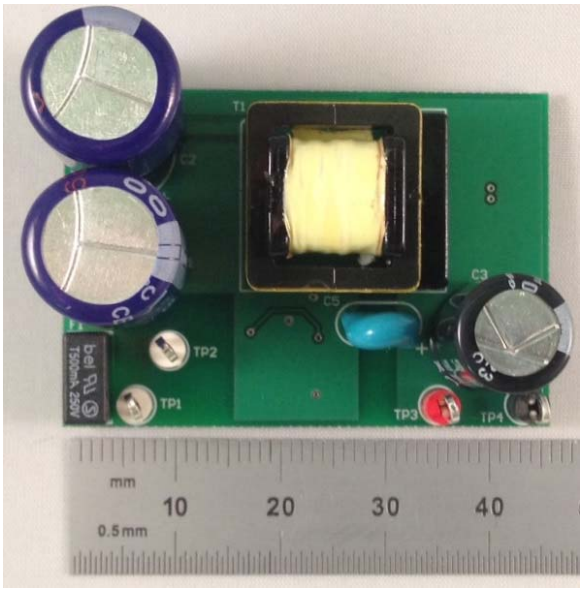
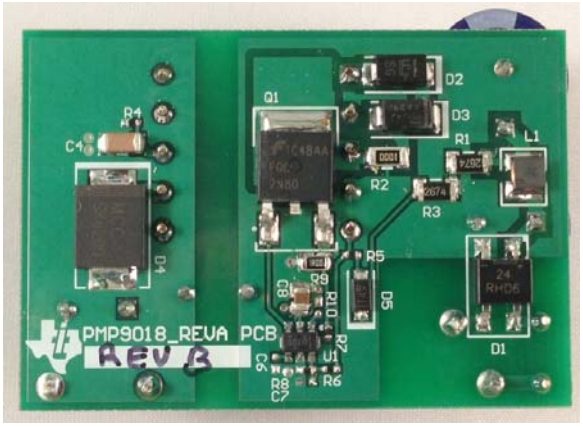
1 Photos

The photographs below show the PMP9018 Rev B prototype assembly. This circuit was built on a PMP9018 Rev A PCB.

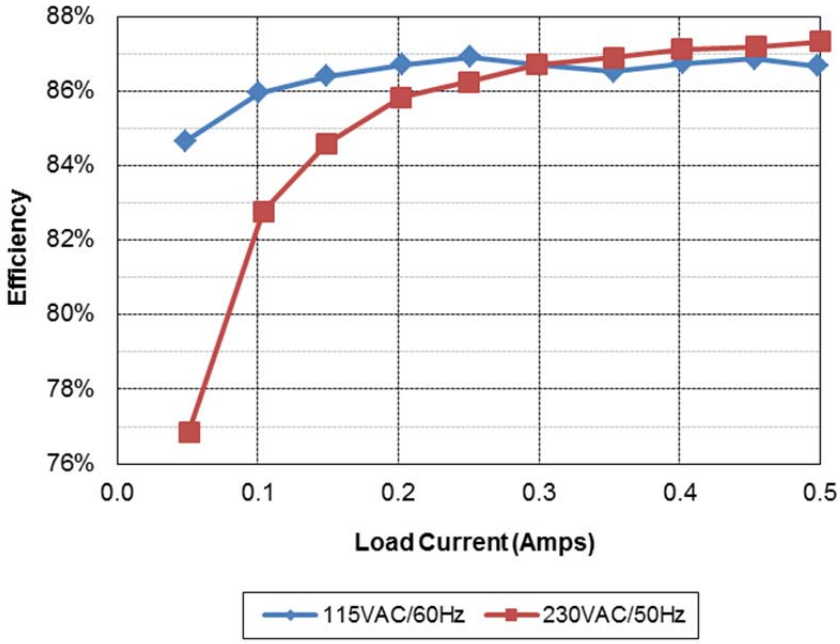




2 Standby Power

With no load attached to the output of the supply, the unit draws 23mW of input power with an 115VAC/60Hz input, and 40mW with a 230VAC/50Hz input.

