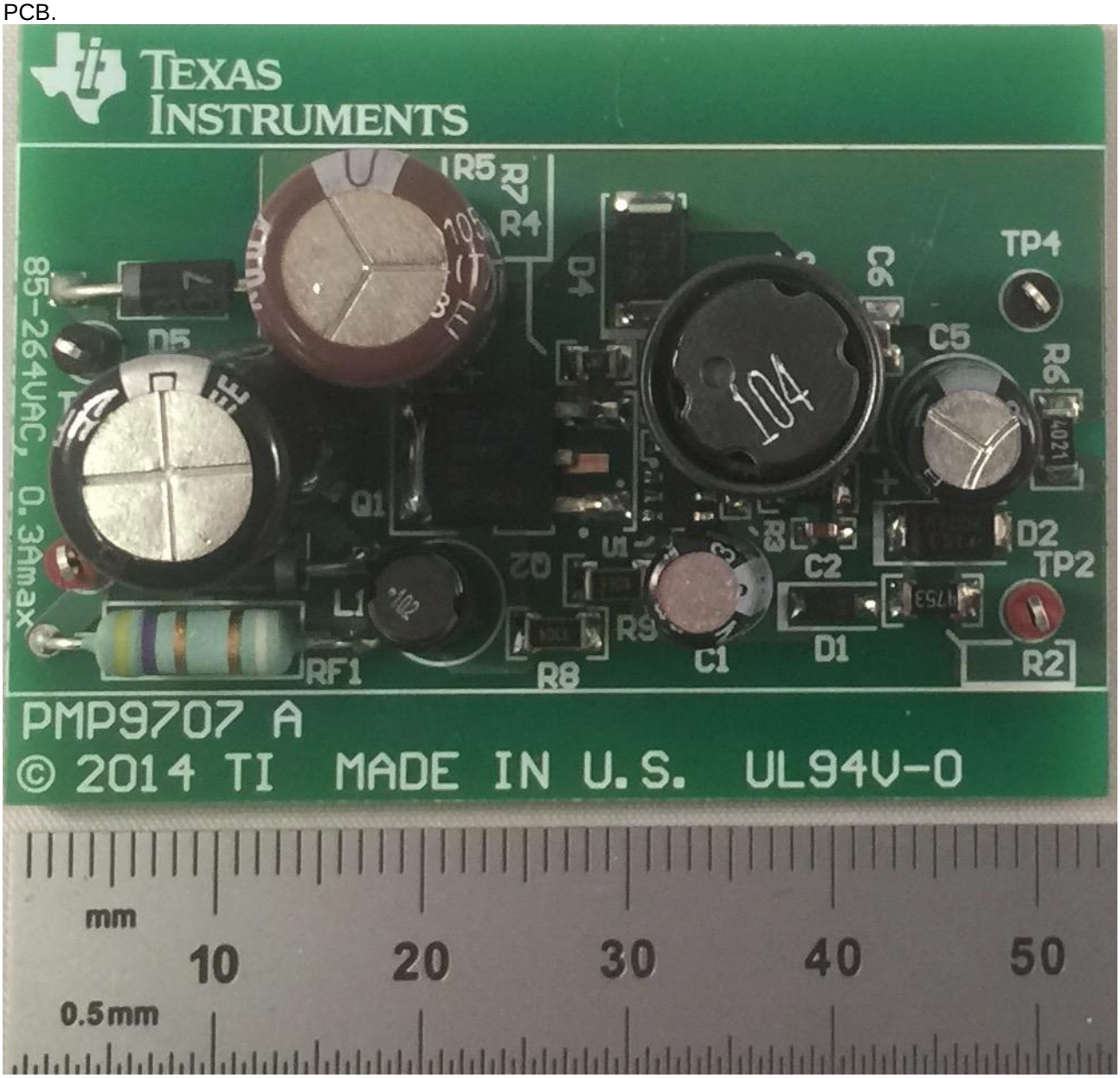
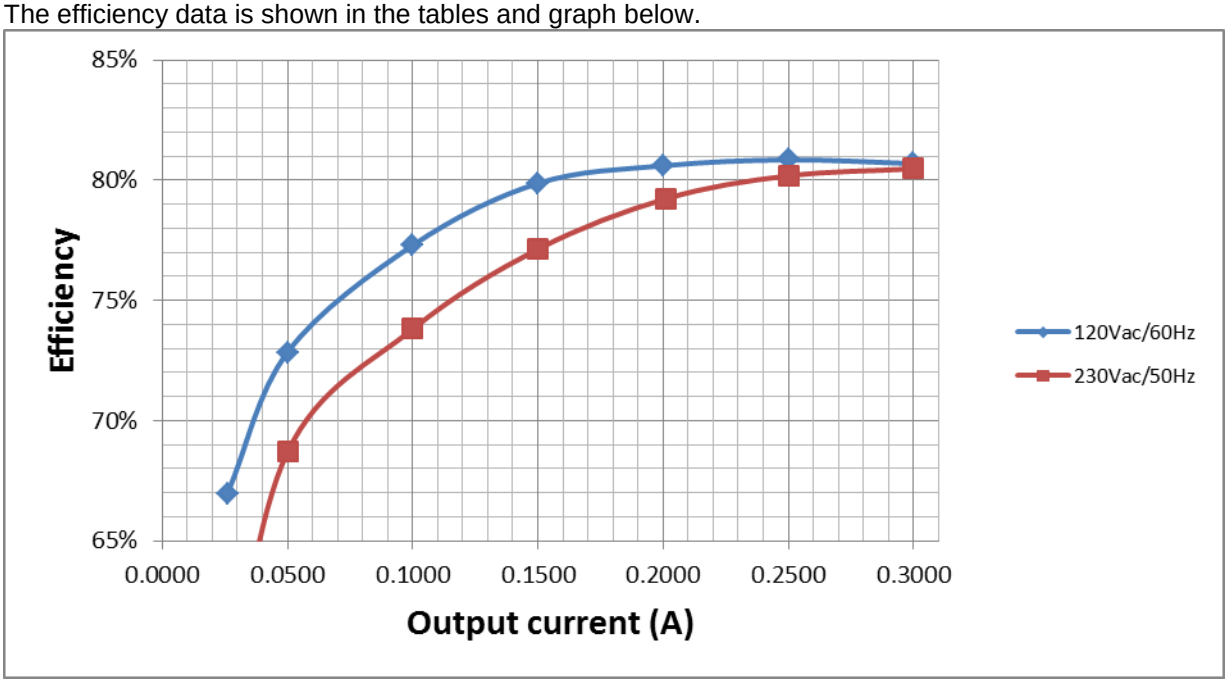
1 Photo

