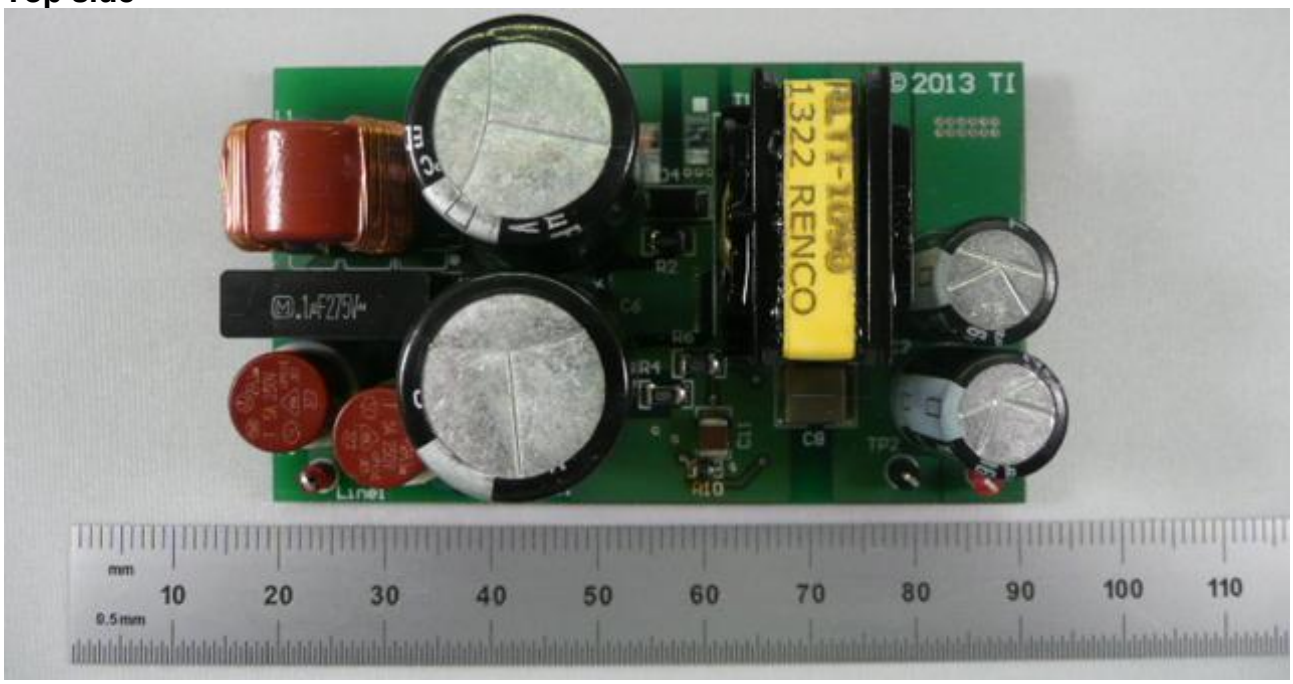
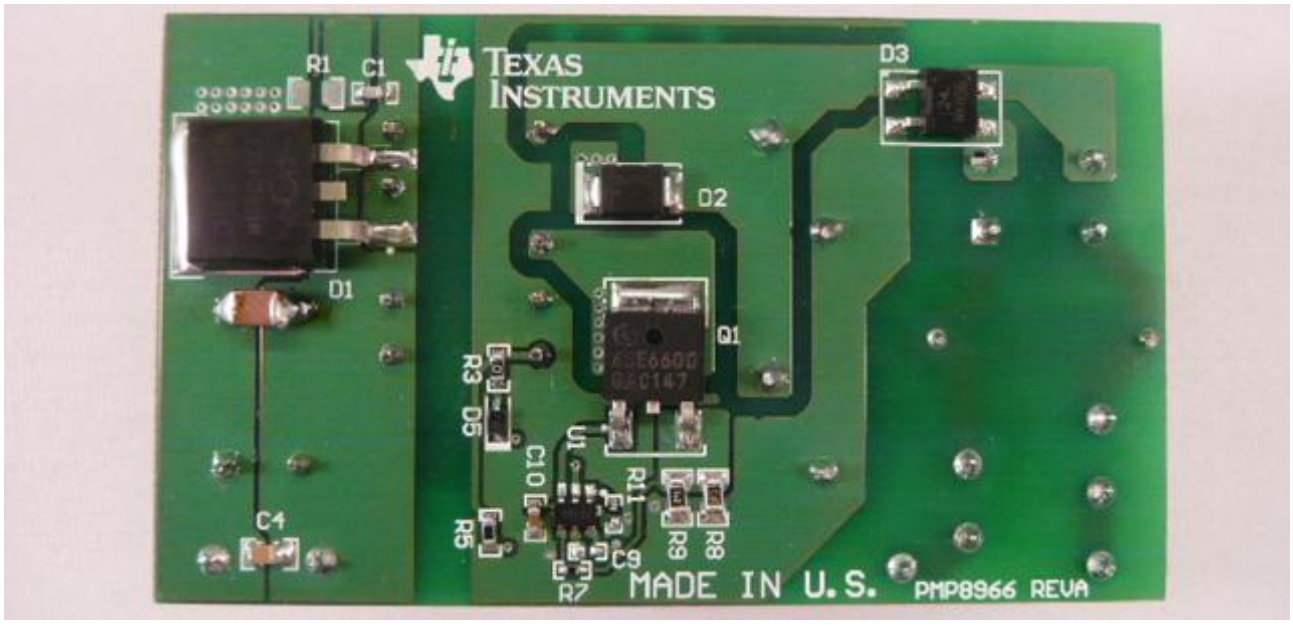
1 Photo