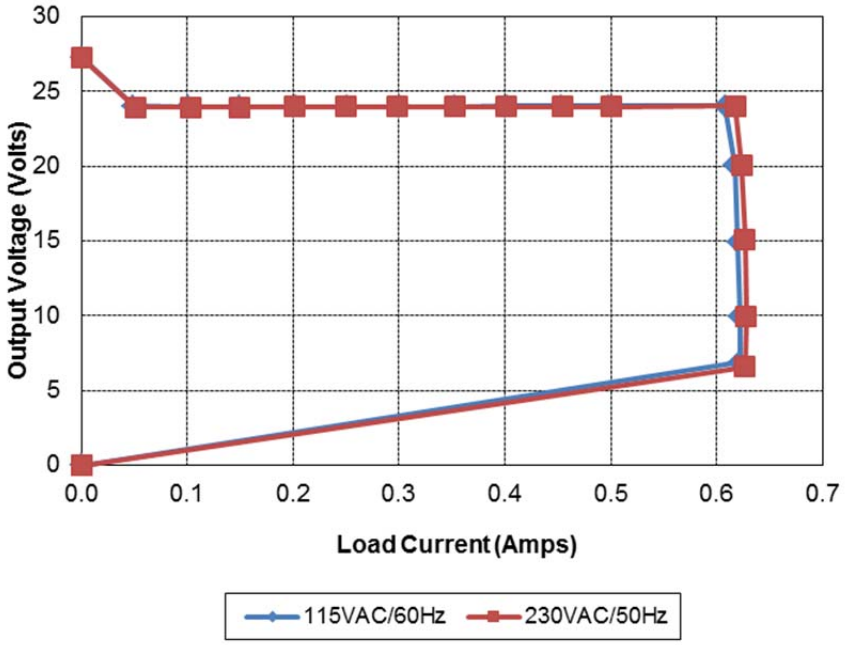
3 Efficiency



115VAC/60Hz								
Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.000	27.30	115.0	0.0013	0.023		0.00	0.02	0.0%
0.049	24.02	115.0	0.033	1.39	0.36	1.18	0.21	84.7%
0.101	24.00	115.0	0.060	2.82	0.41	2.42	0.40	86.0%
0.149	24.01	115.0	0.082	4.14	0.44	3.58	0.56	86.4%
0.203	24.01	115.0	0.104	5.62	0.47	4.87	0.75	86.7%
0.251	24.00	115.0	0.124	6.93	0.49	6.02	0.91	86.9%
0.301	24.00	115.0	0.144	8.33	0.50	7.22	1.11	86.7%
0.353	24.00	115.0	0.164	9.79	0.52	8.47	1.32	86.5%
0.402	24.02	115.0	0.182	11.13	0.53	9.66	1.47	86.8%
0.453	24.03	115.0	0.201	12.53	0.54	10.89	1.64	86.9%
0.498	24.02	115.0	0.218	13.80	0.55	11.96	1.84	86.7%
230VAC/50Hz								
Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.000	27.30	229.8	0.0014	0.040		0.00	0.04	0.0%
0.051	23.96	230.0	0.024	1.59	0.28	1.22	0.37	76.9%
0.104	23.96	230.0	0.042	3.01	0.32	2.49	0.52	82.8%
0.149	23.96	230.0	0.055	4.22	0.34	3.57	0.65	84.6%
0.202	23.97	230.0	0.069	5.64	0.36	4.84	0.80	85.9%
0.250	23.98	230.0	0.081	6.95	0.37	6.00	0.96	86.3%
0.298	23.98	230.0	0.093	8.24	0.38	7.15	1.09	86.7%
0.353	23.98	230.0	0.107	9.74	0.40	8.46	1.28	86.9%
0.401	23.99	230.0	0.118	11.04	0.41	9.62	1.42	87.1%
0.454	23.99	230.0	0.130	12.49	0.42	10.89	1.60	87.2%
0.500	24.00	230.0	0.140	13.74	0.43	12.00	1.74	87.3%

4 Current Limit

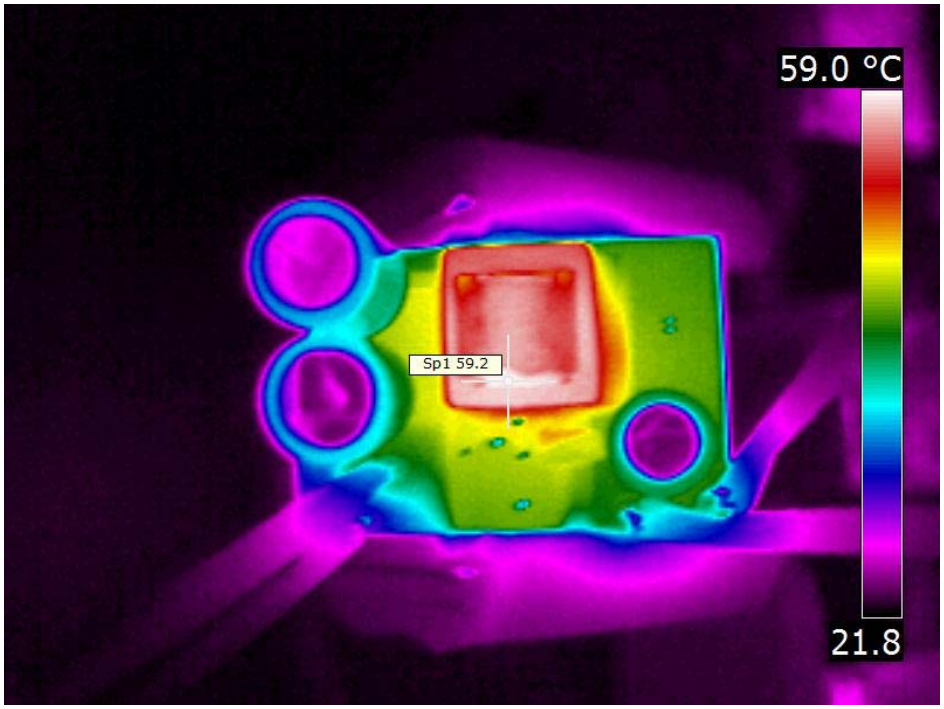
A plot of the output voltage versus load current is shown below.

