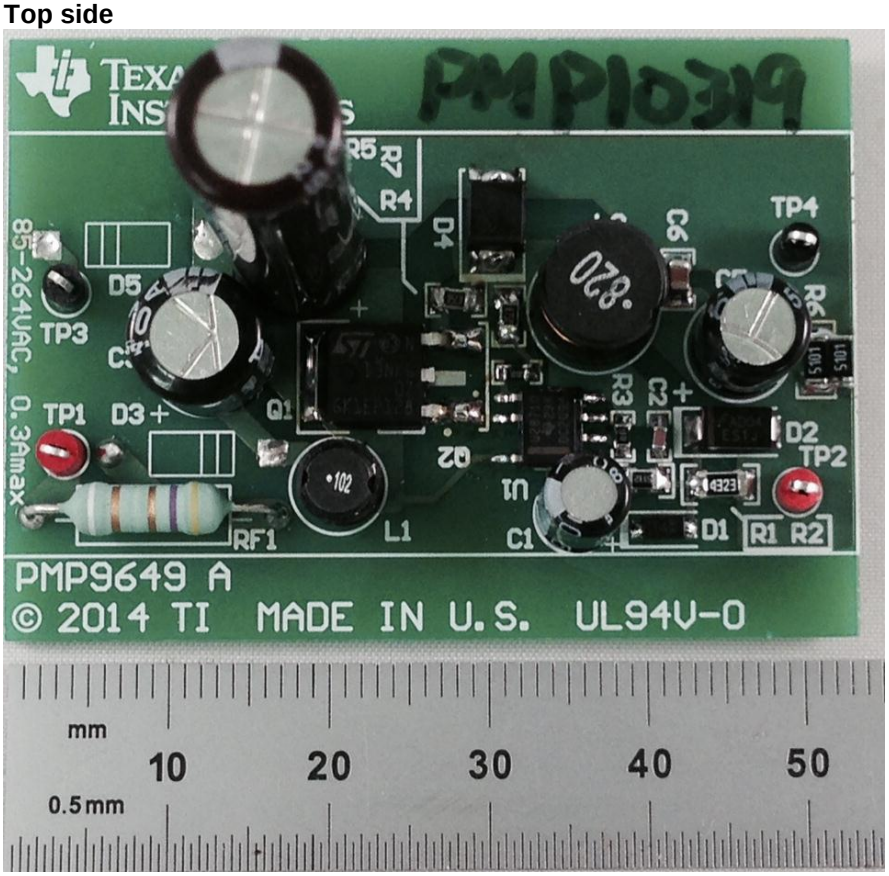
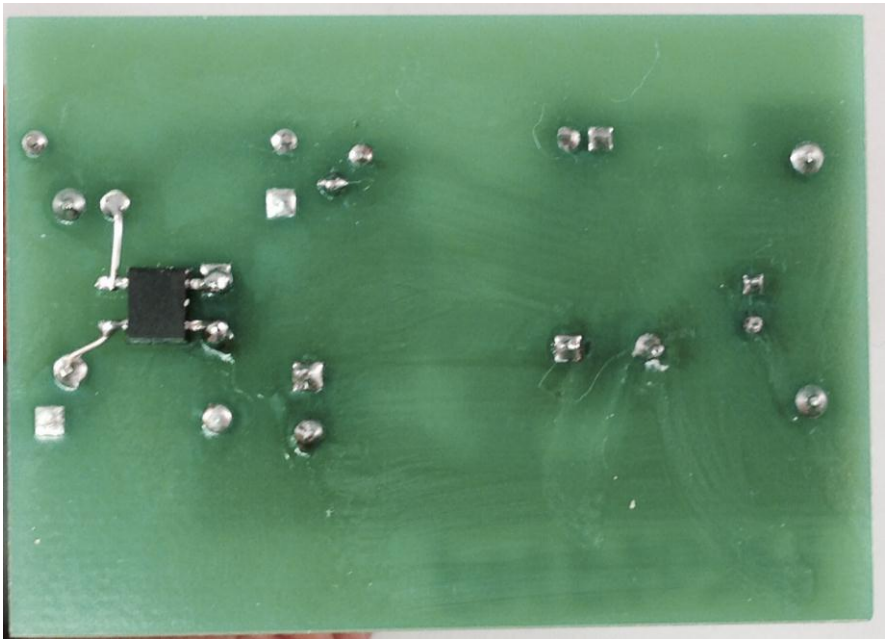
1 Photo

The photographs below show the PMP10319 Rev A assembly. This circuit was built on a PMP9649 Rev A PCB.