The photographs below show the PMP10937 Rev A assembly. This circuit was built on a PMP9707 Rev A PCB.



2 Converter Efficiency

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



V_{in}=120V_{AC}/50Hz

Vin(V)	Iin(mA)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Efficiency (%)
120.02	148.93	6.863	18.46	0.3000	5.5380	1.3250	80.69%
120.05	127.33	5.702	18.44	0.2500	4.6100	1.0920	80.85%
120.06	105.58	4.573	18.43	0.2000	3.6860	0.8870	80.60%
120.07	83.08	3.463	18.44	0.1500	2.7660	0.6970	79.87%
120.1	60.03	2.387	18.45	0.1000	1.8450	0.5420	77.29%
120.12	34.39	1.265	18.43	0.0500	0.9215	0.3435	72.85%
120.14	20.79	0.717	18.46	0.0260	0.4800	0.2368	66.96%
120.14	5.06	0.141	18.53	0.0000	0.0000	0.1407	0.00%

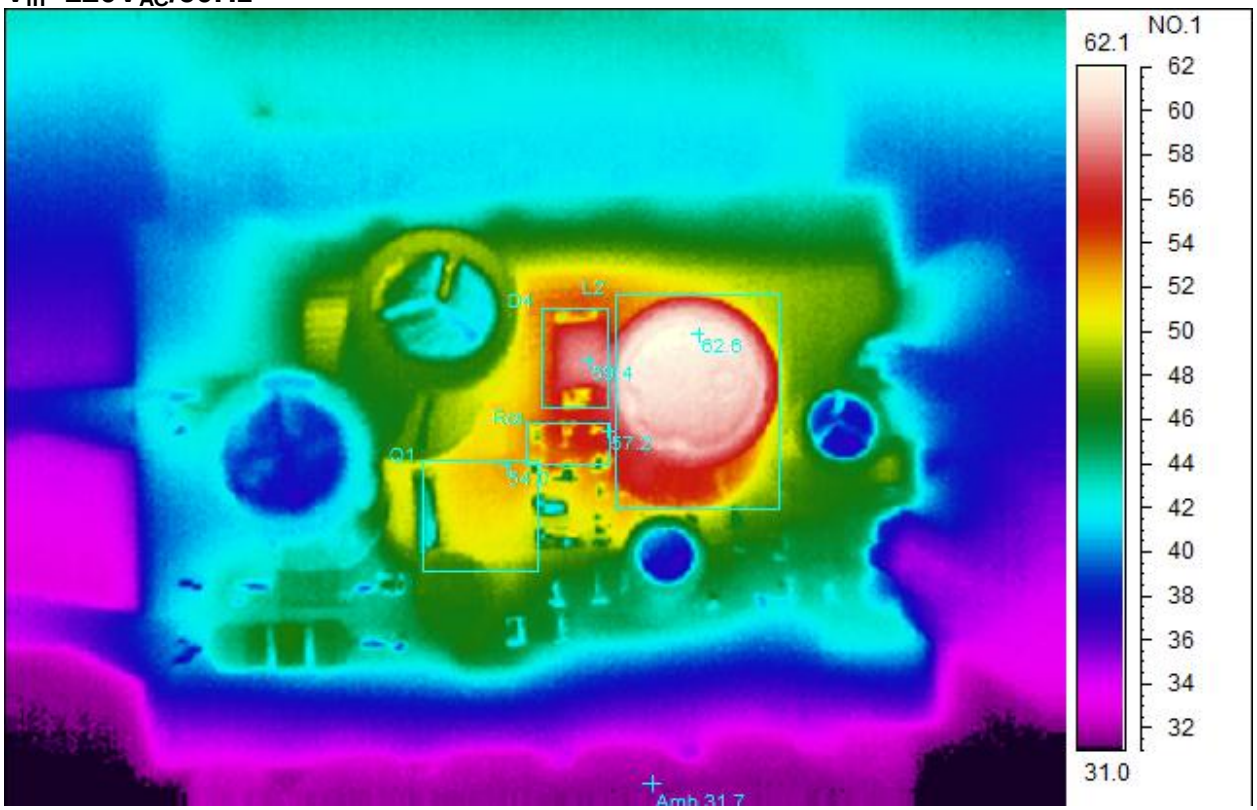
Vin=230V_{AC}/50Hz