The photographs below show the PMP8966 Rev A assembly. This circuit was built on a PMP8966 Rev A PCB.

Top side

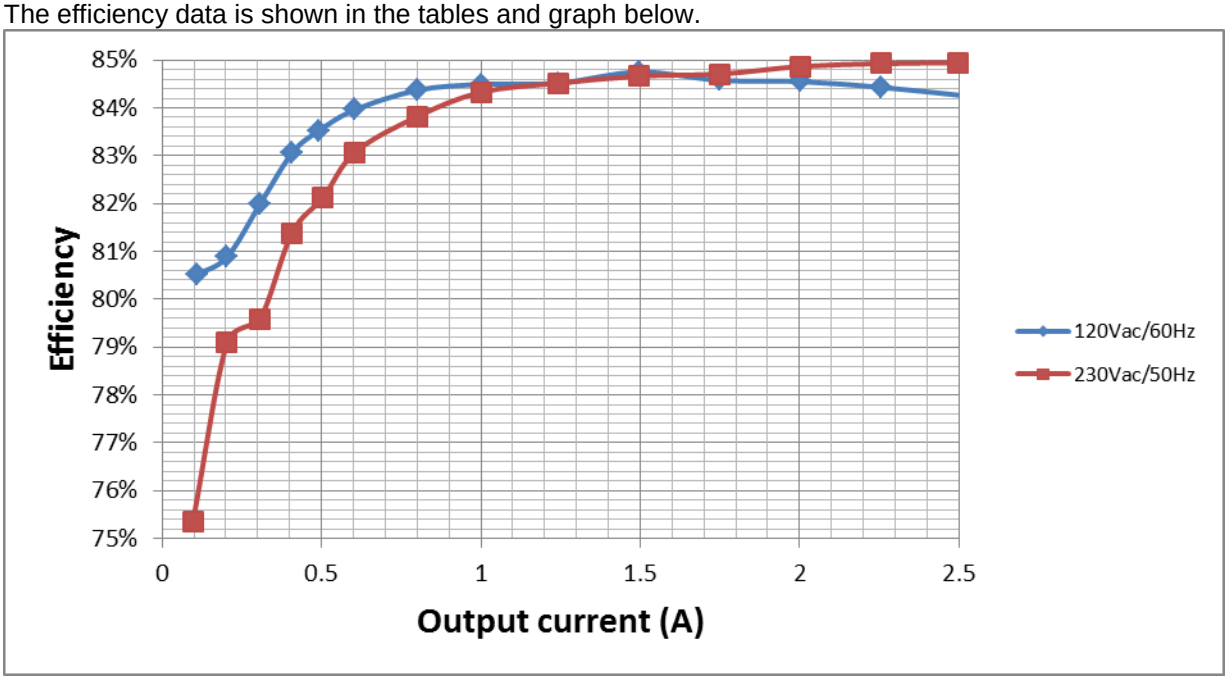


Bottom side



2 Converter Efficiency

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



V_{in}=120V_{AC}/60Hz

Vin(V)	Iin(A)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Efficiency (%)
120.11	0.4158	27.09	9.12	2.503	22.82736	4.26264	84.26%
120.05	0.3785	24.38	9.12	2.257	20.58384	3.79616	84.43%
120.1	0.339	21.56	9.11	2.001	18.22911	3.33089	84.55%
120.15	0.3006	18.84	9.1	1.751	15.9341	2.9059	84.58%
120.09	0.2612	16.063	9.1	1.496	13.6136	2.4494	84.75%
120.04	0.2221	13.39	9.09	1.245	11.31705	2.07295	84.52%
120.09	0.18361	10.78	9.09	1.002	9.10818	1.67182	84.49%
120.13	0.151	8.63	9.09	0.801	7.28109	1.34891	84.37%
120.18	0.11841	6.55	9.09	0.605	5.49945	1.05055	83.96%
120.1	0.0995	5.365	9.09	0.493	4.48137	0.88363	83.53%
120.01	0.0848	4.47	9.1	0.408	3.7128	0.7572	83.06%
120.03	0.067	3.418	9.1	0.308	2.8028	0.6152	82.00%
120.05	0.0471	2.295	9.1	0.204	1.8564	0.4386	80.89%
120.08	0.0271	1.218	9.08	0.108	0.98064	0.23736	80.51%
120.1	0.0041	0.0016	10.46	0	0	0.0016	0.00%