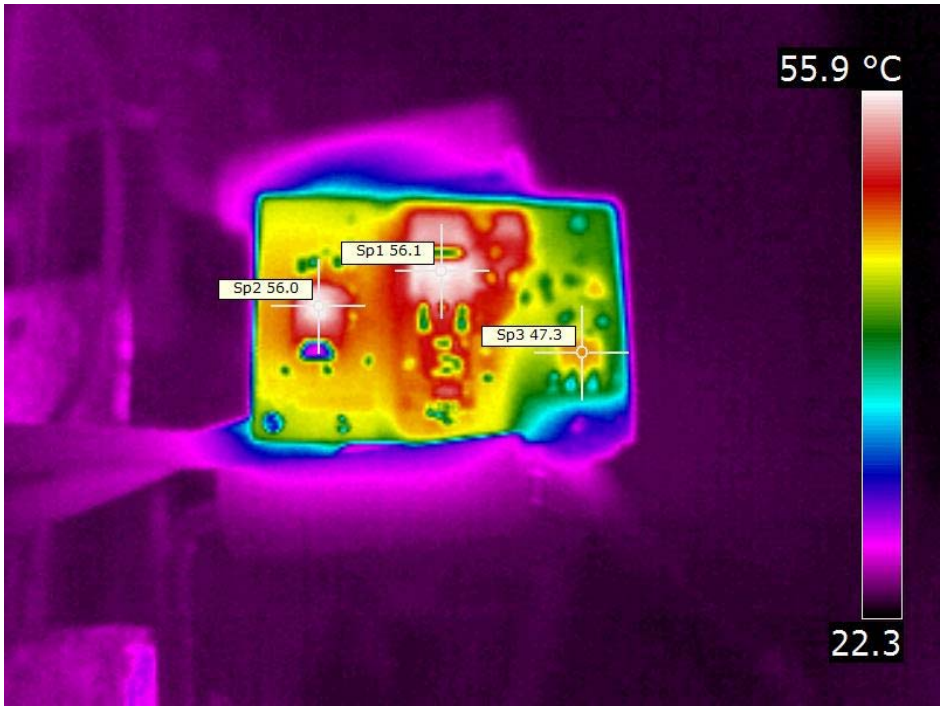


5 Thermal Images

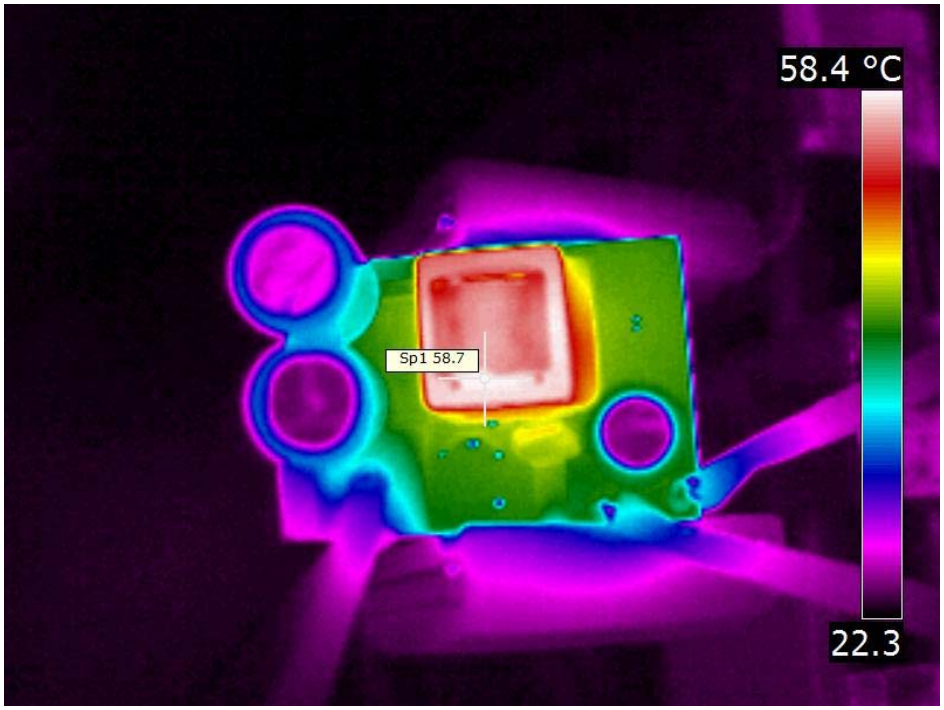
The ambient temperature was 25ºC. The output was loaded with 0.5A.

