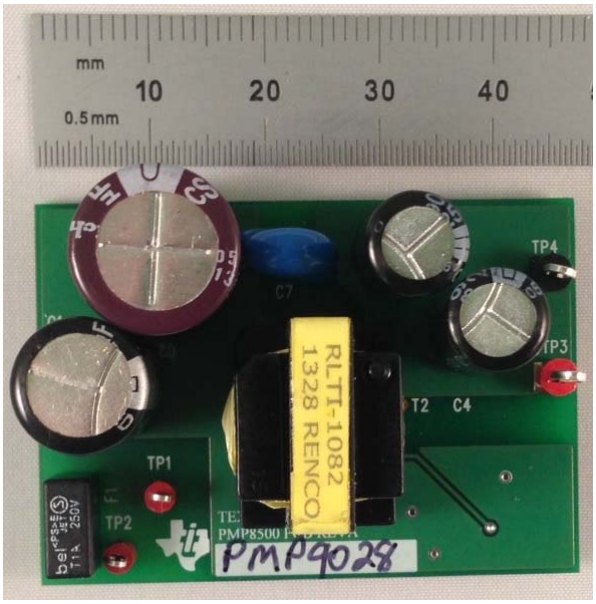
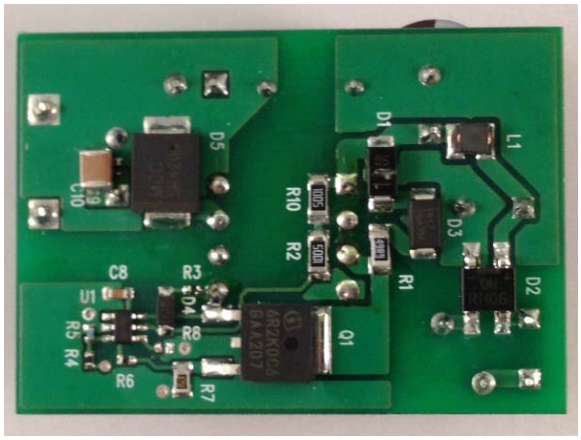
1 Photos

The photographs below show the PMP9028 Rev A prototype assembly. This circuit was built on a PMP8500 Rev A PCB.

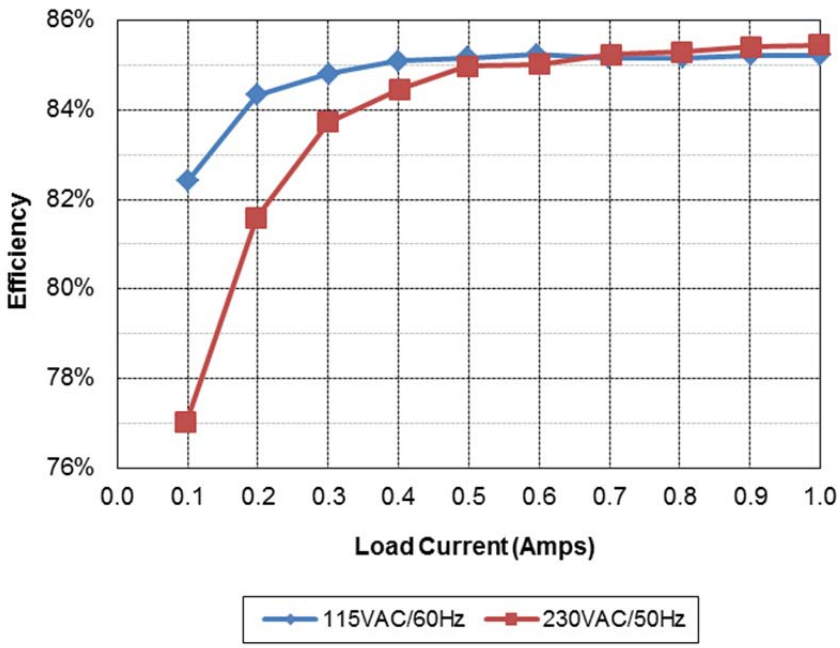




2 Standby Power

With no load attached to the output of the supply, the unit draws 34mW of input power with an 115VAC/60Hz input, and 44mW with a 230VAC/50Hz input.