Top side

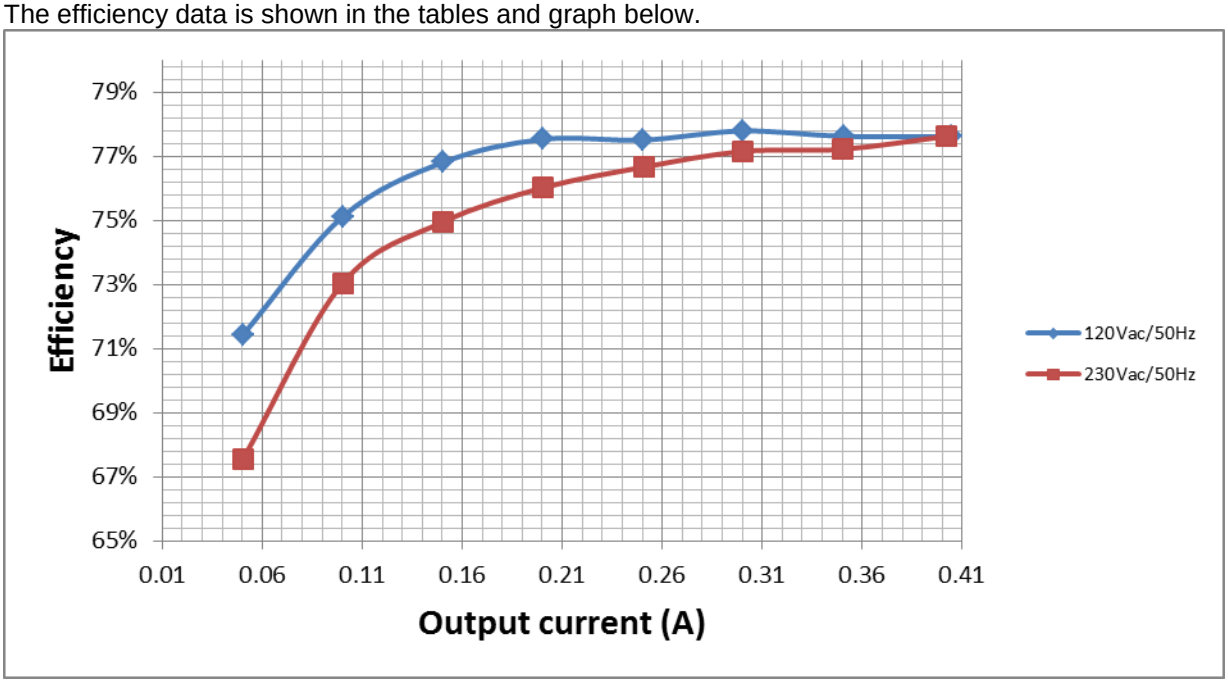


Bottom side



2 Converter Efficiency

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



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

Vin(V)	Iin(mA)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Efficiency (%)
120.14	124.31	7.75	14.86	0.40	6.02	1.73	0.78
120.16	109.67	6.70	14.84	0.35	5.20	1.50	0.78
120.17	95.55	5.73	14.83	0.30	4.45	1.27	0.78
120.19	81.89	4.79	14.82	0.25	3.71	1.08	0.78
120.21	67.31	3.83	14.82	0.20	2.97	0.86	0.78
120.23	52.94	2.90	14.82	0.15	2.23	0.67	0.77
120.25	37.97	1.98	14.83	0.10	1.49	0.49	0.75
120.27	21.53	1.04	14.83	0.05	0.75	0.30	0.71
120.29	3.01	124.16	14.85	0.00	0.00	124.16	0.00