Vin(V)	Iin(mA)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Efficiency (%)
230	94.52	6.878	18.45	0.3000	5.5350	1.3430	80.47%
230	80.88	5.746	18.43	0.2500	4.6075	1.1385	80.19%
230	67.50	4.673	18.42	0.2010	3.7024	0.9706	79.23%
230	53.50	3.584	18.43	0.1500	2.7645	0.8195	77.13%
230.1	38.87	2.497	18.43	0.1000	1.8430	0.6540	73.81%
230.1	22.36	1.343	18.45	0.0500	0.9225	0.4205	68.69%
230.1	13.47	0.775	18.47	0.0240	0.4433	0.3321	57.17%
230.1	3.52	0.157	18.53	0.0000	0.0000	0.1571	0.00%

3 Thermal Images

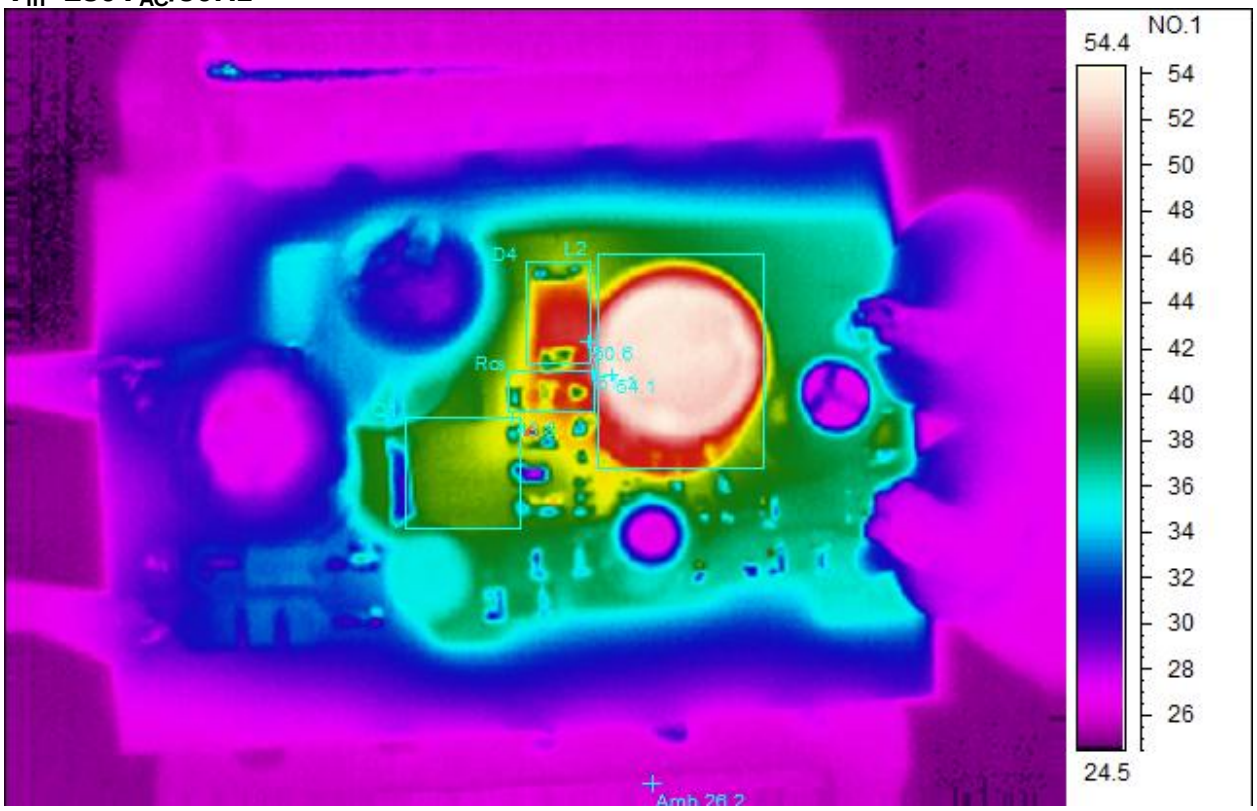
The thermal images below show a top view and bottom view of the board under $120V_{AC}$/60Hz and $230V_{AC}$/50Hz input conditions. The ambient temperature was 20ºC with no forced air flow. The output was at 18V/0.3A.