3 Efficiency

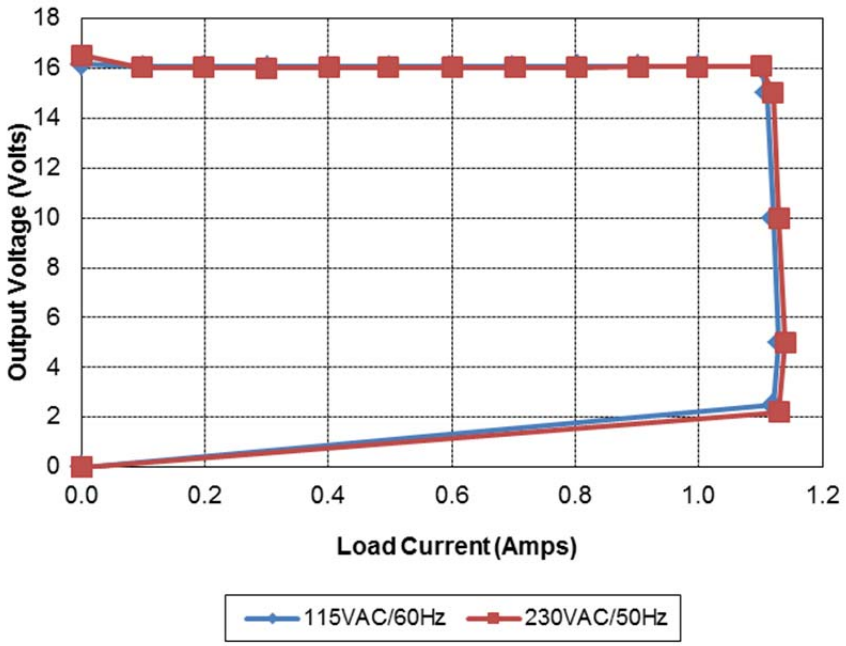


115VAC/60Hz								
Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.000	16.17	115.1	0.0018	0.034		0.00	0.03	0.0%
0.100	16.07	115.0	0.046	1.95	0.37	1.61	0.34	82.4%
0.199	16.06	115.0	0.080	3.79	0.41	3.20	0.59	84.3%
0.301	16.06	115.0	0.112	5.70	0.44	4.83	0.87	84.8%
0.399	16.06	115.0	0.140	7.53	0.47	6.41	1.12	85.1%
0.499	16.06	115.0	0.168	9.41	0.49	8.01	1.40	85.2%
0.596	16.06	115.0	0.194	11.23	0.50	9.57	1.66	85.2%
0.699	16.07	115.0	0.221	13.19	0.52	11.23	1.96	85.2%
0.804	16.08	115.0	0.248	15.18	0.53	12.93	2.25	85.2%
0.901	16.09	115.0	0.273	17.01	0.54	14.50	2.51	85.2%
1.000	16.08	115.0	0.297	18.87	0.55	16.08	2.79	85.2%

230VAC/50Hz								
Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.000	16.52	230.0	0.0140	0.044		0.00	0.04	0.0%
0.098	16.03	230.0	0.031	2.04	0.29	1.57	0.47	77.0%
0.198	16.03	230.0	0.054	3.89	0.32	3.17	0.72	81.6%
0.300	16.02	230.0	0.074	5.74	0.34	4.81	0.93	83.7%
0.402	16.03	230.0	0.093	7.63	0.36	6.44	1.19	84.5%
0.498	16.04	230.0	0.110	9.40	0.37	7.99	1.41	85.0%
0.600	16.04	230.0	0.128	11.32	0.39	9.62	1.70	85.0%
0.702	16.04	230.0	0.145	13.21	0.40	11.26	1.95	85.2%
0.803	16.04	230.0	0.161	15.10	0.41	12.88	2.22	85.3%
0.902	16.06	230.0	0.177	16.96	0.42	14.49	2.47	85.4%
0.998	16.07	230.0	0.191	18.77	0.43	16.04	2.73	85.4%

4 Current Limit

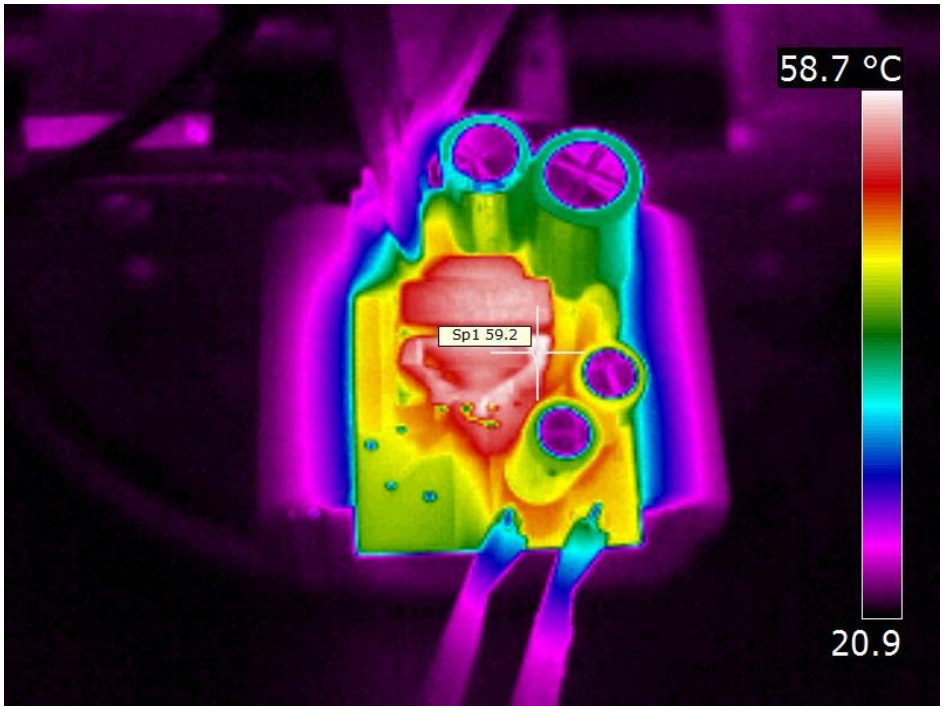
A plot of the output voltage versus load current is shown below.

