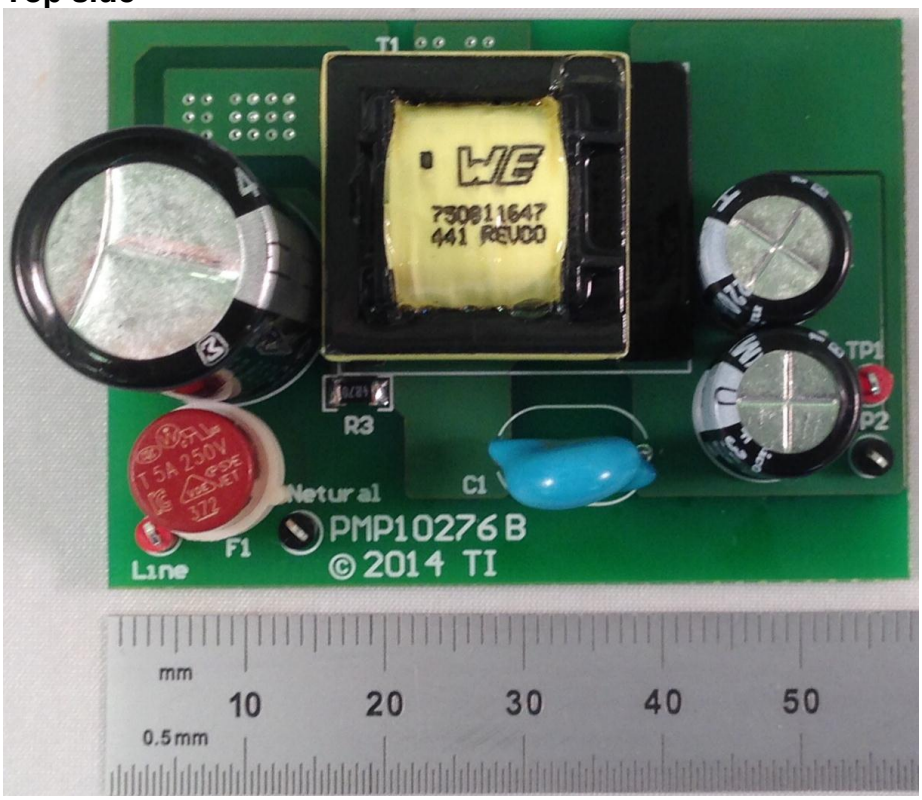
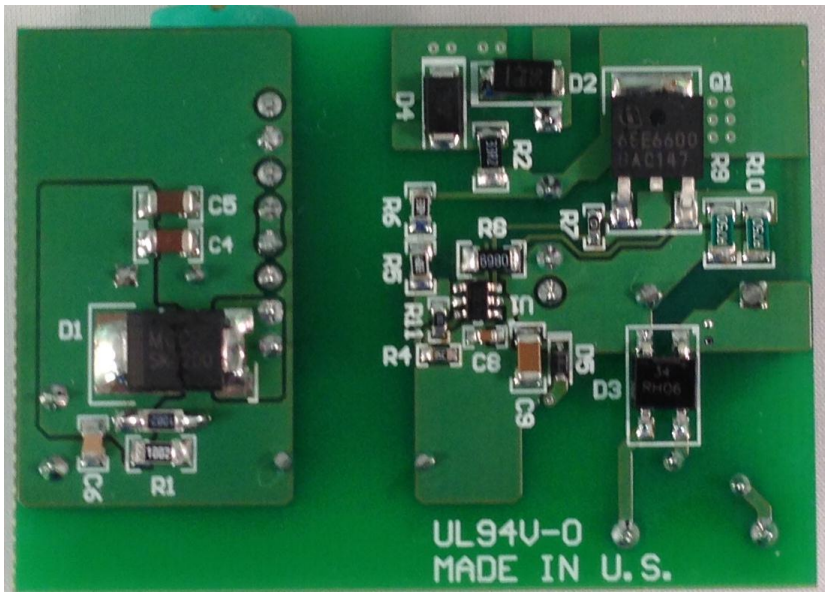
1 Photo

The photographs below show the PMP10468 Rev A assembly. This circuit was built on a PMP10276 Rev B PCB.