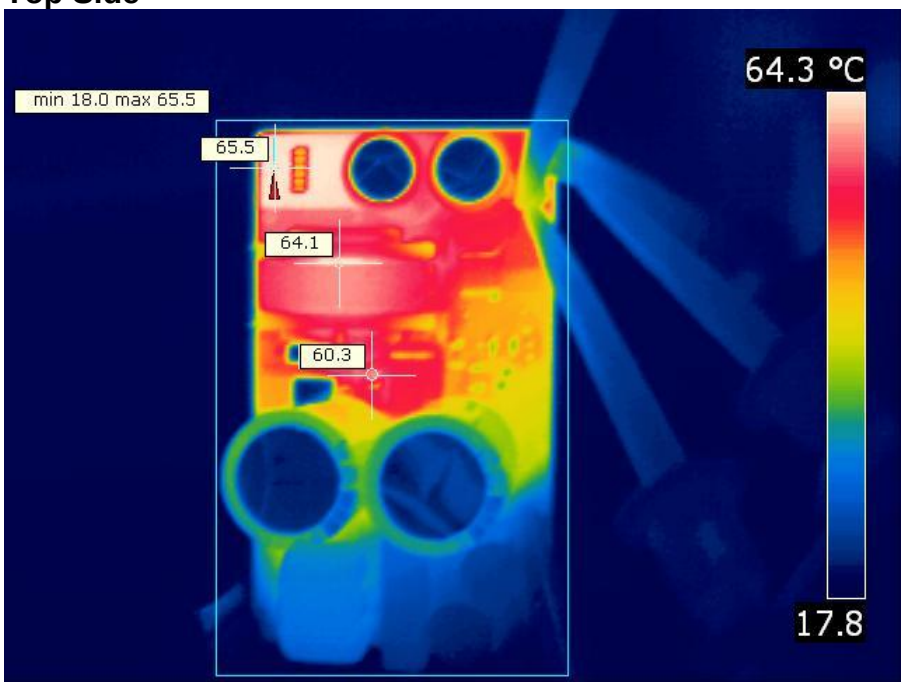
Vin=230V_{AC}/50Hz

Vin(V)	Iin(A)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Efficiency (%)
230	0.2597	26.83	9.12	2.499	22.79088	4.03912	84.95%
230	0.2371	24.2	9.11	2.256	20.55216	3.64784	84.93%
230	0.2134	21.48	9.11	2.001	18.22911	3.25089	84.87%
230	0.1895	18.8	9.1	1.75	15.925	2.875	84.71%
230	0.165	16.069	9.1	1.495	13.6045	2.4645	84.66%
230	0.1406	13.39	9.09	1.245	11.31705	2.07295	84.52%
230	0.1163	10.79	9.09	1.001	9.09909	1.69091	84.33%
230	0.0959	8.676	9.09	0.8	7.272	1.404	83.82%
230	0.07575	6.62	9.09	0.605	5.49945	1.12055	83.07%