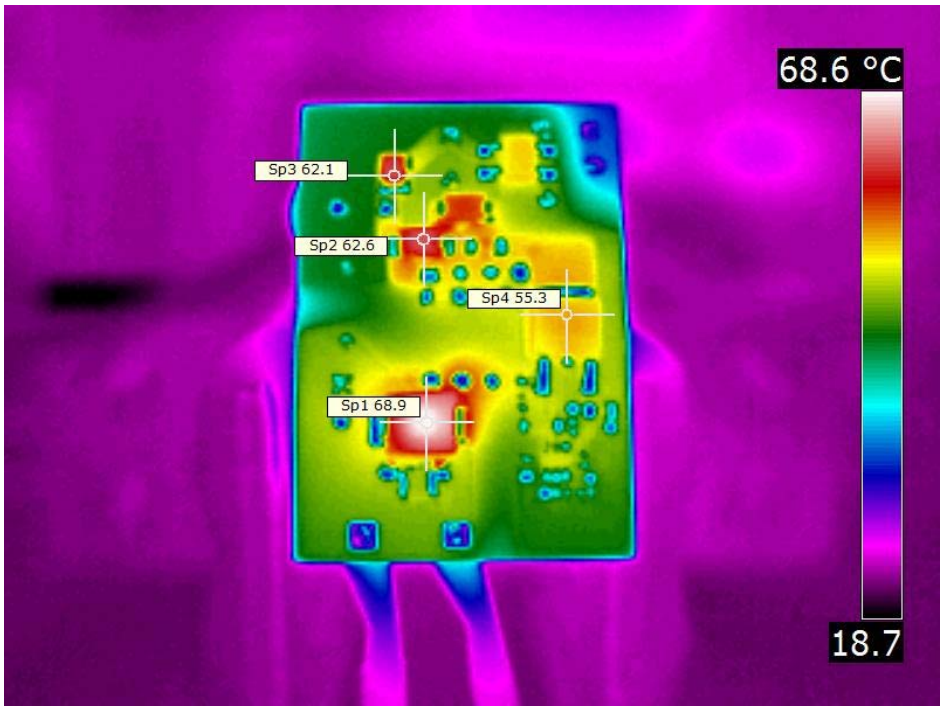


5 Thermal Images

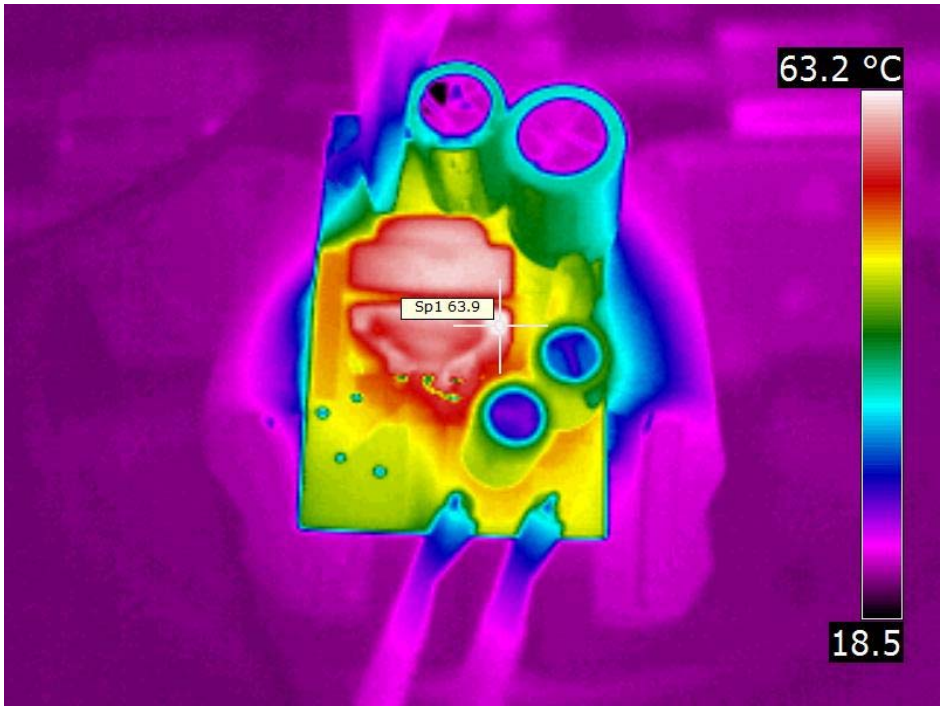
The ambient temperature was 25ºC. The output was loaded with 1A. These images were taken from PMP8977 Rev A Test Results, which is configured for 15V output.