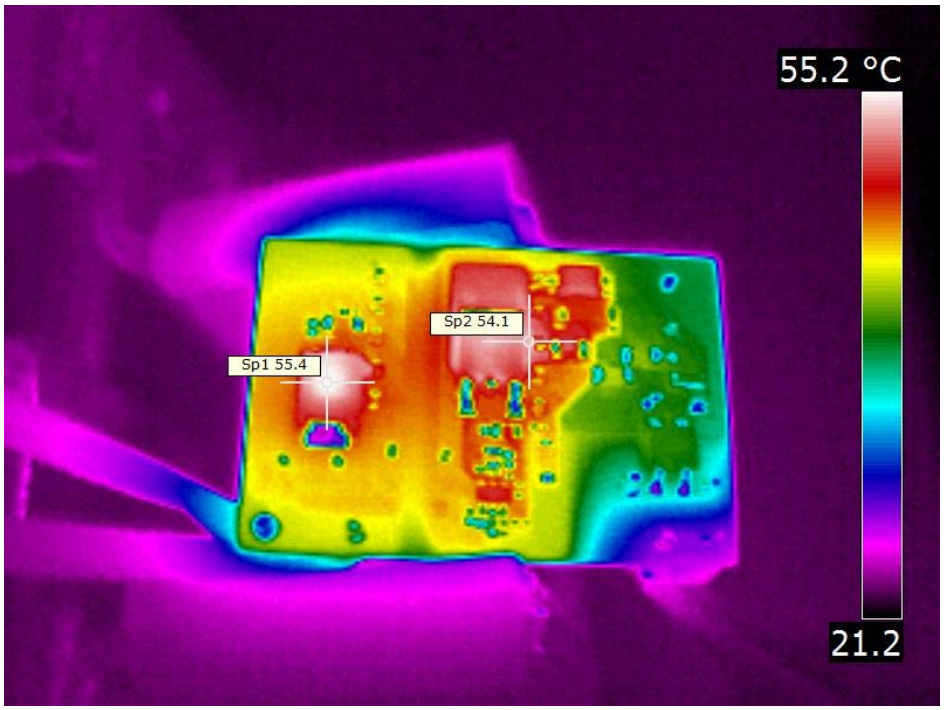
5.1 115VAC/60Hz Input





5.2 230VAC/50Hz Input

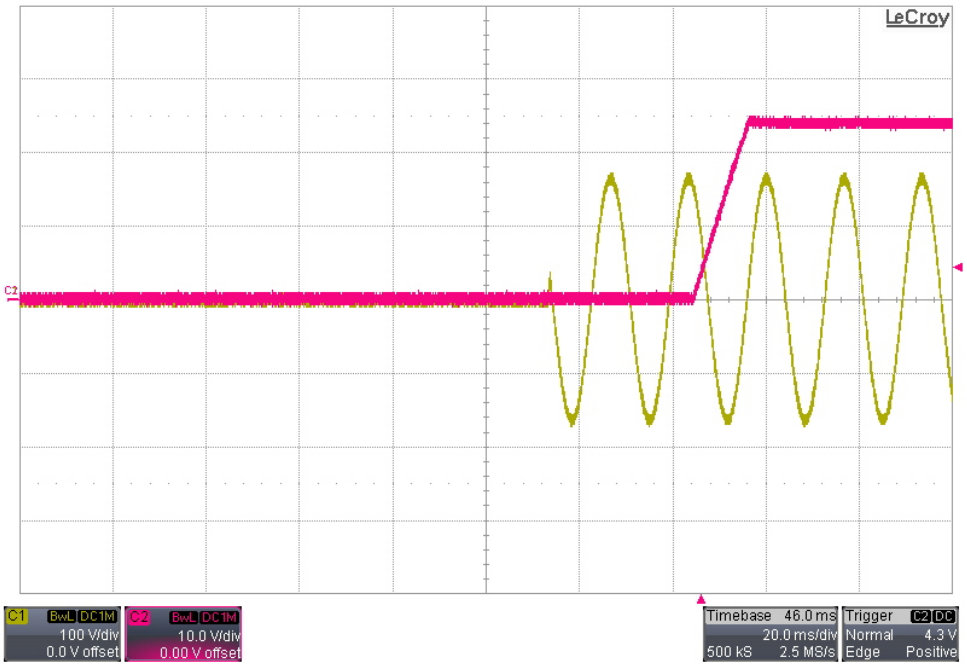




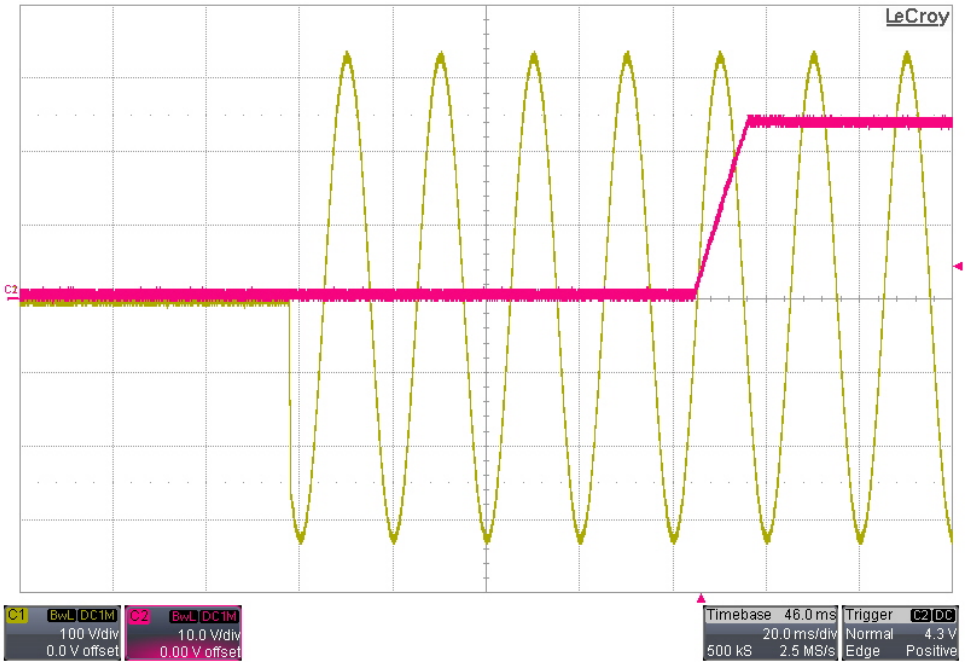
6 Startup