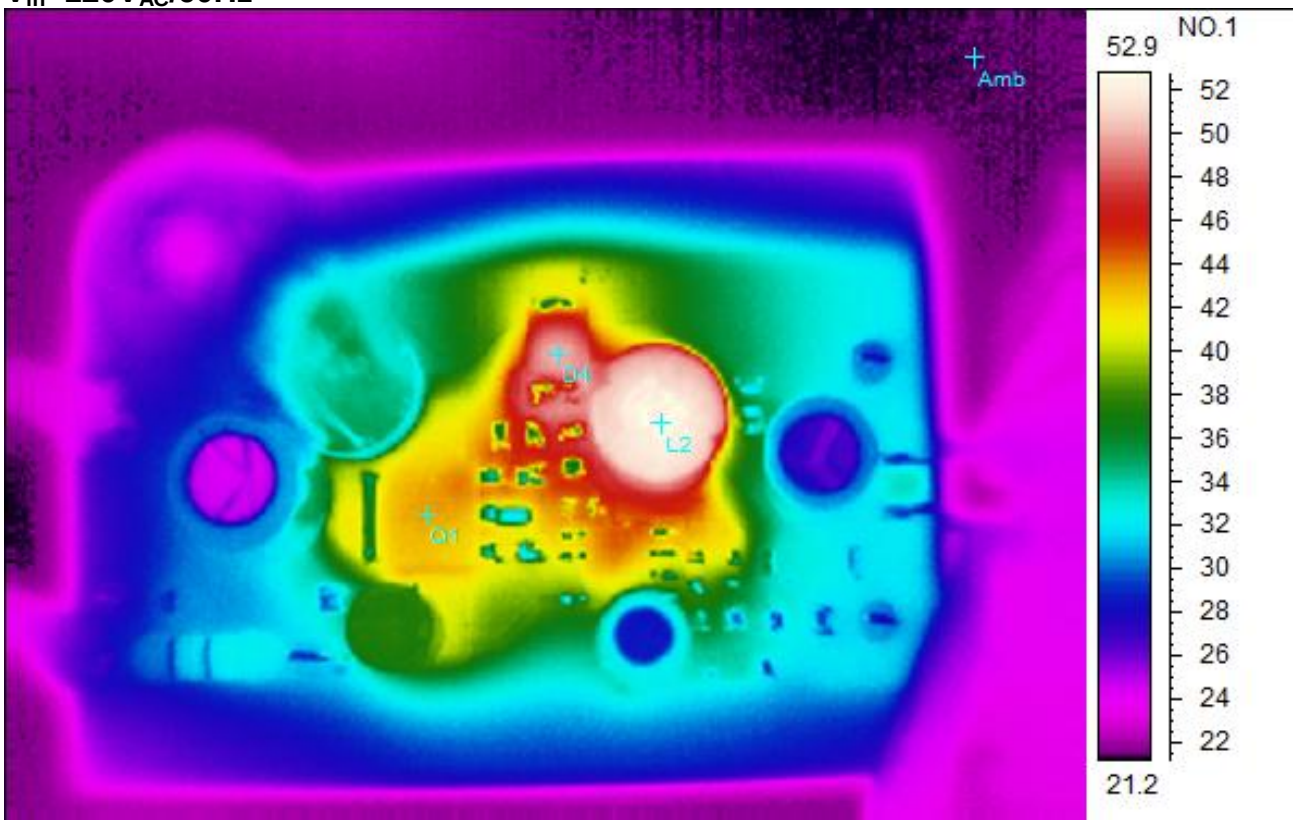
Vin=230V_{AC}/50Hz

Vin(V)	Iin(mA)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Efficiency (%)
230.00	78.05	7.69	14.84	0.40	5.97	1.72	0.78
230.10	69.46	6.72	14.82	0.35	5.19	1.53	0.77
230.10	60.61	5.76	14.81	0.30	4.44	1.32	0.77
230.10	52.04	4.84	14.80	0.25	3.71	1.13	0.77
230.10	43.18	3.91	14.81	0.20	2.97	0.94	0.76
230.10	33.91	2.97	14.81	0.15	2.23	0.74	0.75
230.10	24.21	2.04	14.82	0.10	1.49	0.55	0.73
230.10	13.96	1.11	14.84	0.05	0.75	0.36	0.68
230.20	2.76	0.09	20.89	0.00	0.00	0.09	0.00