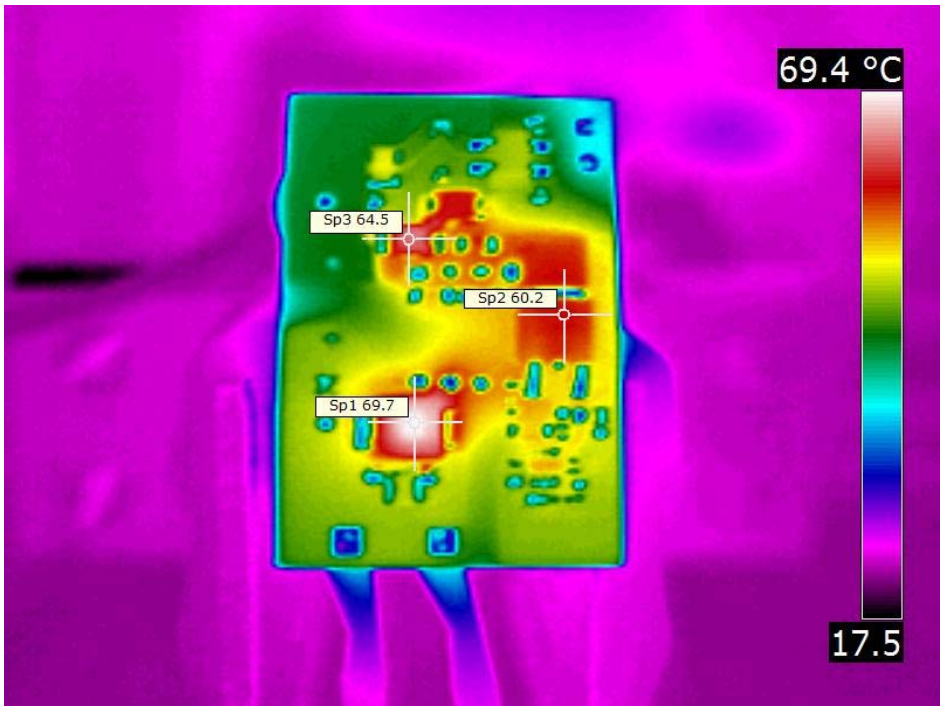
5.1 115VAC/60Hz Input





5.2 230VAC/50Hz Input

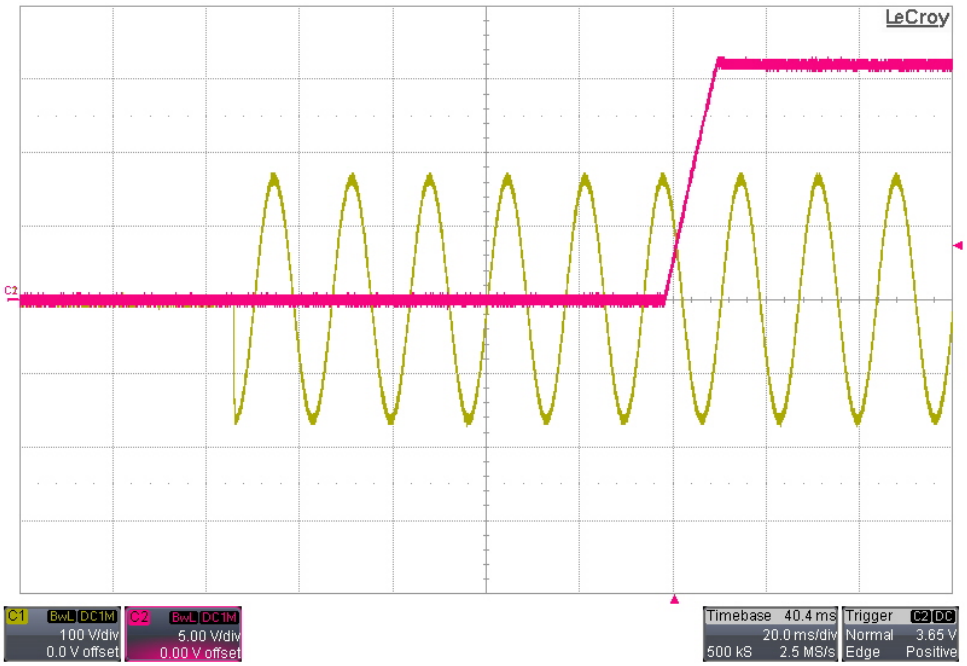




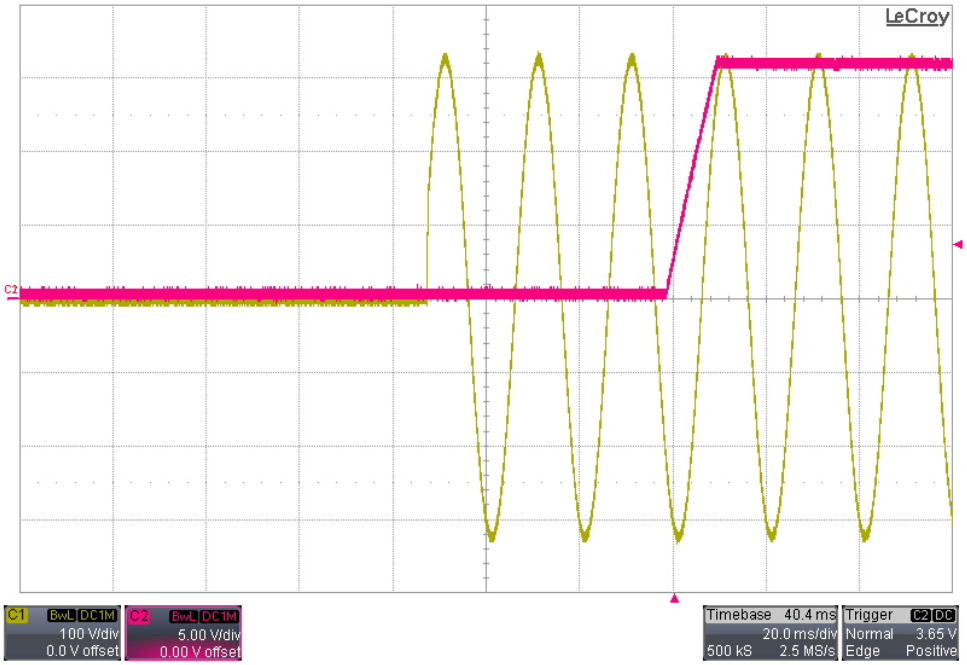
6 Startup

Channel 1 shows the AC input voltage. Channel 2 shows the output voltage.