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

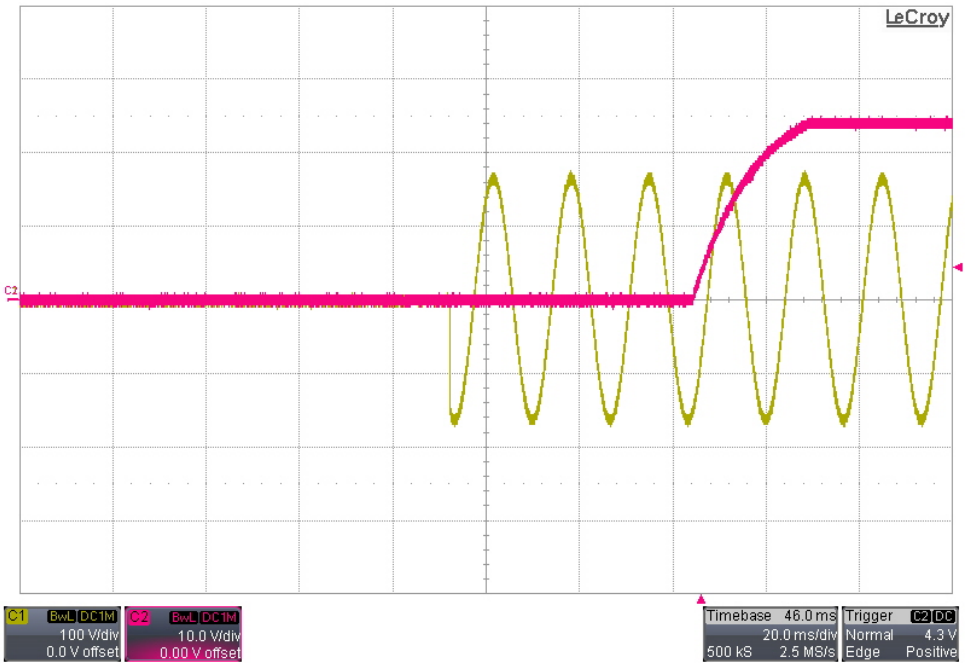
6.1 115VAC/60Hz Startup – 0A Load



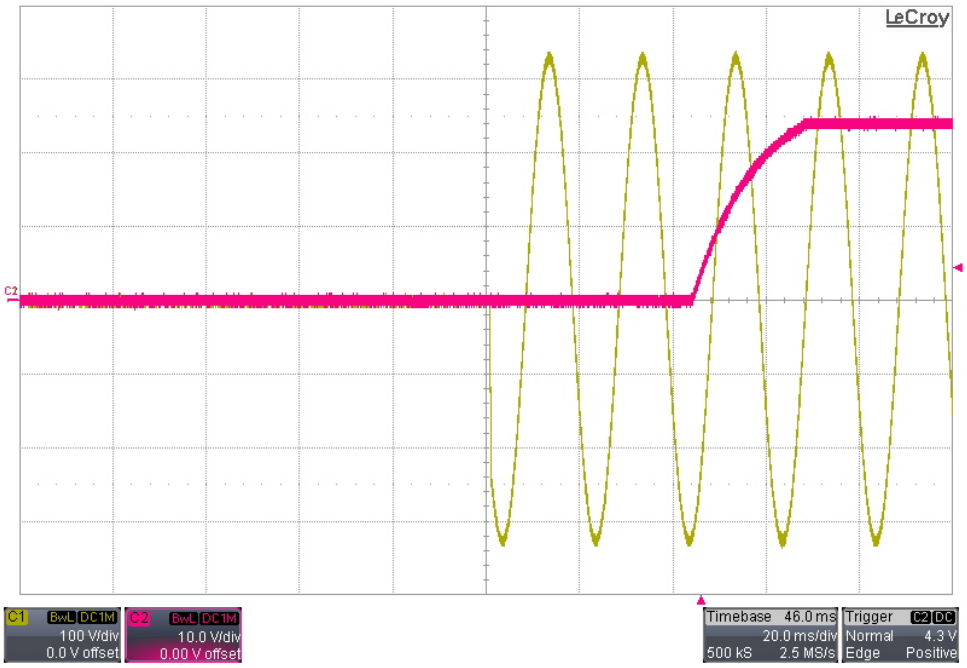
6.2 230VAC/50Hz Startup – 0A Load