230	0.0654	5.589	9.09	0.505	4.59045	0.99855	82.13%
230	0.0546	4.546	9.09	0.407	3.69963	0.84637	81.38%
230	0.04375	3.51	9.1	0.307	2.7937	0.7163	79.59%
230	0.03085	2.347	9.1	0.204	1.8564	0.4906	79.10%
230	0.0173	1.157	9.08	0.096	0.87168	0.28532	75.34%
230	0.00637	0.058	10.45	0	0	0.058	0.00%

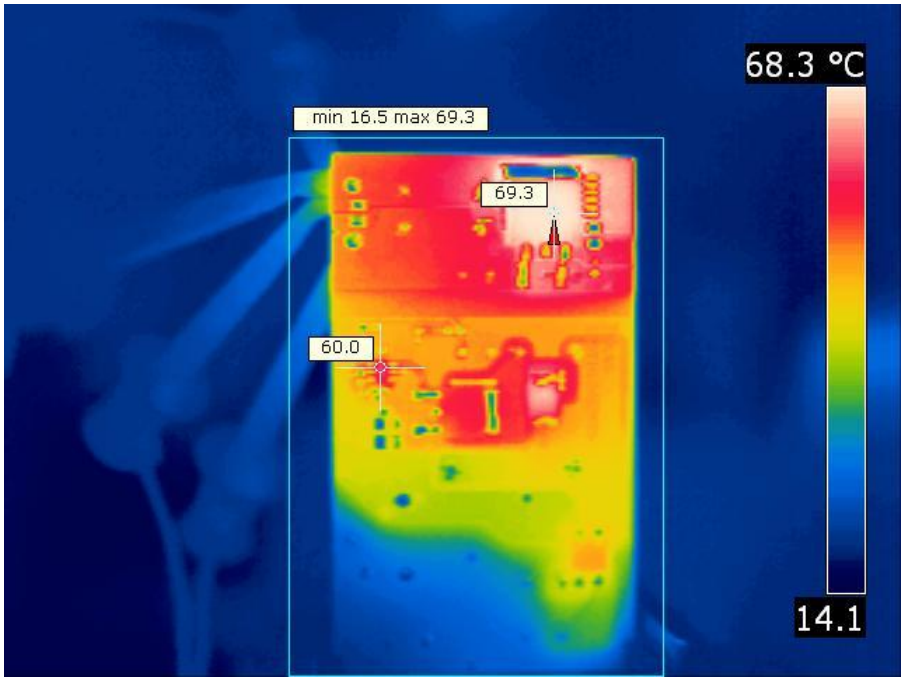
3 Thermal Images

The thermal images below show a top view and bottom view of the board with 120V_{ac}/60Hz input. The ambient temperature was 20ºC with no forced air flow. The output was at full load: 9V/2.5A.