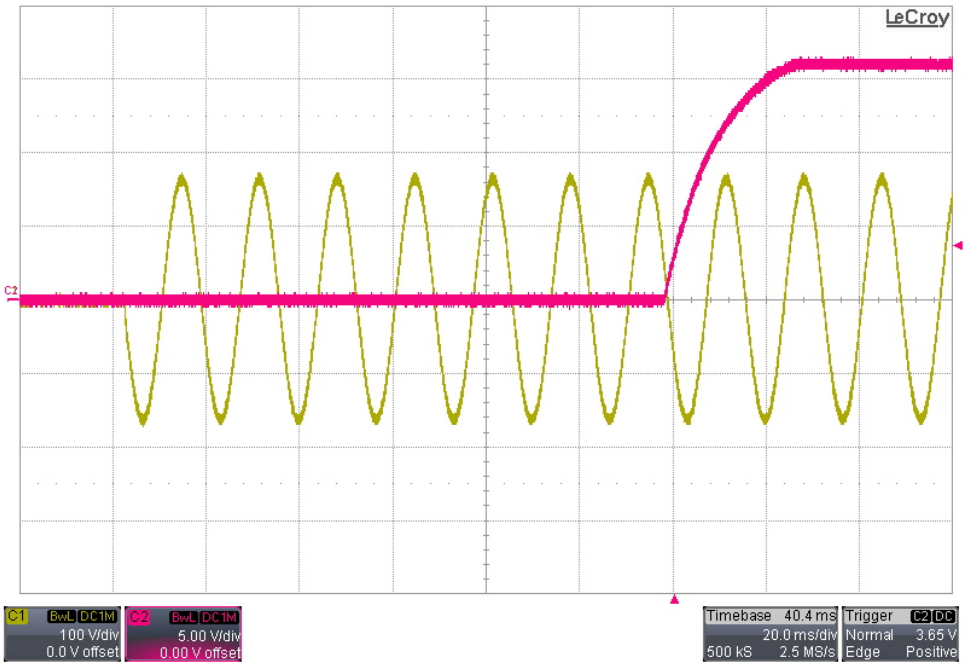
6.1 115VAC/60Hz Startup – 0A Load



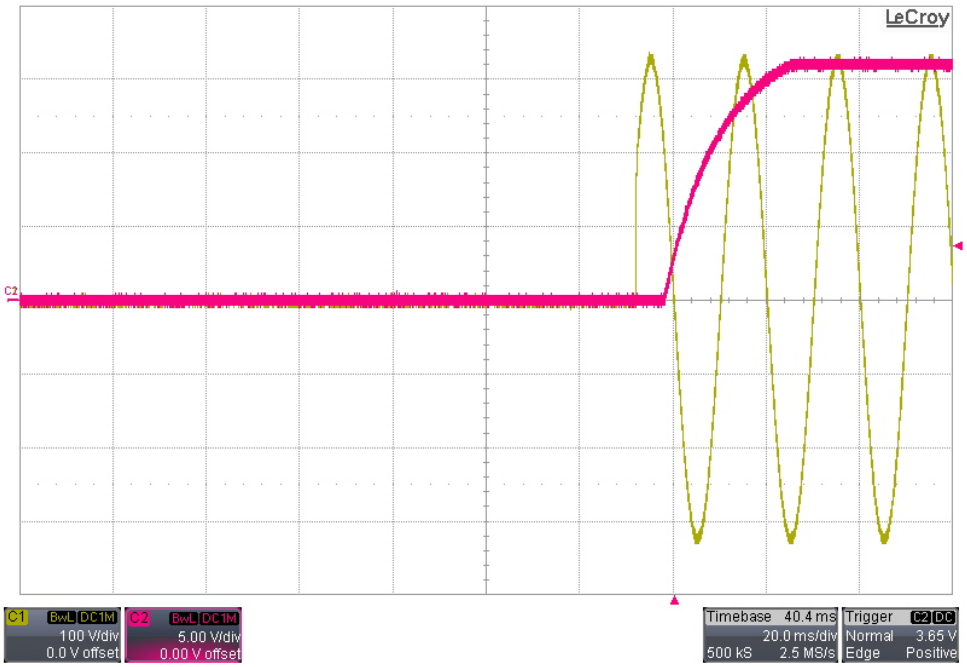
6.2 230VAC/50Hz Startup – 0A Load



6.3 115VAC/60Hz Startup – 16Ω Load