6.3 115VAC/60Hz Startup – 48Ω Load



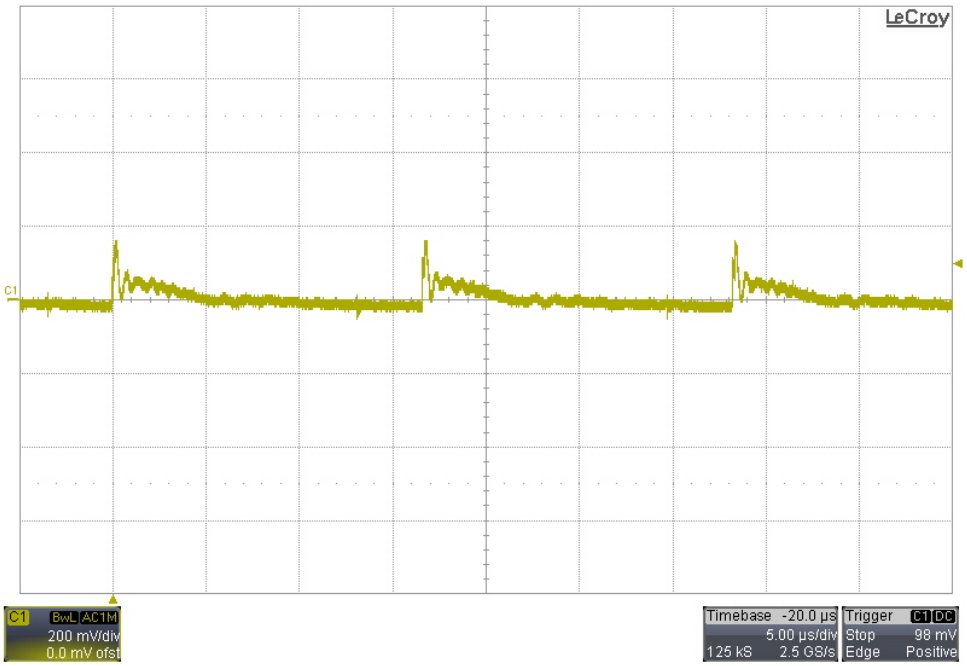
6.4 230VAC/50Hz Startup – 48Ω Load



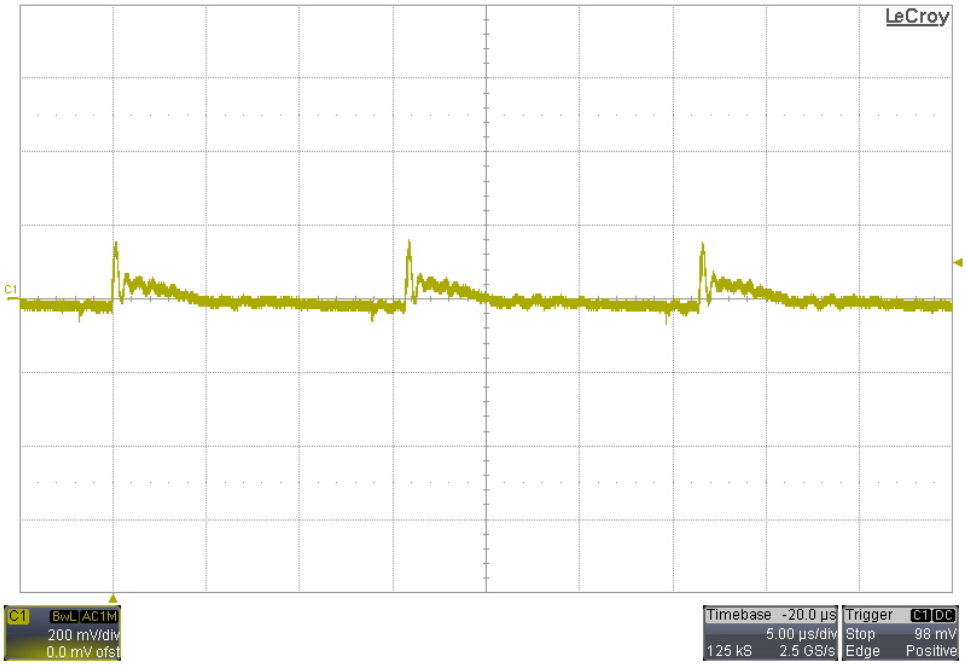
7 Output Ripple Voltage

The output was loaded with 0.5A.