Top side

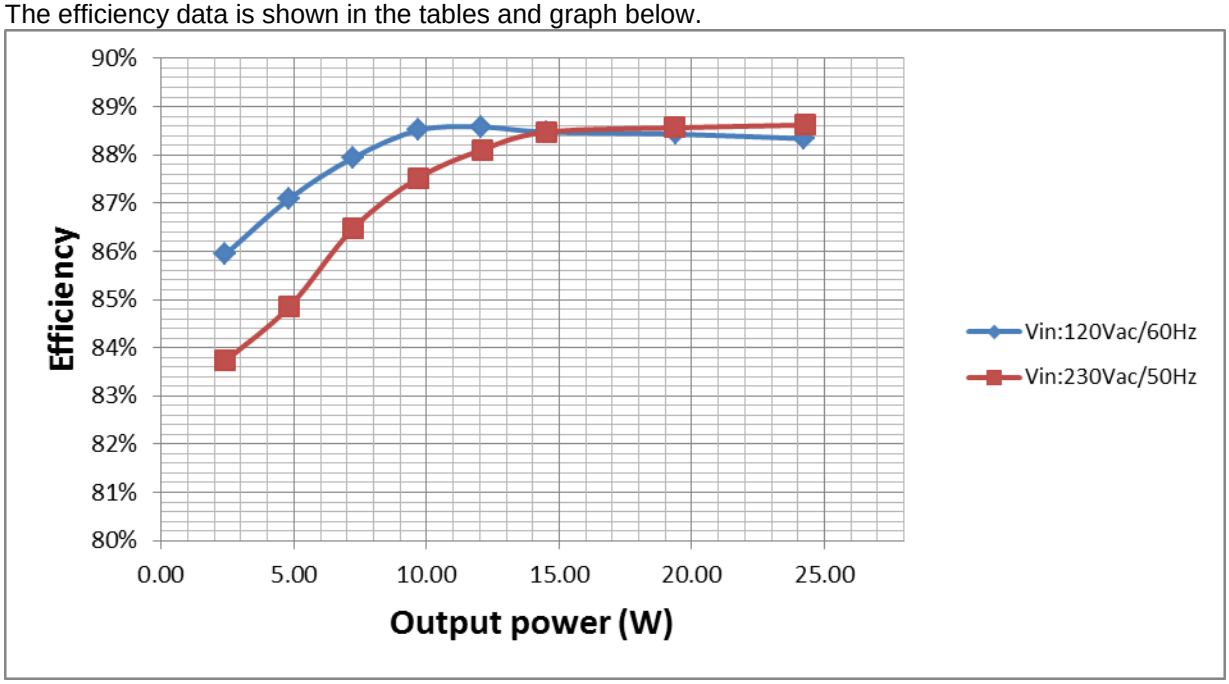


Bottom side



2 Converter Efficiency

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



Vin=120V_{AC}/60Hz

Vin(ac)	Iin(A)	Pin(W)	Vo(V)	Io(A)	Pout(W)	Eff. (%)
120.05	0.446	27.440	24.24	1.000	24.24	88.34%
120.02	0.362	21.920	24.20	0.801	19.38	88.43%
120.01	0.277	16.391	24.17	0.600	14.50	88.48%
120.06	0.234	13.616	24.17	0.499	12.06	88.58%
120.10	0.192	10.950	24.17	0.401	9.69	88.51%
120.15	0.149	8.218	24.17	0.299	7.23	87.94%
120.20	0.105	5.548	24.16	0.200	4.83	87.09%
120.25	0.057	2.809	24.14	0.100	2.41	85.94%
120.30	0.004	0.141	24.26	0.000	0.00	0.00%