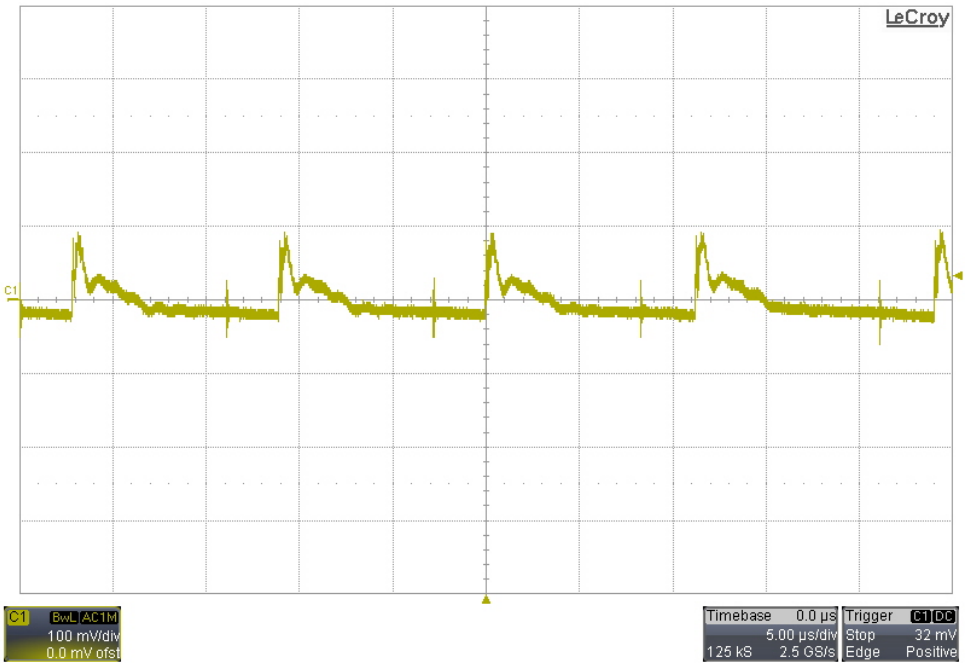
6.4 230VAC/50Hz Startup – 16Ω Load



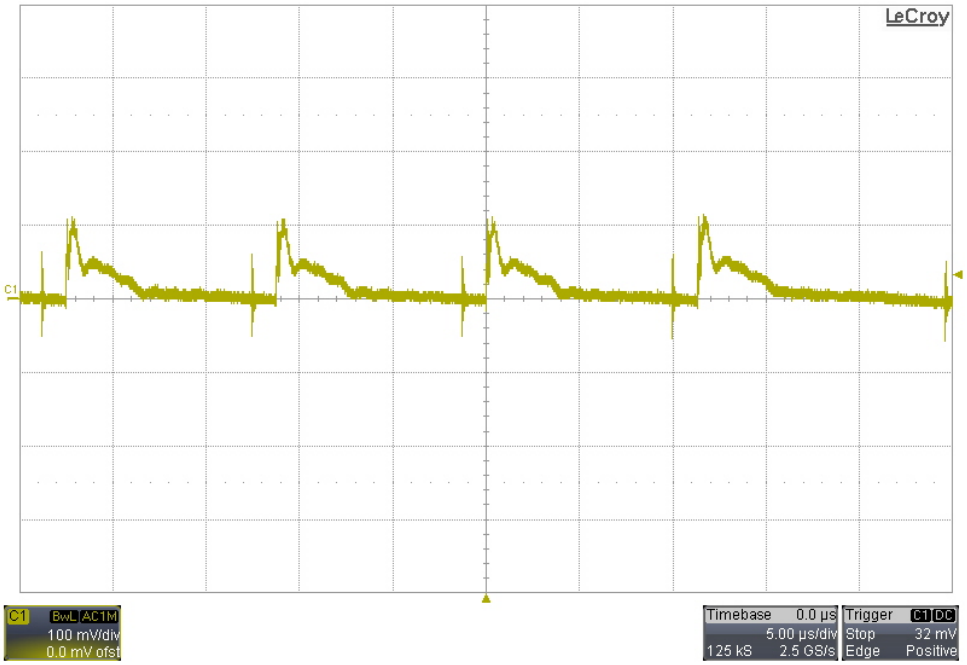
7 Output Ripple Voltage

The output was loaded with 1A.