7.1 115VAC/60Hz Output Ripple Voltage

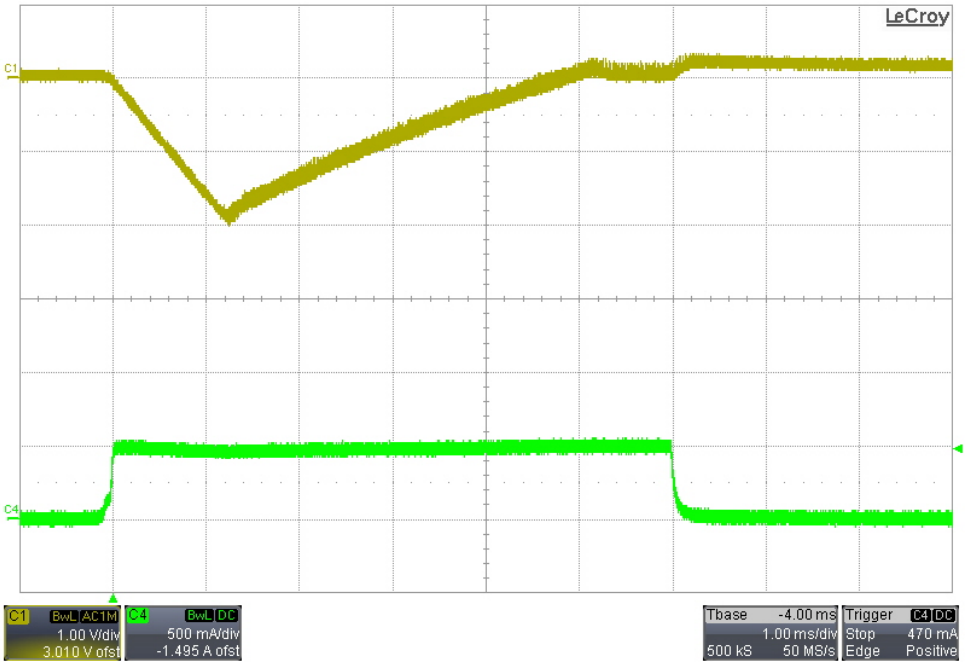


7.2 230VAC/50Hz Output Ripple Voltage

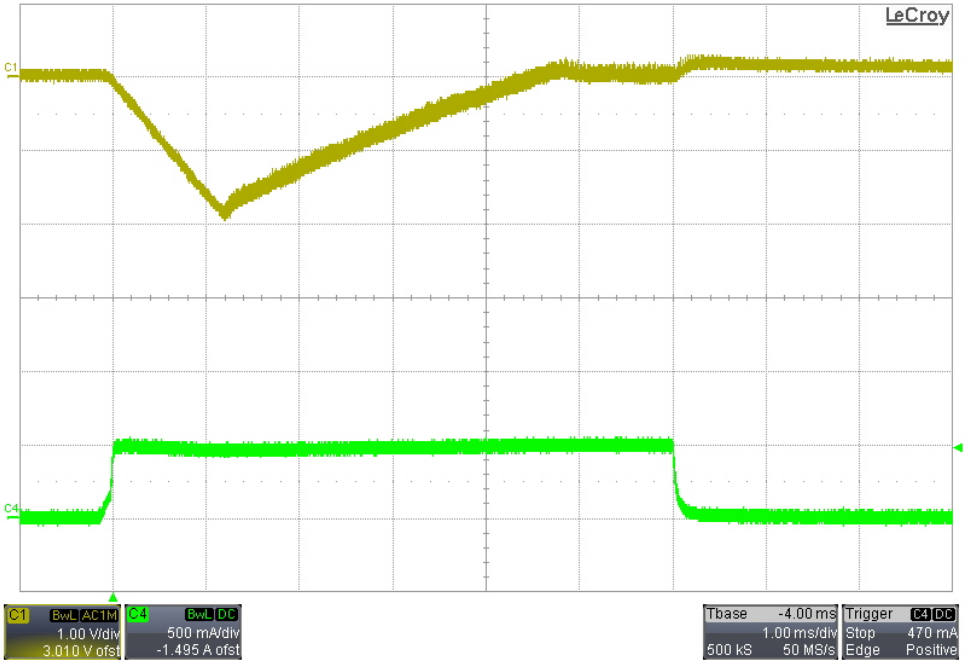


8 Load Transients

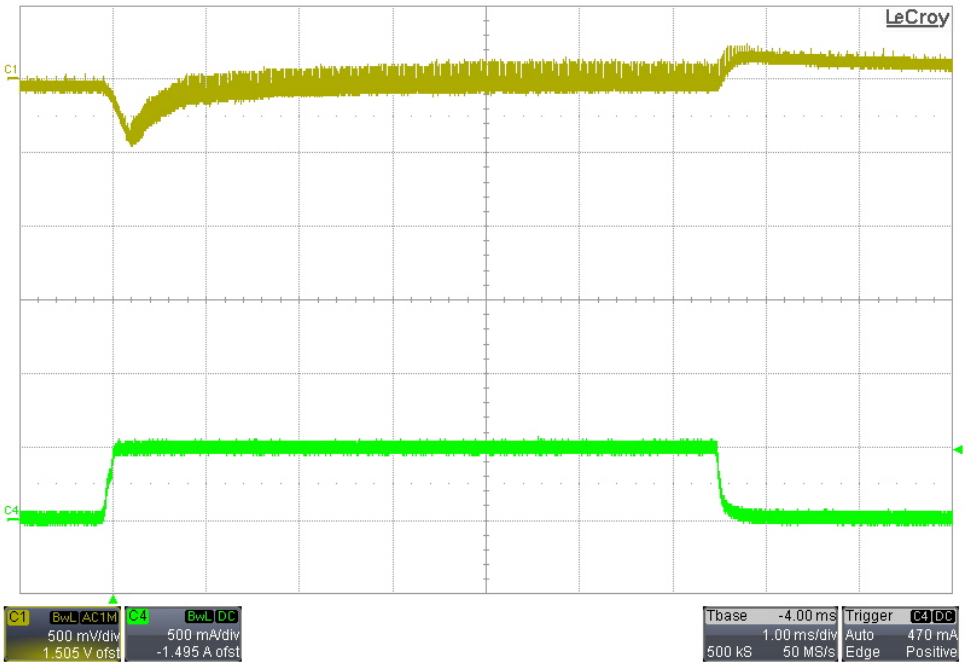
8.1 0A to 0.5A Transient – 115VAC/60Hz Input



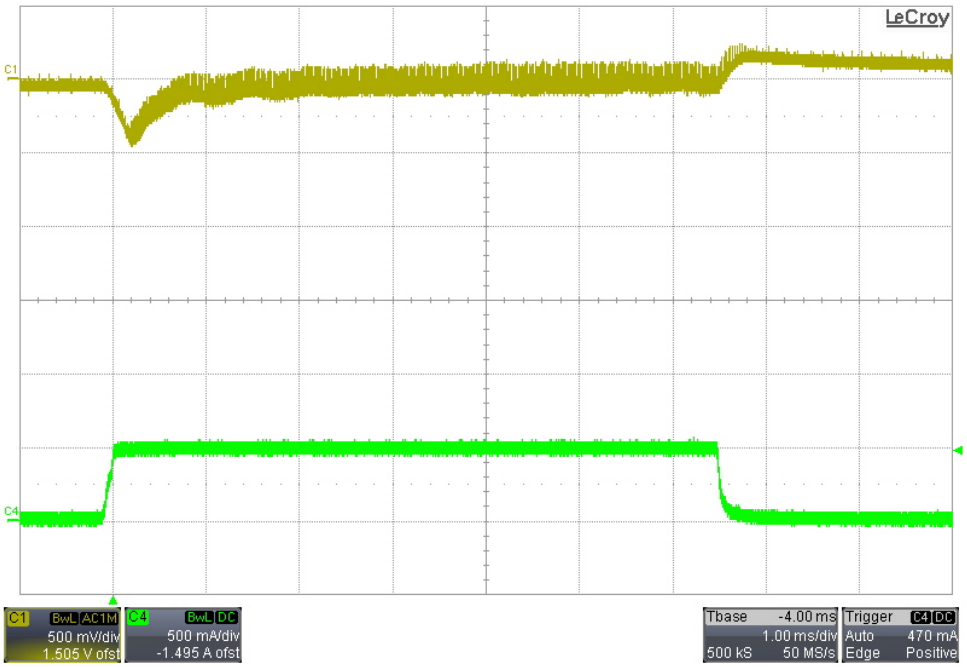
8.2 0A to 0.5A Transient – 230VAC/50Hz Input