Vin=230V_{AC}/50Hz

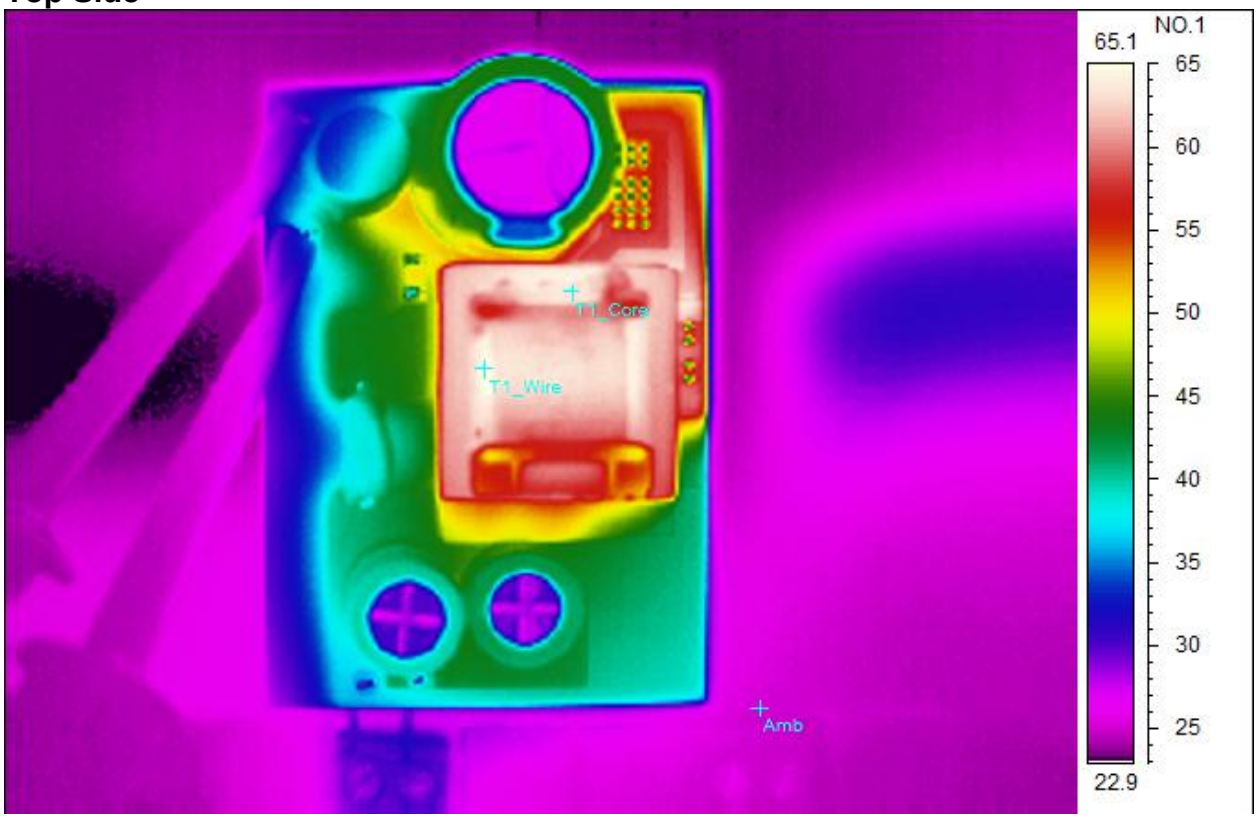
Vin(ac)	Iin(A)	Pin(W)	Vo(V)	Io(A)	Pout(W)	Eff. (%)
230.00	0.272	27.380	24.24	1.001	24.26	88.62%
230.00	0.222	21.860	24.20	0.800	19.36	88.56%
230.10	0.172	16.405	24.19	0.600	14.51	88.47%
230.10	0.147	13.722	24.18	0.500	12.09	88.11%
230.10	0.121	11.047	24.17	0.400	9.67	87.52%
230.10	0.094	8.354	24.16	0.299	7.22	86.47%
230.20	0.067	5.692	24.15	0.200	4.83	84.86%
230.20	0.037	2.882	24.13	0.100	2.41	83.73%
230.20	0.003	0.156	24.25	0.000	0.00	0.00%

3 Thermal Images

The thermal images below show a top view and bottom view of the board. The ambient temperature was 20ºC with no forced air flow. The output was at 24V/1A.