7.1 115VAC/60Hz Output Ripple Voltage

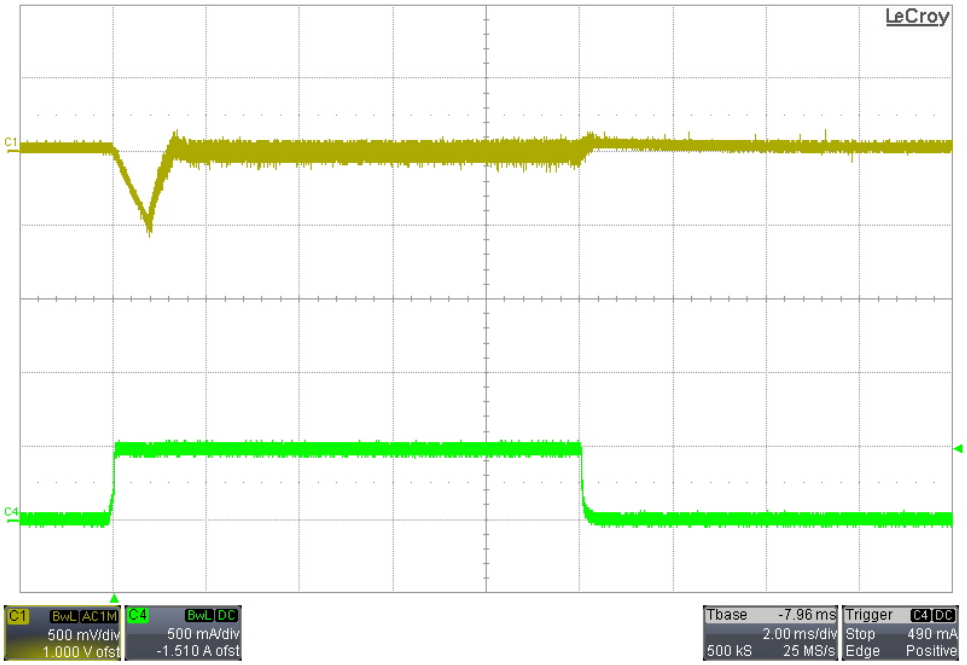


7.2 230VAC/50Hz Output Ripple Voltage

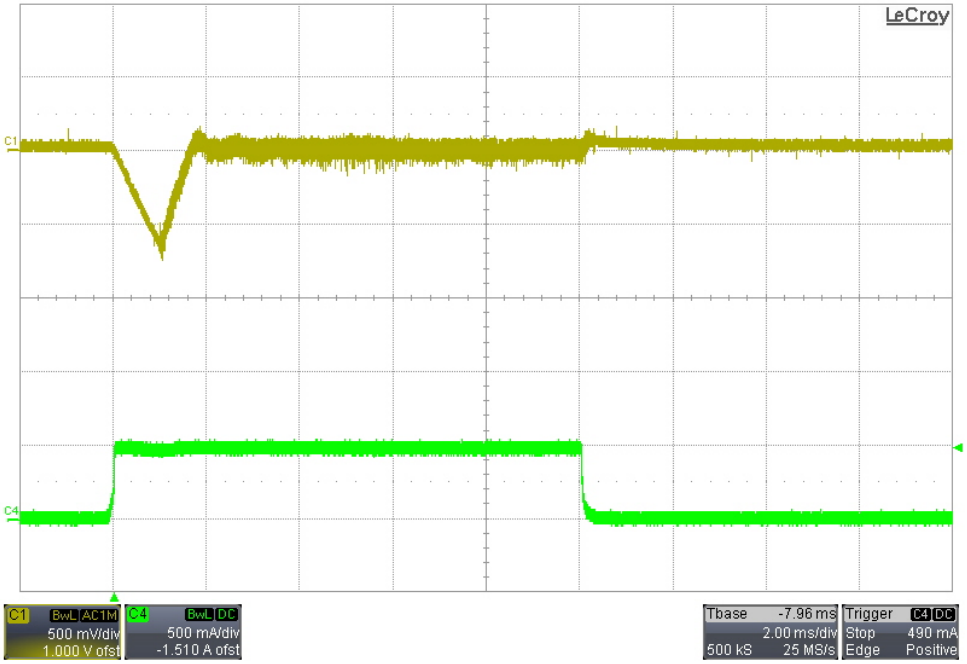


8 Load Transients

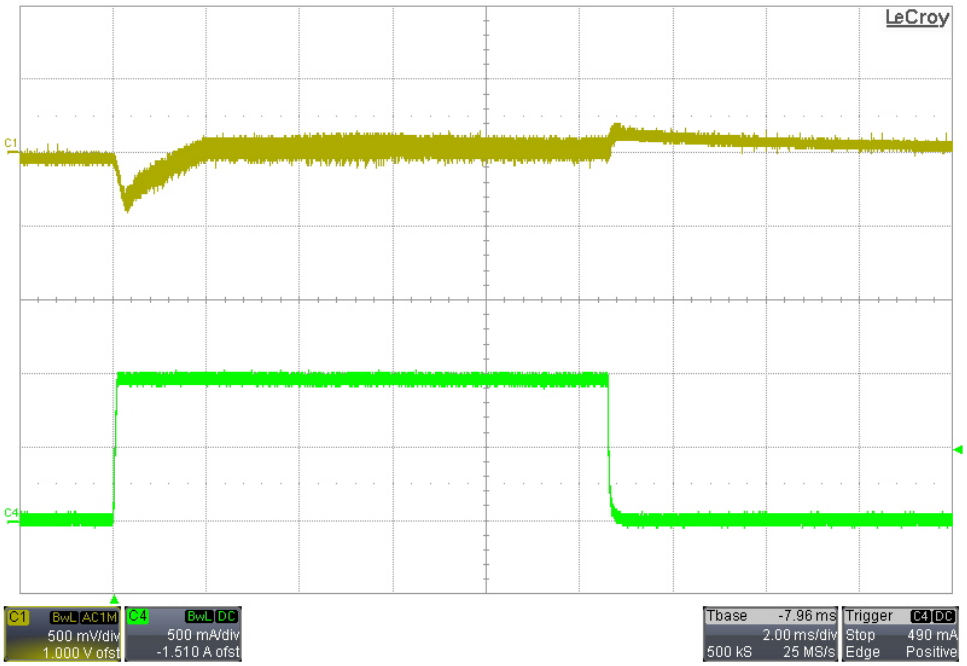
8.1 0A to 0.5A Transient – 115VAC/60Hz Input



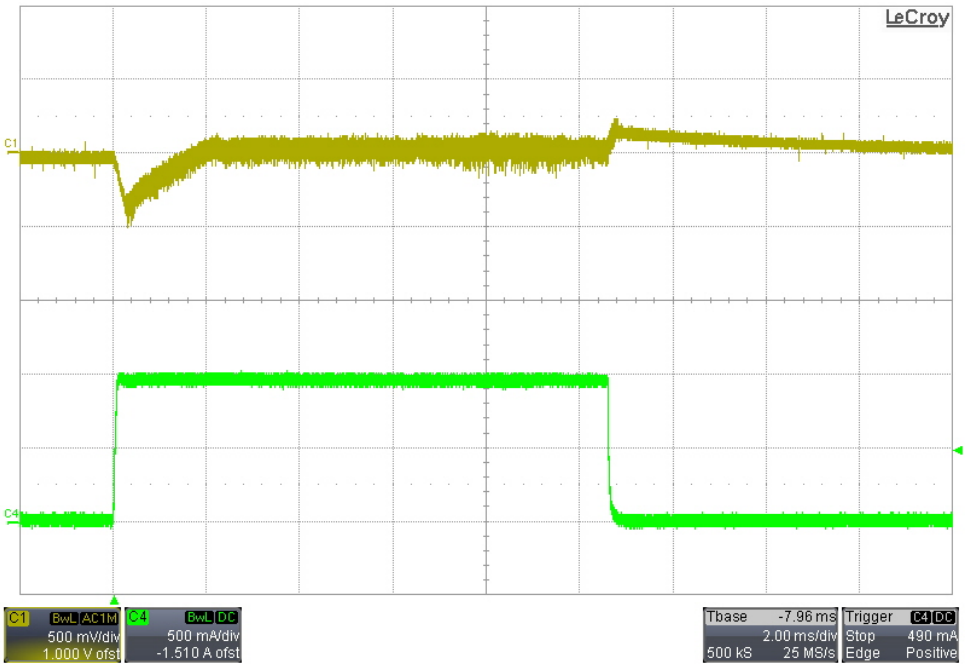
8.2 0A to 0.5A Transient – 230VAC/50Hz Input