Top Side



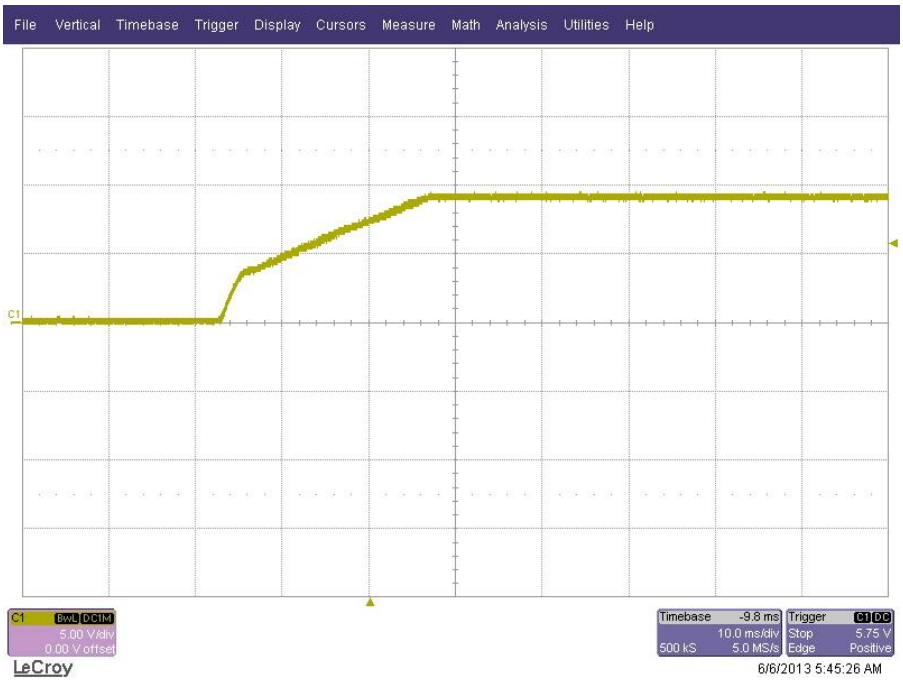
Bottom Side



4 Startup

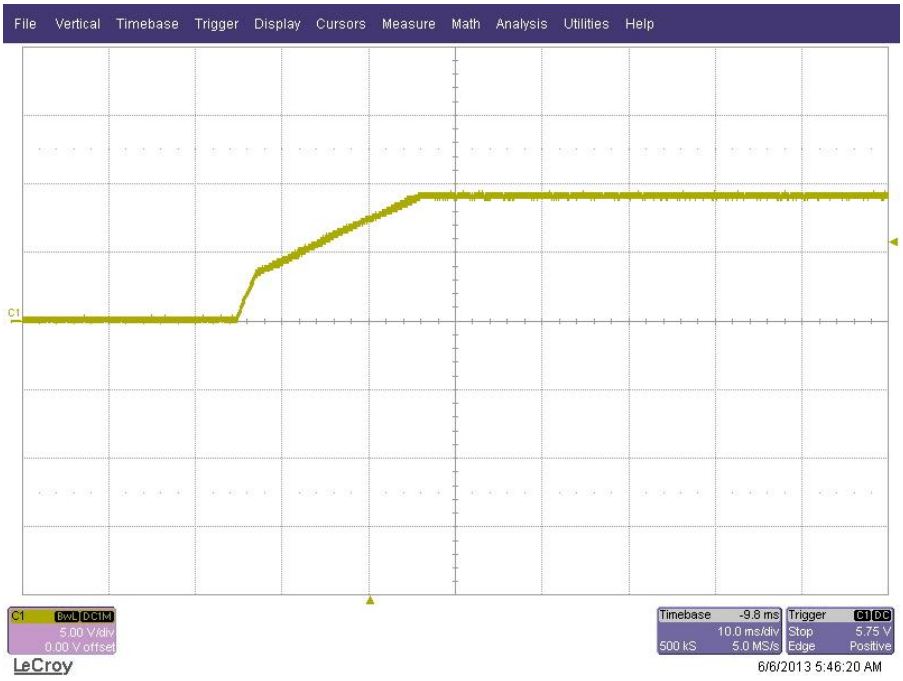
The output voltages at startup are shown in the images below.