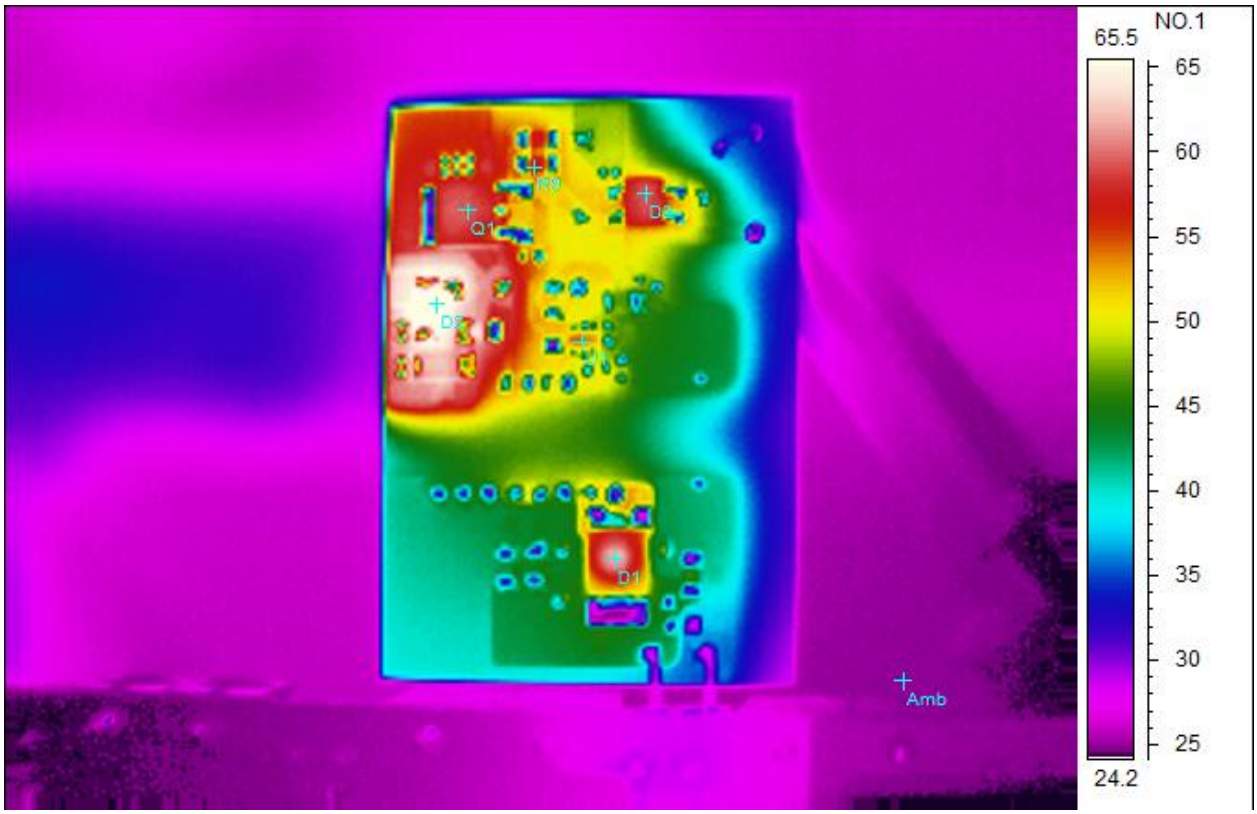
120V_{AC}/60Hz

Top Side



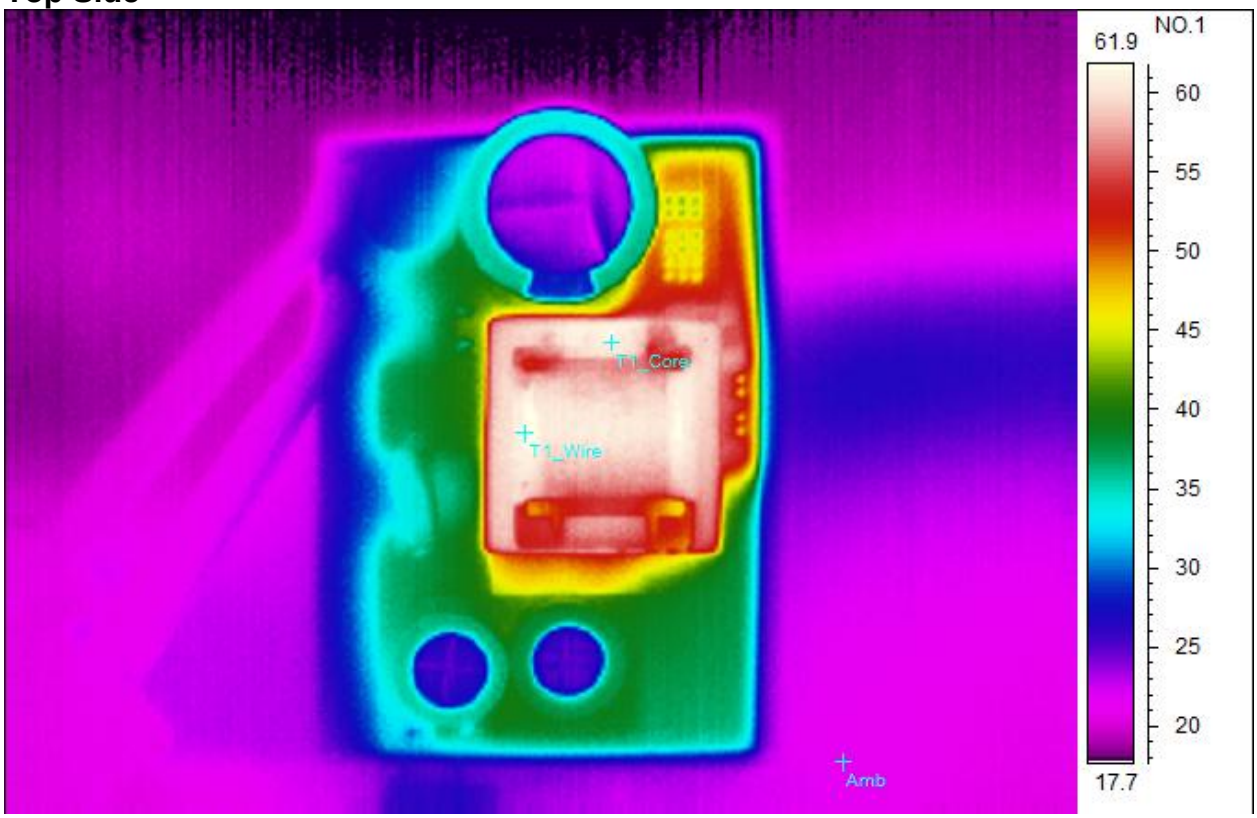
Spot analysis	Value
AmbTemperature	25.4°C
T1_CoreTemperature	64.0°C
T1_Wire Temperature	65.5°C