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



Spot analysis	Value
Amb Temperature	31.7°C
Area analysis	**Value**
D4Max	59.4°C
L2Max	62.6°C
RcsMax	57.2°C
Q1Max	54.0°C

V_{in}=230V_{AC}/50Hz

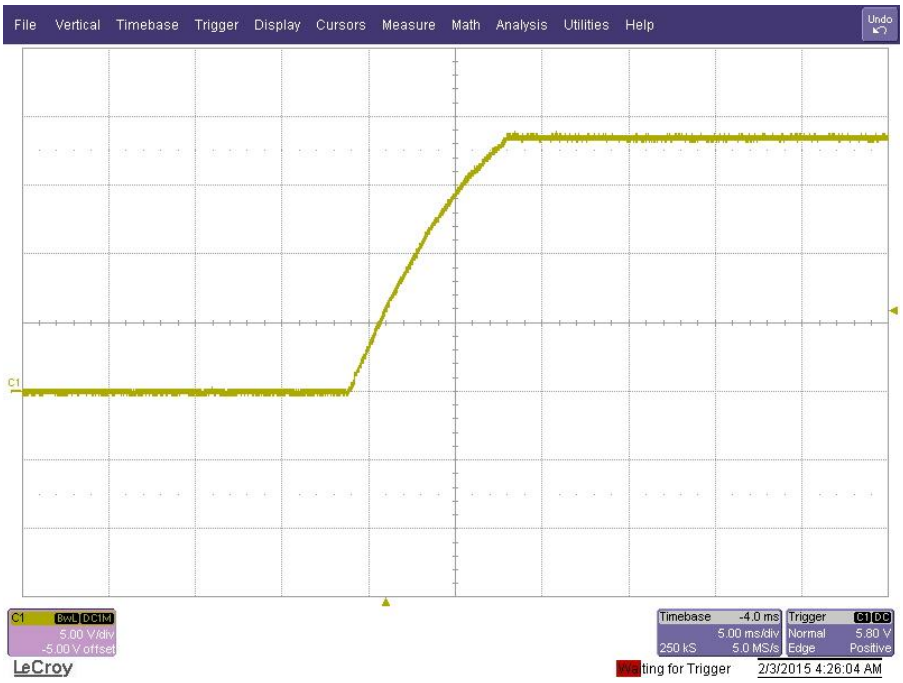


Spot analysis	Value
Amb Temperature	26.2°C
Area analysis	**Value**
D4Max	50.6°C
L2Max	54.1°C
RcsMax	51.1°C
Q1Max	43.8°C