8.3 10mA to 0.5A Transient – 115VAC/60Hz Input



8.4 10mA to 0.5A Transient – 230VAC/50Hz Input

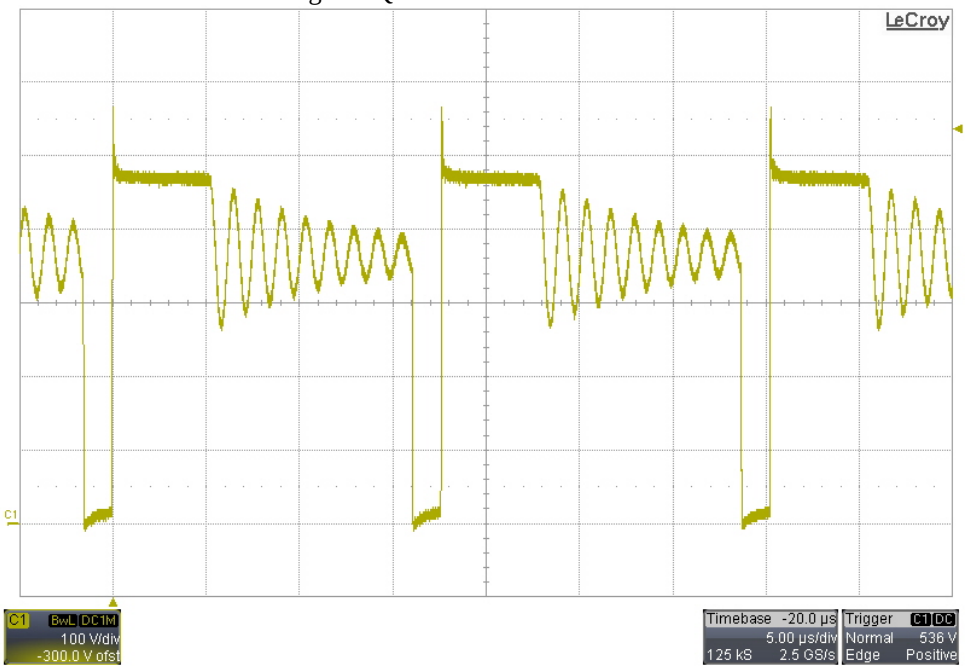


9 Switching Waveforms

The images below show the voltage waveforms on the switching devices within the supply. The input was 265VAC/50Hz. The output was loaded 0.5A.

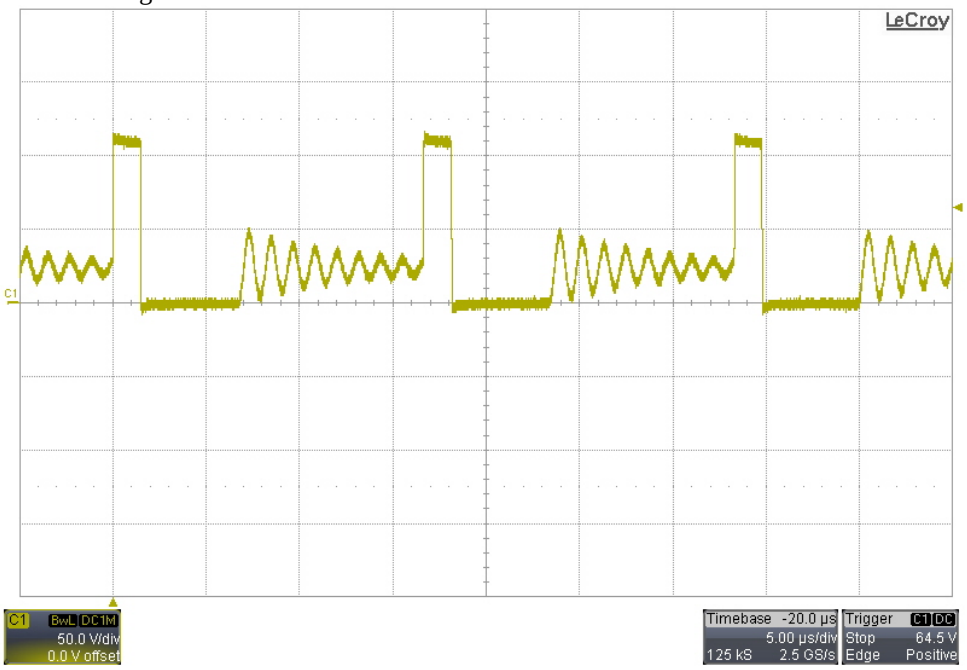
9.1 Primary Waveforms

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 D4.



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