120V_{AC}/60Hz
Bottom Side



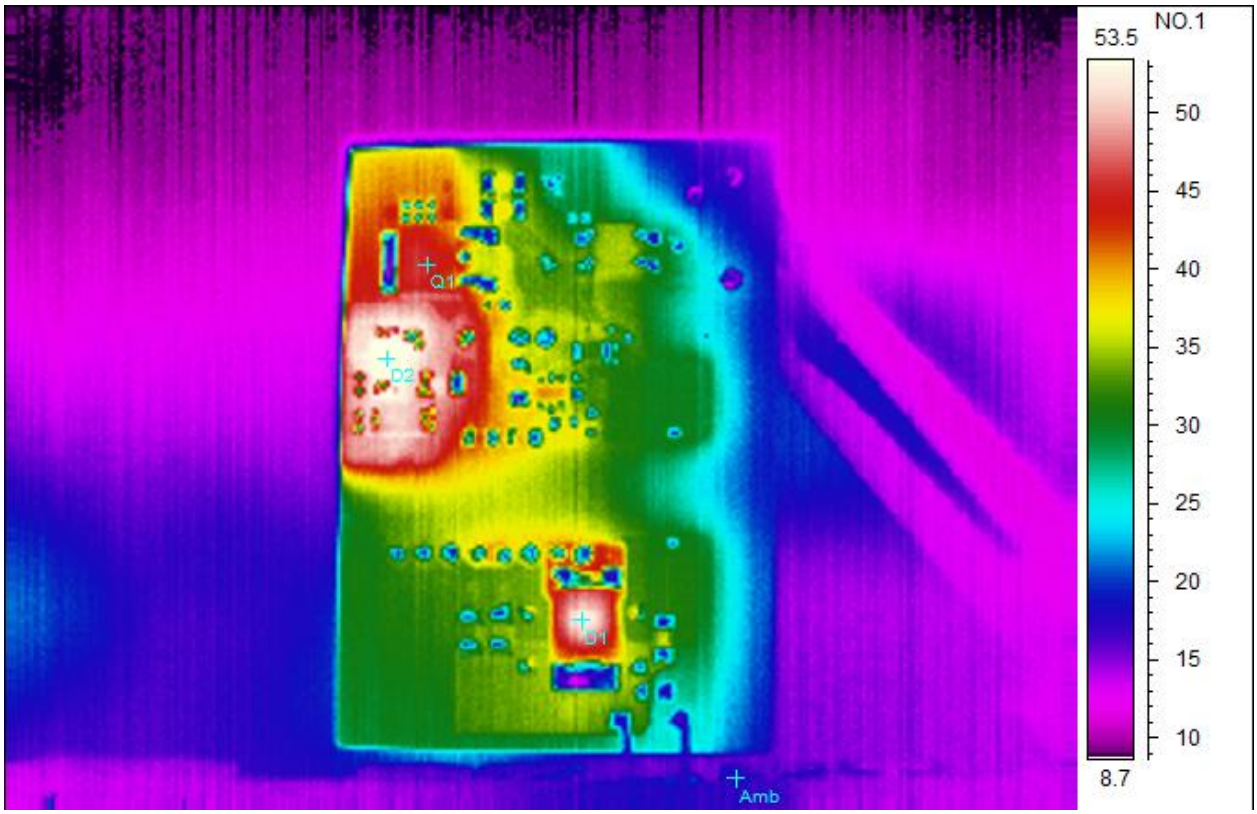
Spot analysis	Value
AmbTemperature	25.0°C
D1Temperature	62.2°C
D2Temperature	70.3°C
Q1Temperature	60.0°C
D3Temperature	60.0°C
U1Temperature	55.0°C
R9 Temperature	57.5°C