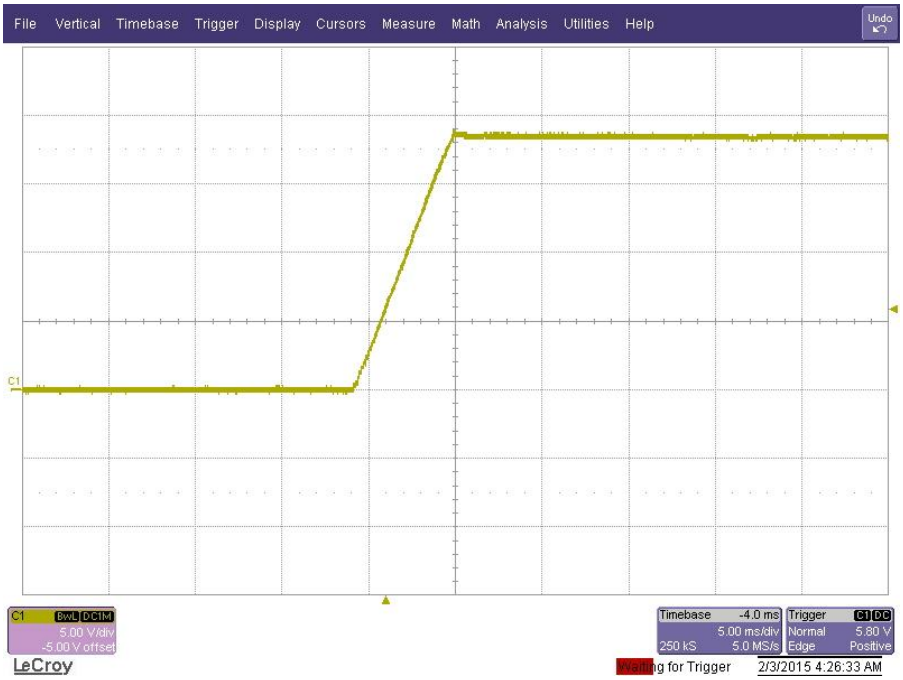
4 Startup Waveforms

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

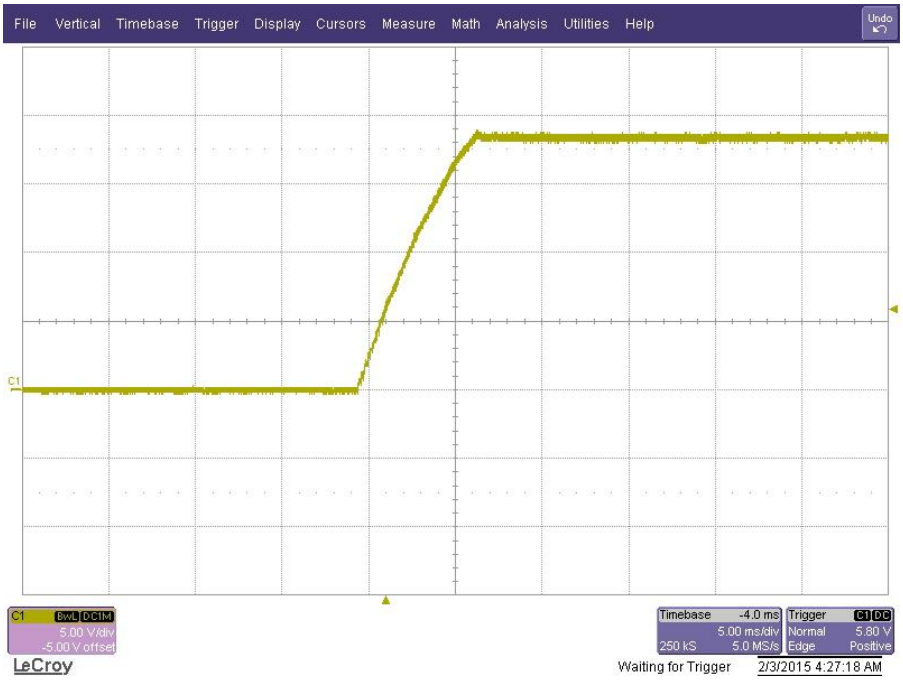
4.1 $85V_{AC}$/60Hz: 18V/0.3A.



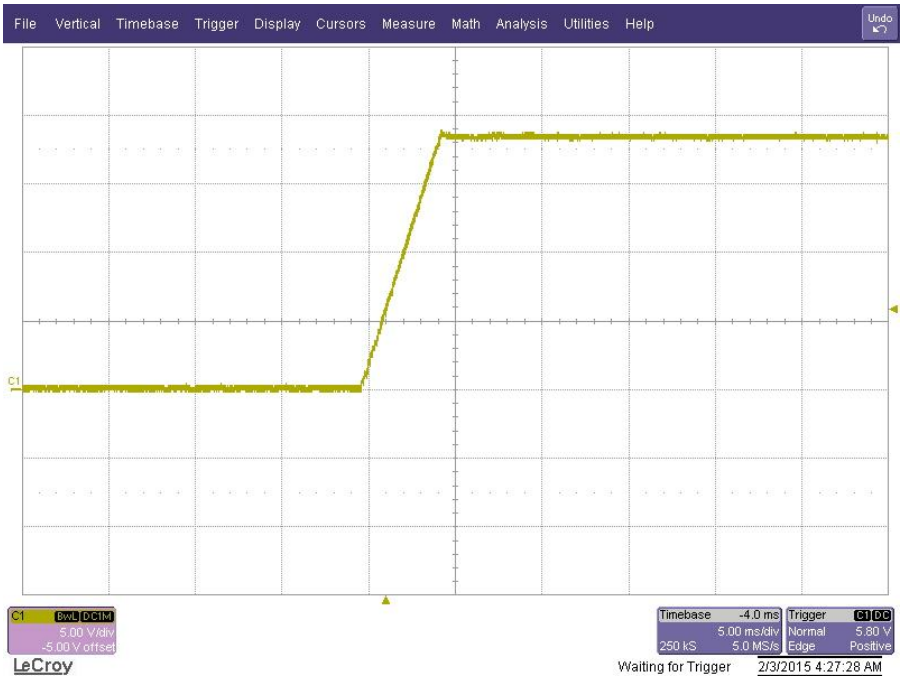
4.2 $85V_{AC}$/60Hz: no load.



4.3 265V_{AC}/60Hz: 18V/0.3A.



4.4 265V_{AC}/60Hz: no load.