4.1 Start Up @ 85V_{ac}: 9V/2.5A.

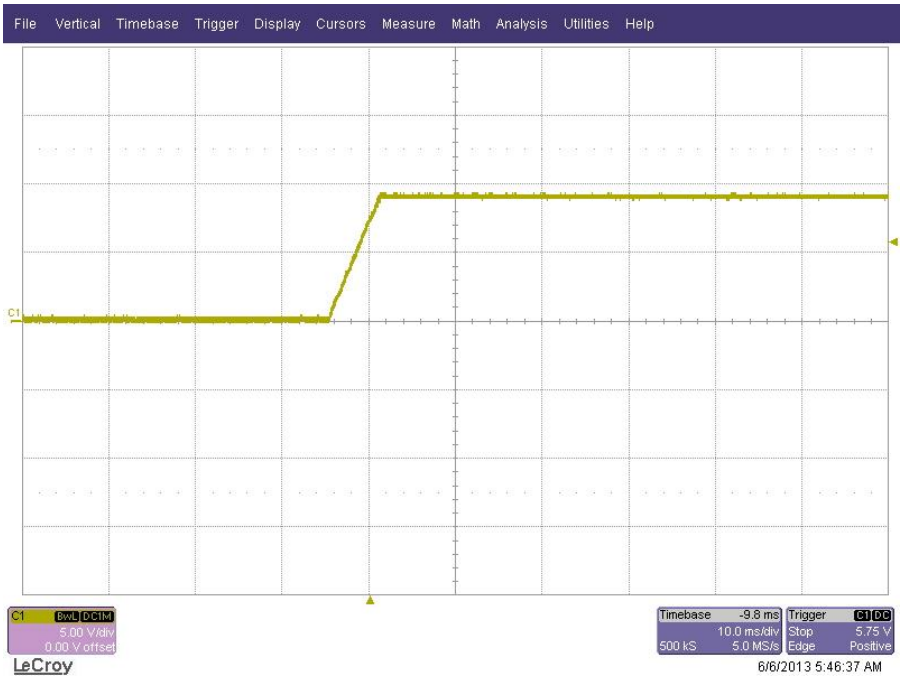


4.2 Start Up @ 85V_{ac}: no load.

4.3 Start Up @ 230V_{ac}: 9V/2.5A.

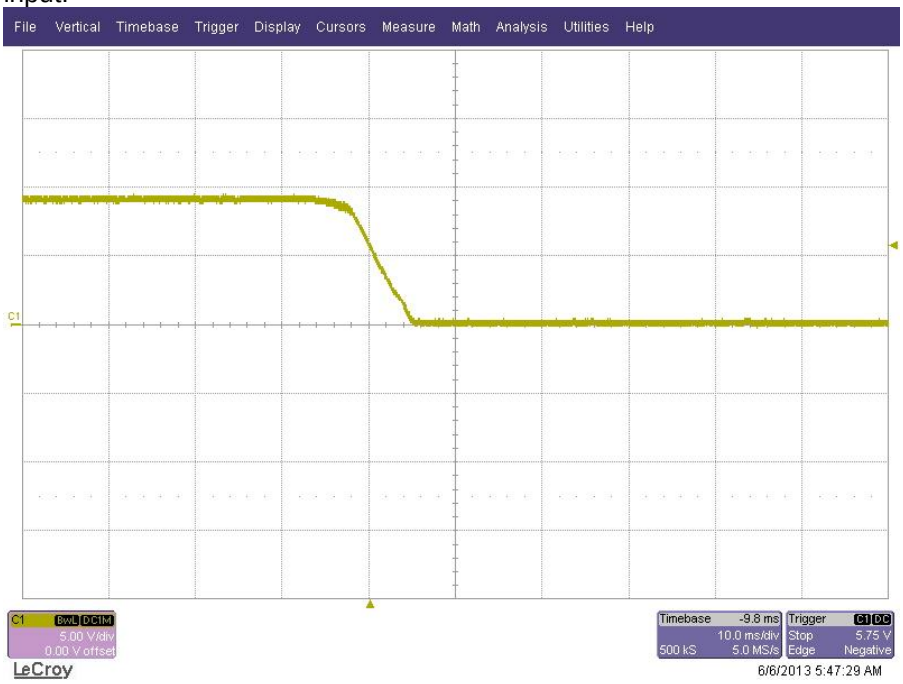


4.4 Start Up @ 230V_{ac}: no load.



5 Turn off

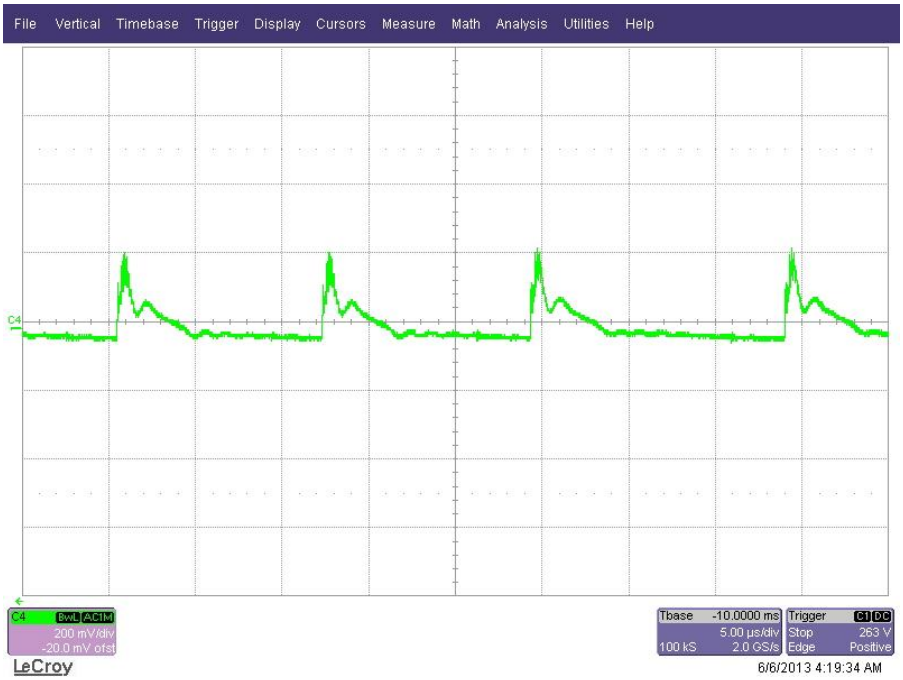