230V_{AC}/50Hz
Top Side



Spot analysis	Value
AmbTemperature	21.9°C
T1_CoreTemperature	61.2°C
T1_Wire Temperature	62.5°C

230V_{AC}/50Hz
Bottom Side

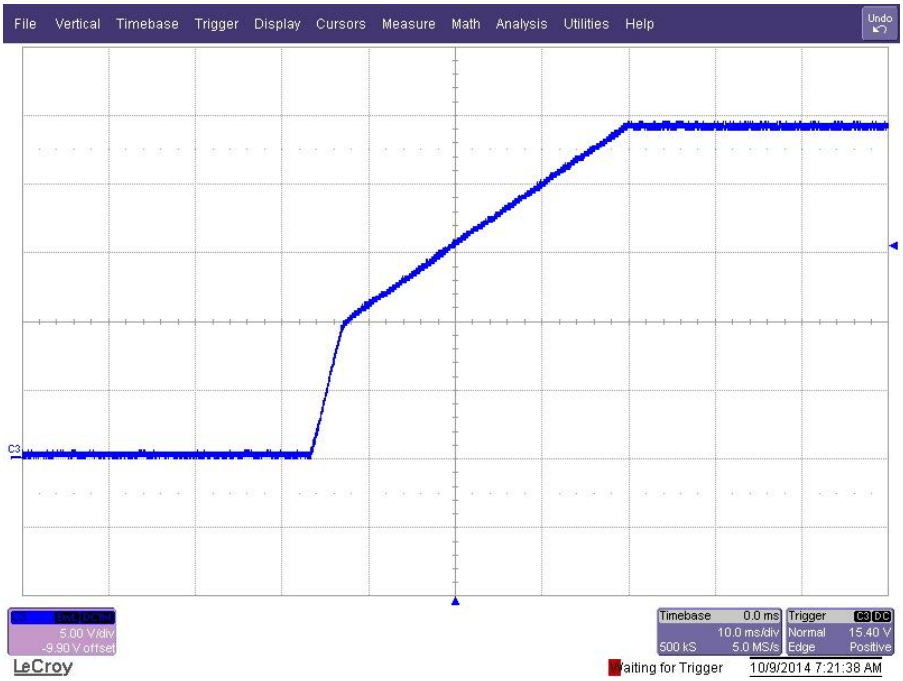


Spot analysis	Value
AmbTemperature	18.4°C
D1Temperature	52.7°C
D2Temperature	58.3°C
Q1 Temperature	46.1°C