8.3 10mA to 1A Transient – 115VAC/60Hz Input



8.4 10mA to 1A Transient – 230VAC/50Hz Input

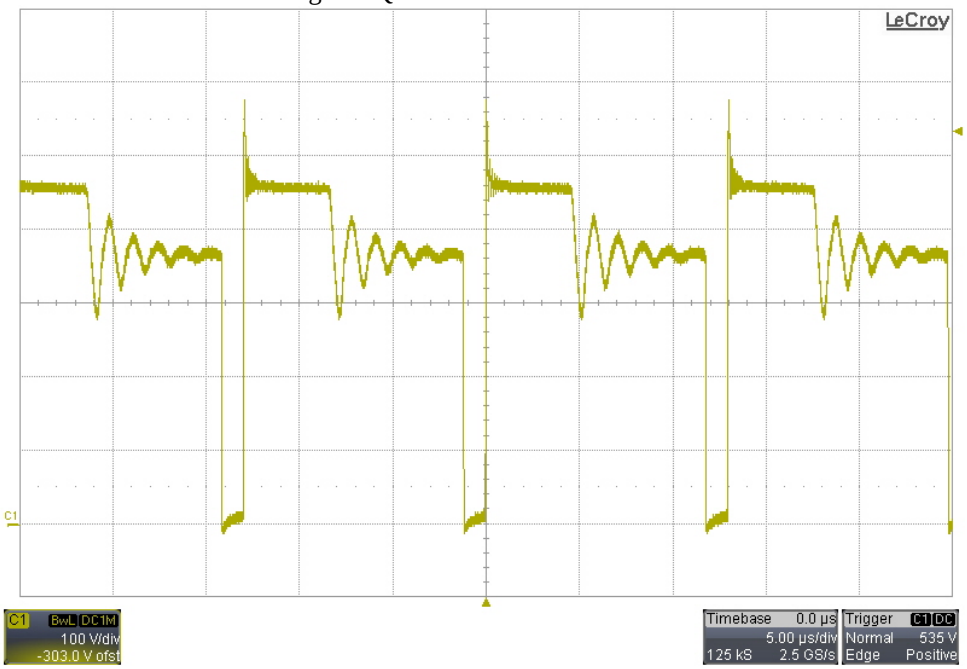


9 Switching Waveforms

The images below show the voltage waveforms on the switching devices within the supply. The input was 265VAC/50Hz. The output was loaded 1A.

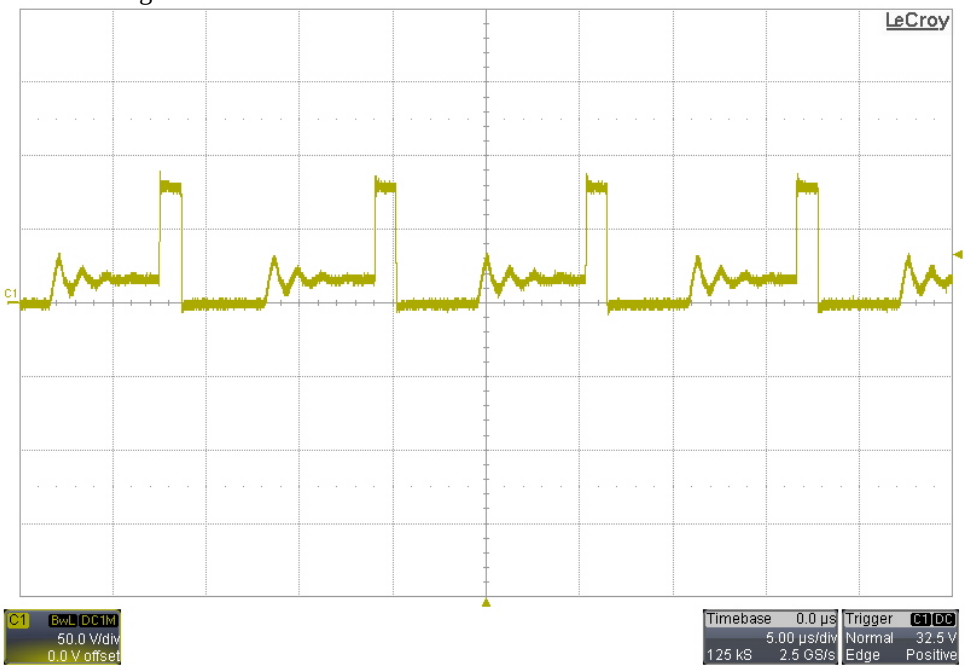
9.1 Primary Waveforms

The image below shows the drain-to-source voltage on Q1.



9.2 Secondary Waveforms

The image below shows the voltage on the anode of D5.



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