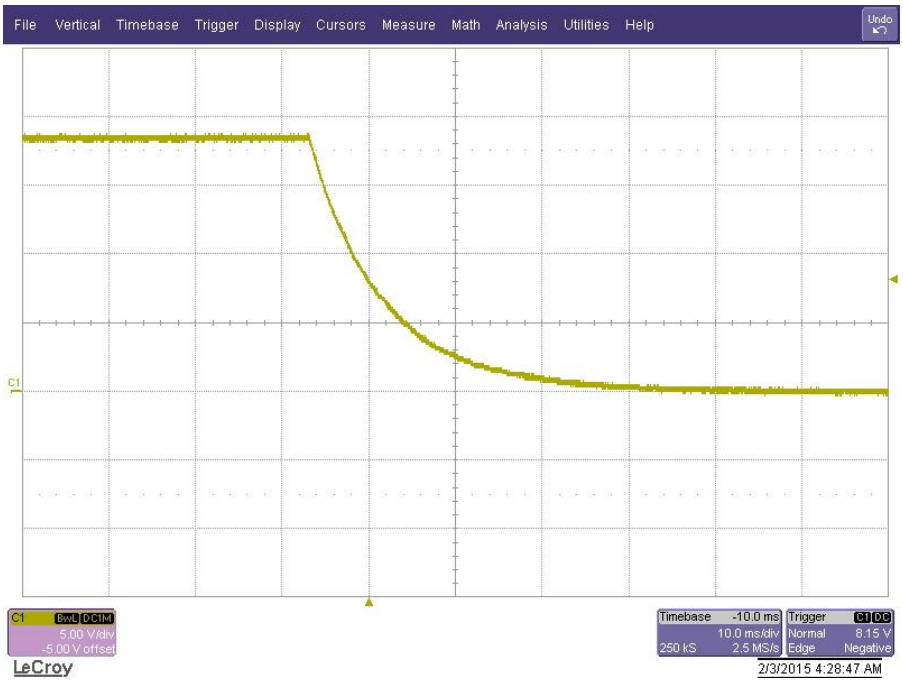


5 Turn off

The output voltages at turn off transient are shown in the images below.

5.1 85V_{AC}/60Hz: 18V/60ohm load.

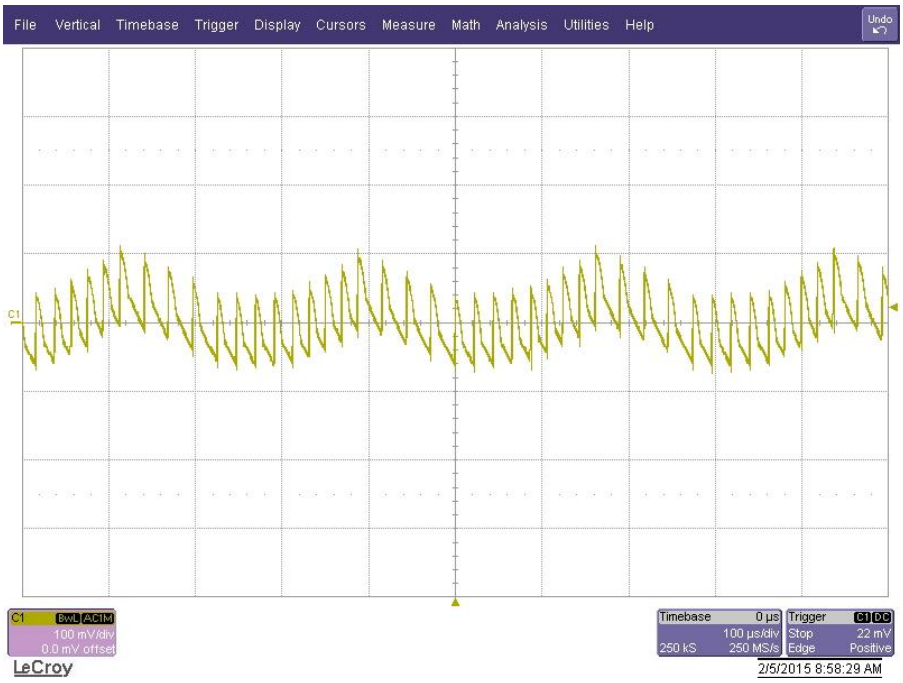
5.2 265V_{AC}/60Hz: 18V/60ohm load.