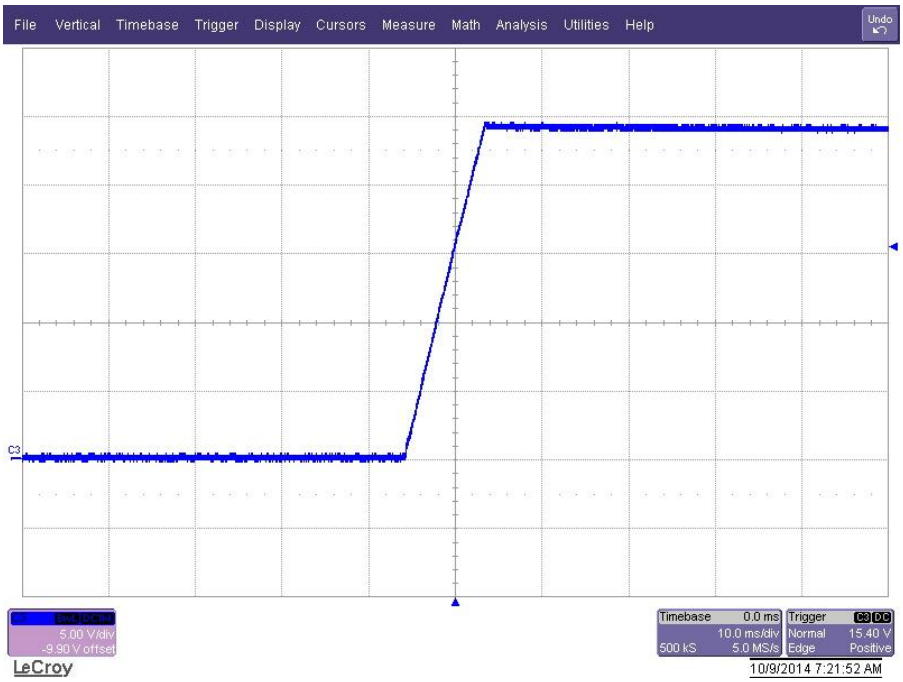
4 Startup

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

4.1 Start Up @ 120V_{AC}: 24V/1A.



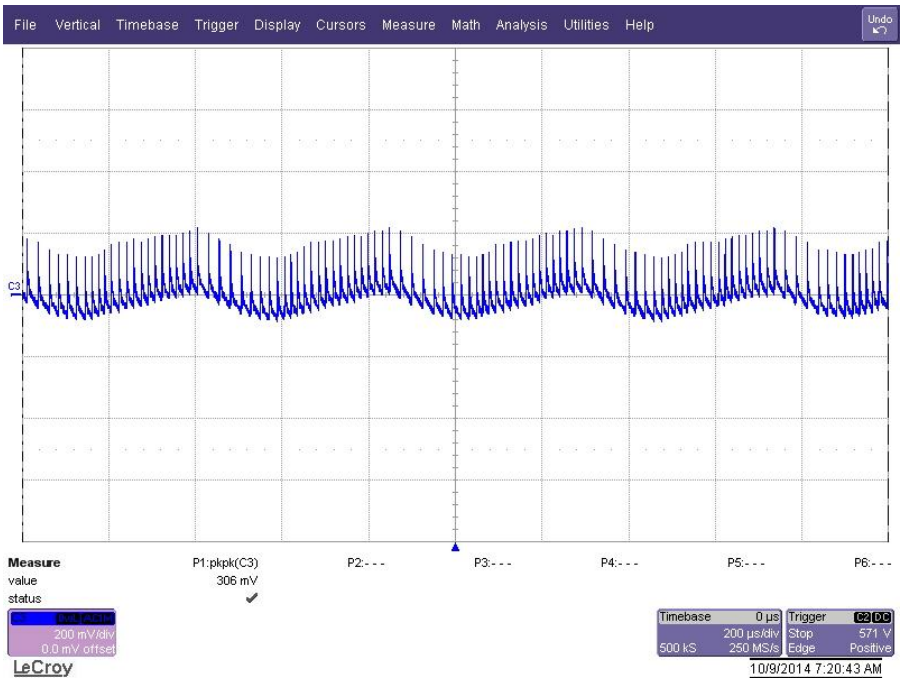
4.2 Start Up @ 120V_{AC}: no load.



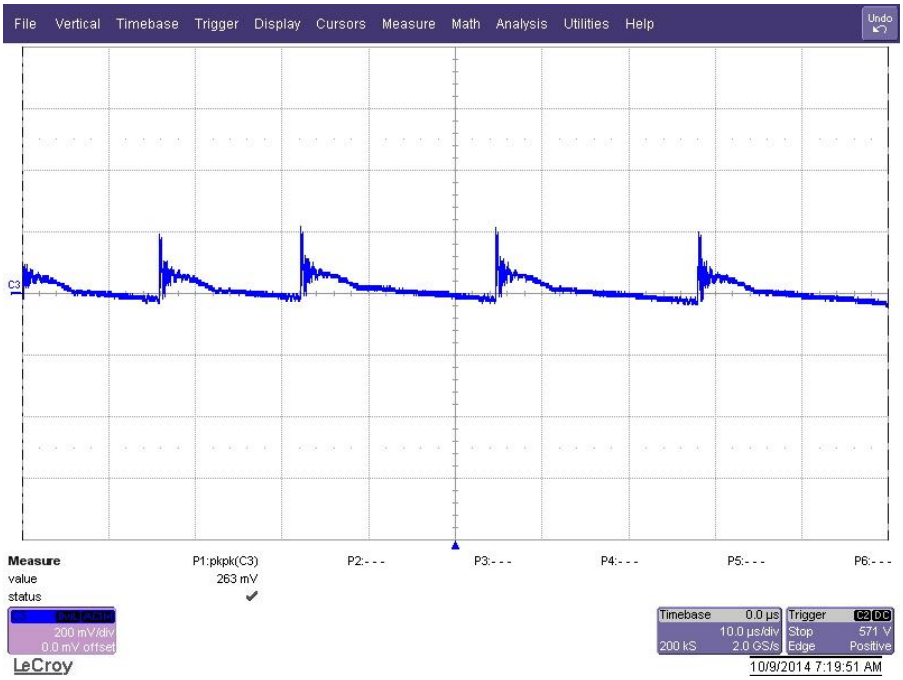
5 Output Ripple Voltages

The output ripple voltage is shown in the plots below at 24V/1A full load.