The output voltage at turn off transient is shown in the image below at full load (9V/2.5A) and 85V_{ac}/60Hz input.



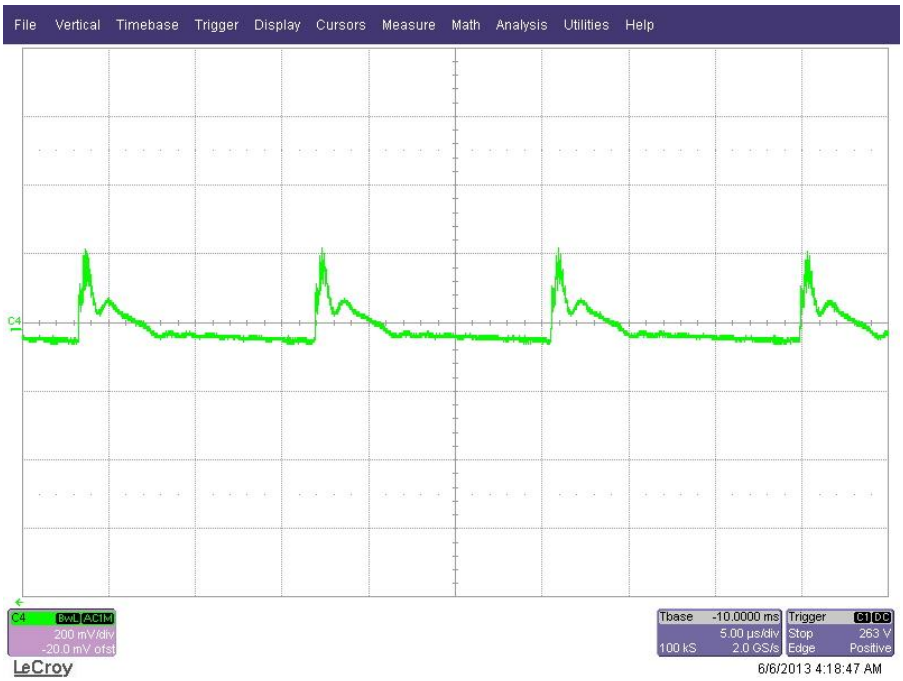
6 Output Ripple Voltages - Full Load

The output ripple voltages are shown in the plots below.

