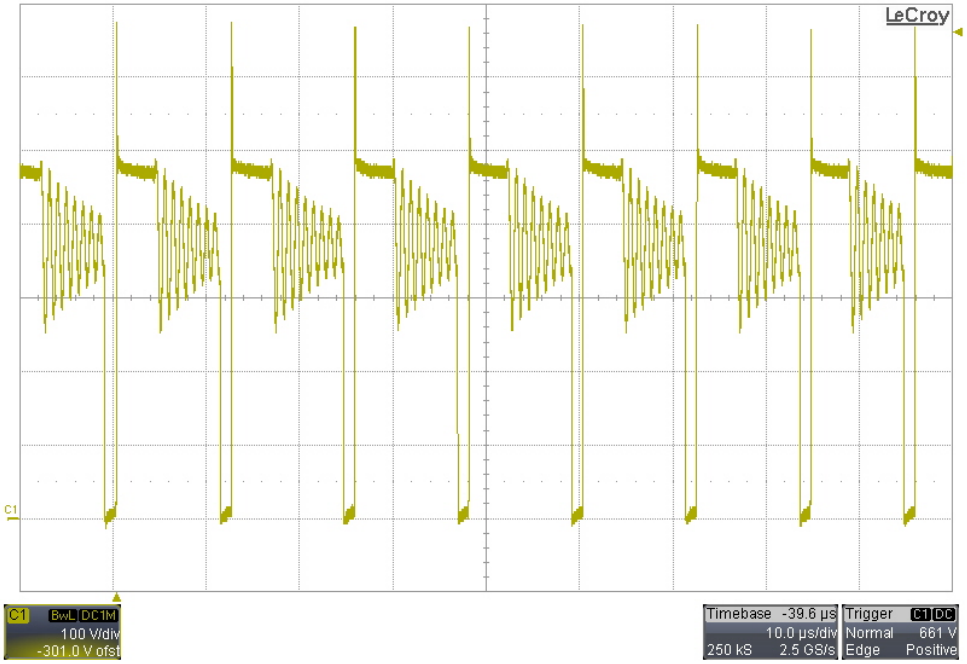


9.8 2A on J2; 20mA to 2A Transient on J1; 230VAC/50Hz Input



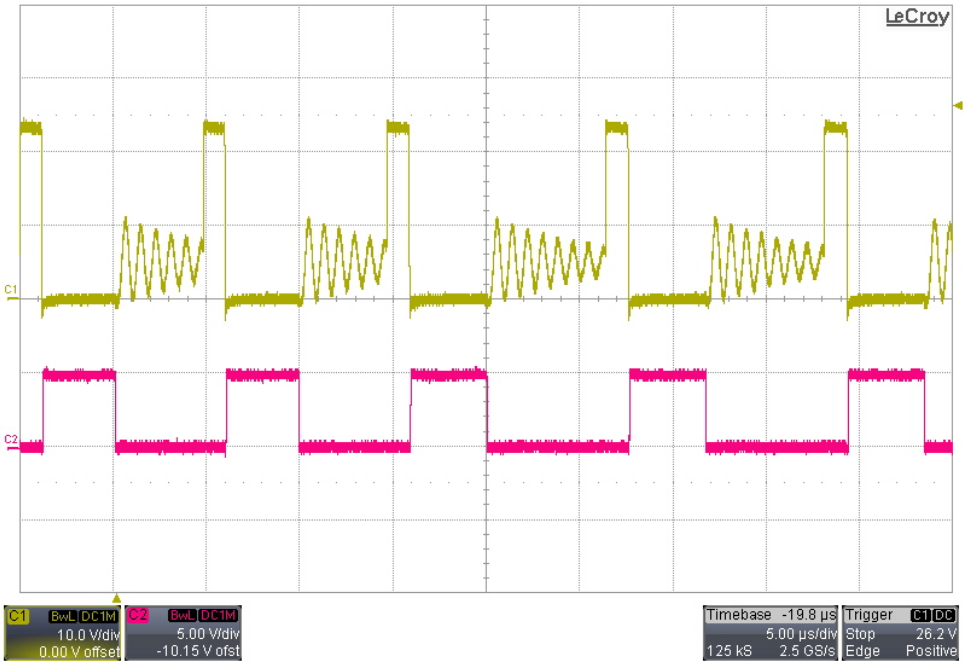
10 Primary Waveforms

The image below shows the drain-to-source voltage on Q1. The input was 265VAC/50Hz, and the output was loaded with a total of 4A.



11 Secondary Waveforms

Channel 1 shows the voltage on the drain of Q2. Channel 2 shows the voltage on the gate of Q2. The input was 265VAC/50Hz, and the output was loaded with a total of 4A.



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