5.1 $24V_{ripple}$ at $120V_{AC}$/60Hz



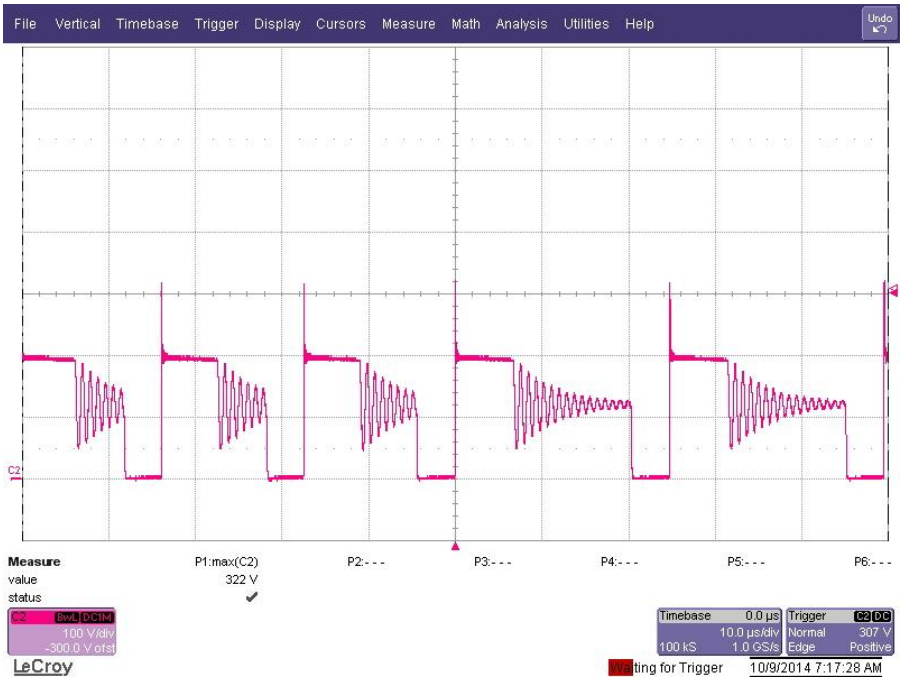
5.2 $24V_{ripple}$ at $230V_{AC}$/50Hz



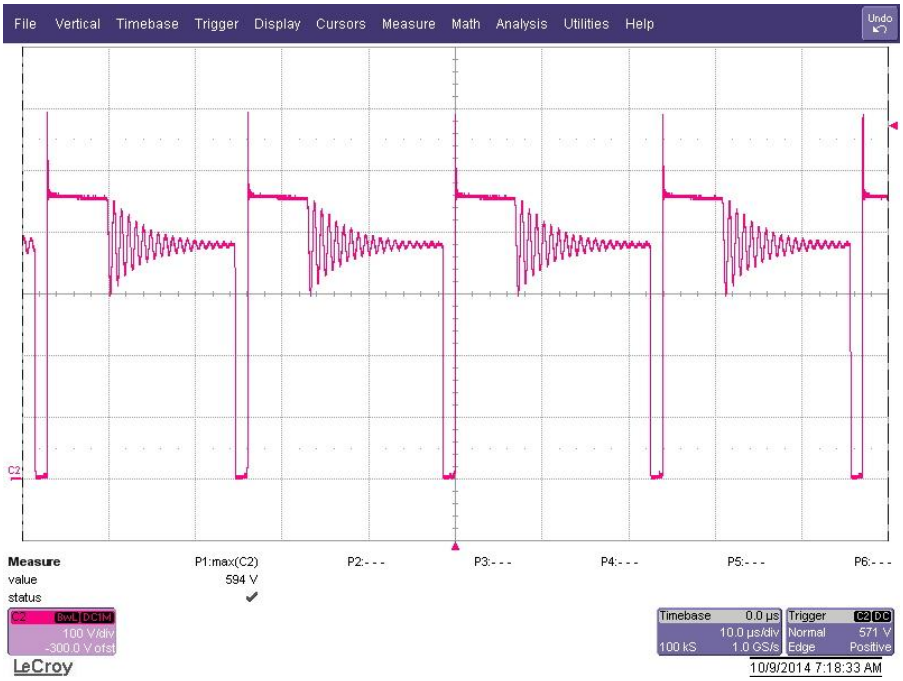
6 Switching Waveforms

The images below show key switching waveforms of PMP10468RevA. The waveforms are measured with 24V/1A load.

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



6.2 Primary MOSFET Q1 @ 264V_{ac}/50Hz



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