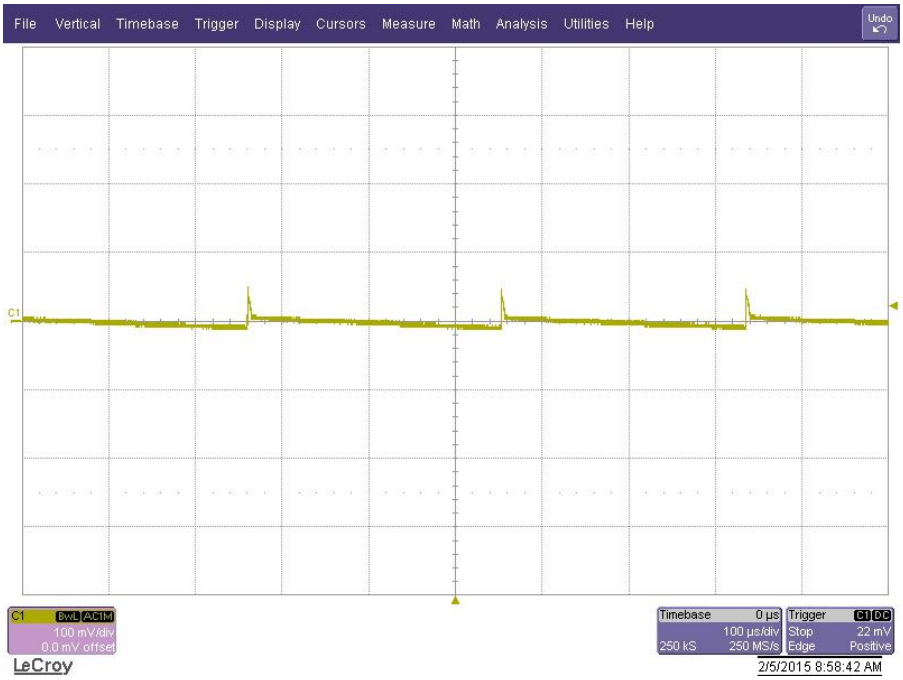
6 Output Ripple Voltages

The output ripple voltages are shown in the plots below:

6.1 120V_{AC}/60Hz: 18V/0.3A.

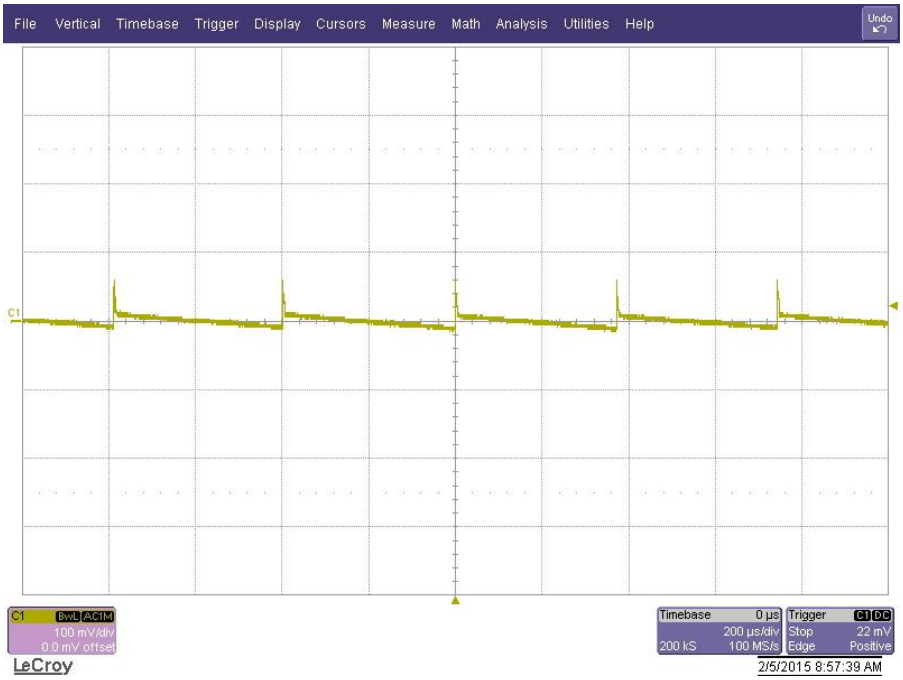


6.2 120V_{AC}/60Hz: no load.



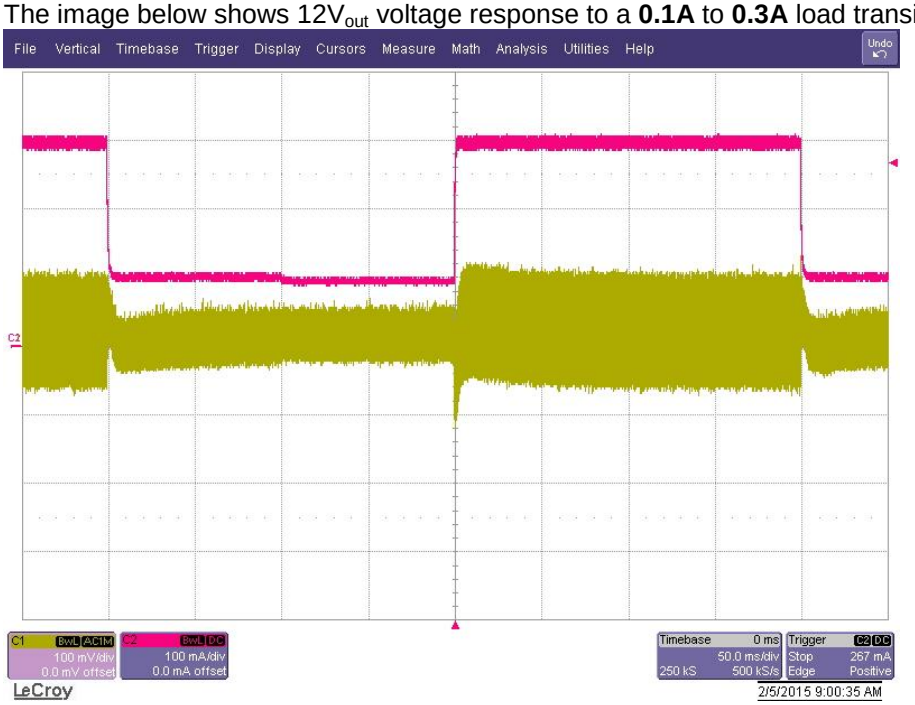
6.3 230V_{AC}/60Hz: 18V/0.3A.