6.1 120V/60Hz

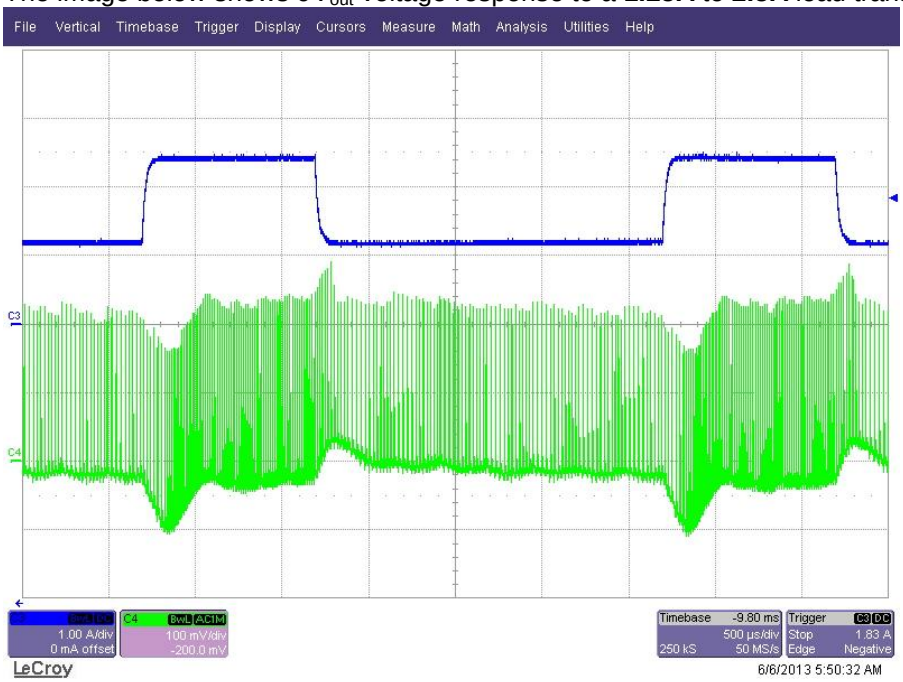


6.2 230V/50Hz



7 Load Transient

The image below shows $9V_{out}$ voltage response to a **1.25A** to **2.5A** load transient.

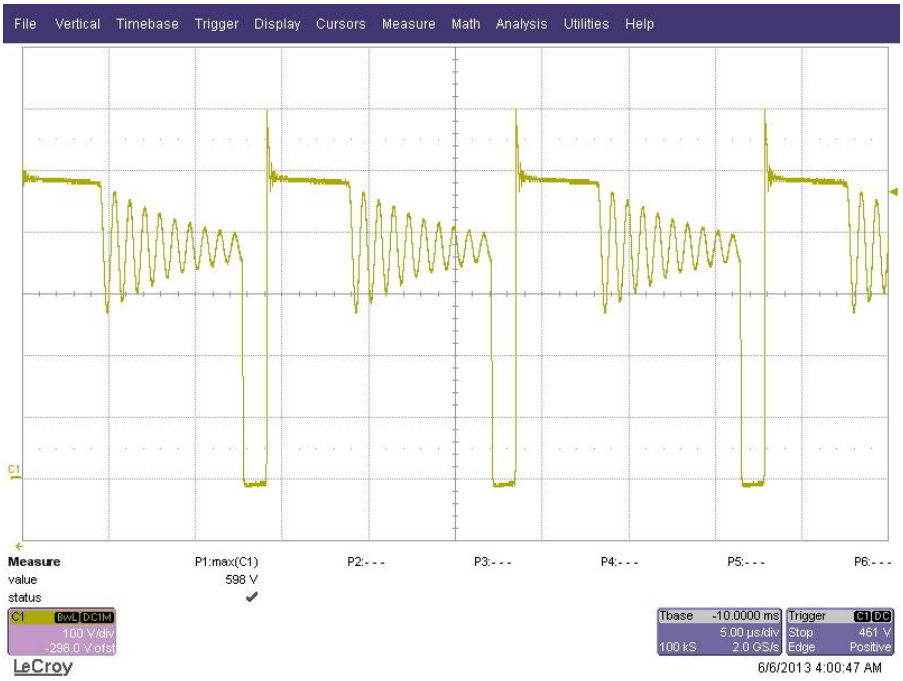


8 Switching Waveforms

The images below show key switching waveforms of PMP8966RevA. The waveforms are measured with 2.5A full load.

8.1 Primary MOSFET Q1 @ 85V_{ac}/60Hz

8.2 Primary MOSFET Q1 @ 265V_{ac}/50Hz



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