6.4 230V_{AC}/60Hz: no load.



7 Load Transient

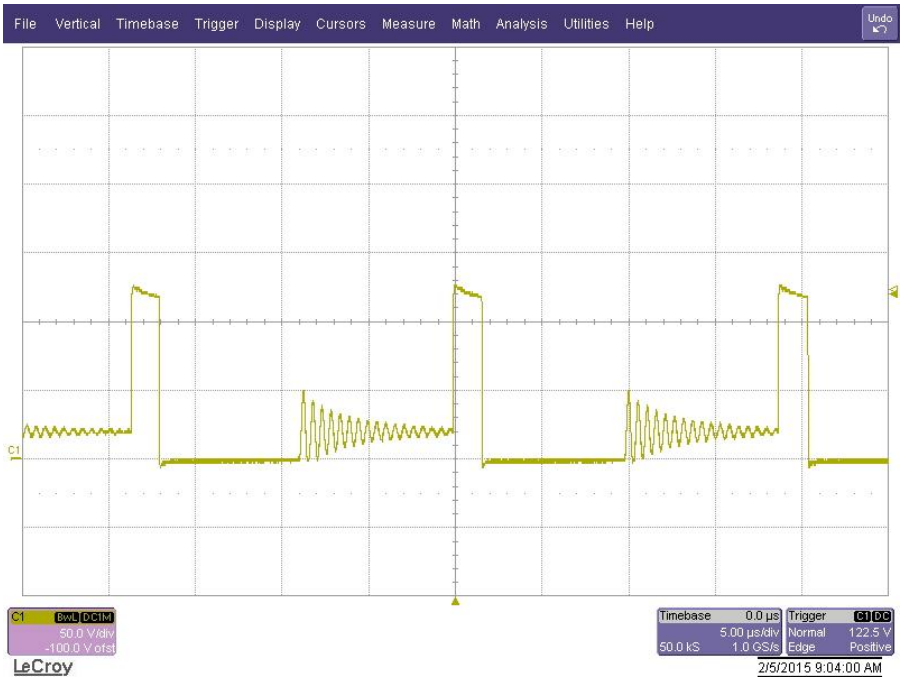
The image below shows 12V_{out} voltage response to a **0.1A** to **0.3A** load transient at 120V_{AC}/60Hz input.



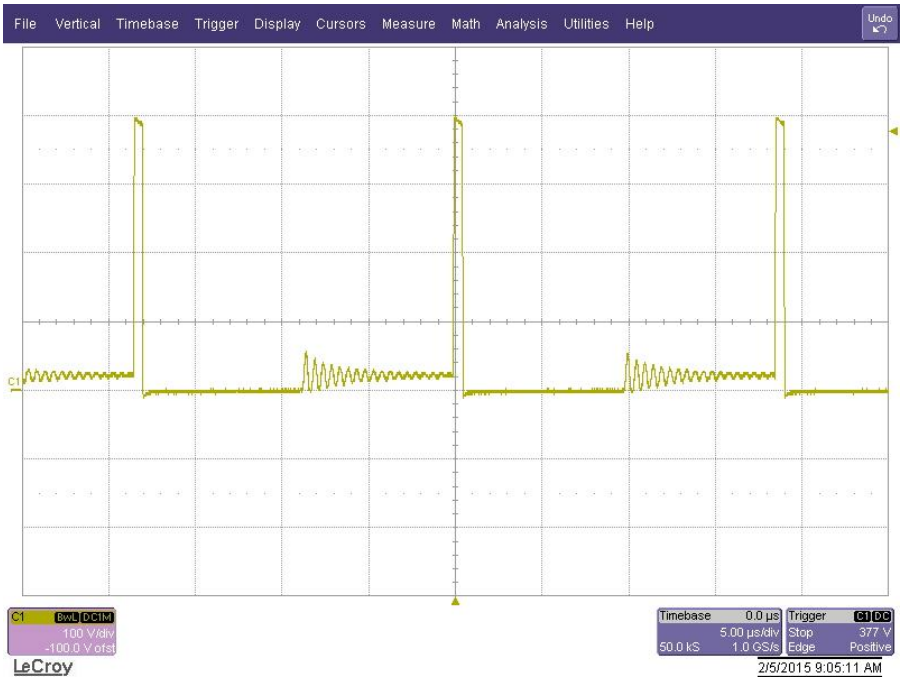
8 Switching Waveforms

The images below show key switching waveforms of PMP10937RevA. The waveforms are measured with 0.3A load current.

8.1 Diode D4 @ 85V_{AC}/60Hz



8.2 Diode D4 @ 265V_{AC}/50Hz



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