3 Thermal Images

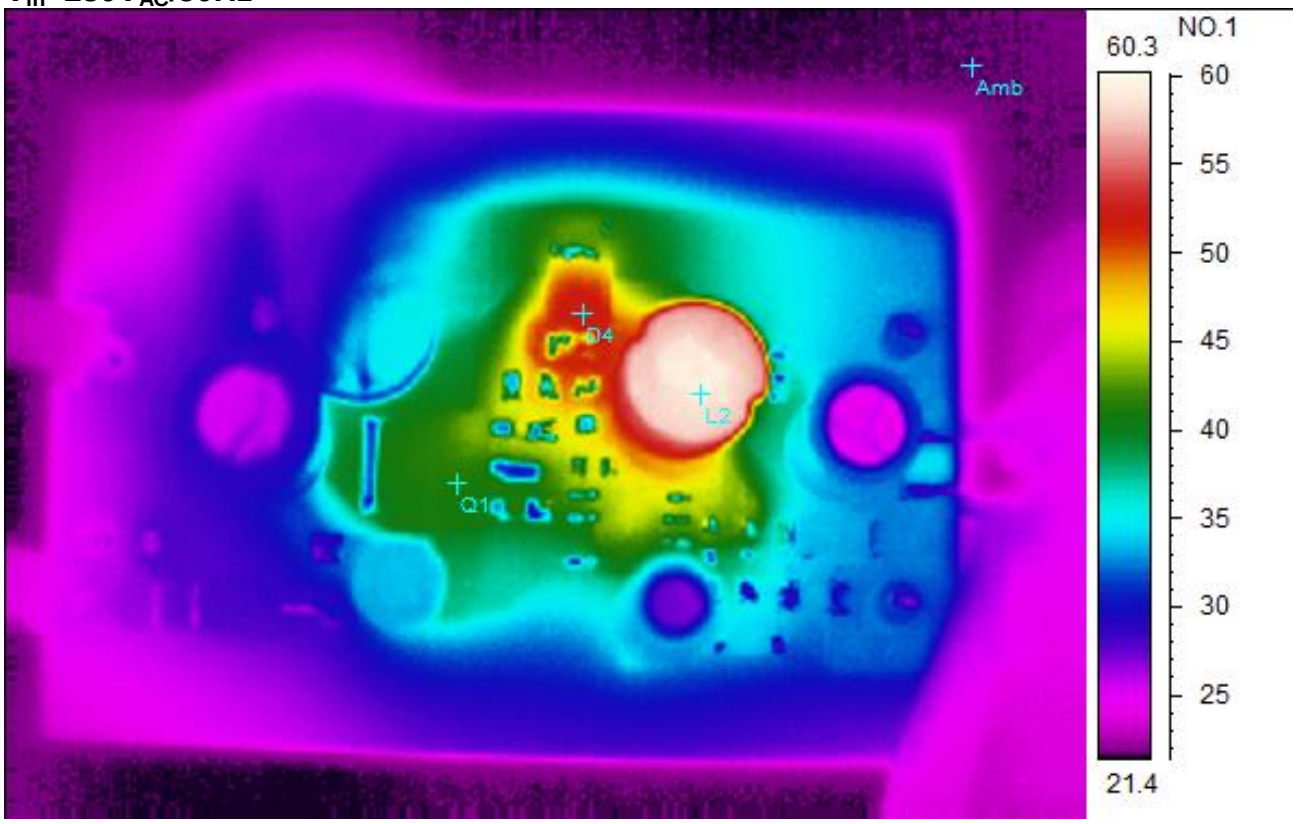
The thermal images below show a top view and bottom view of the board under 120V_{AC}/60Hz and 230V_{AC}/50Hz input conditions. The ambient temperature was 20ºC with no forced air flow. The output was at 15V/0.4A.

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



Spot analysis	Value
L2 Temperature	53.0°C
D4 Temperature	50.2°C
Q1 Temperature	43.9°C
Amb Temperature	21.3°C

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

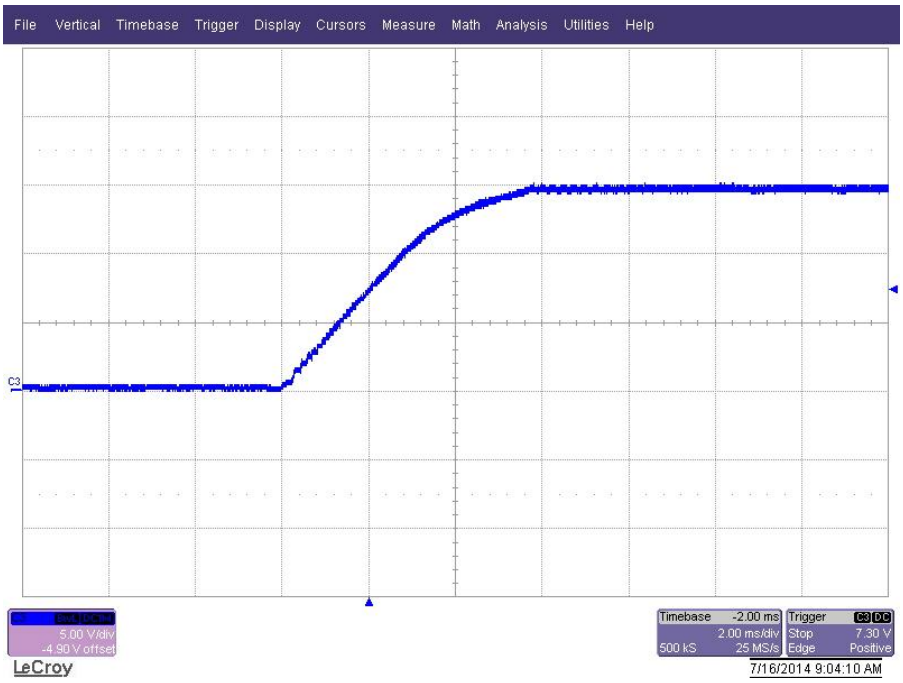


Spot analysis	Value
L2 Temperature	59.8°C
D4 Temperature	52.8°C
Q1 Temperature	42.0°C
Amb Temperature	21.7°C

4 Startup Waveforms

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

4.1 Start Up @ 120V_{AC}: 15V/0.4A.



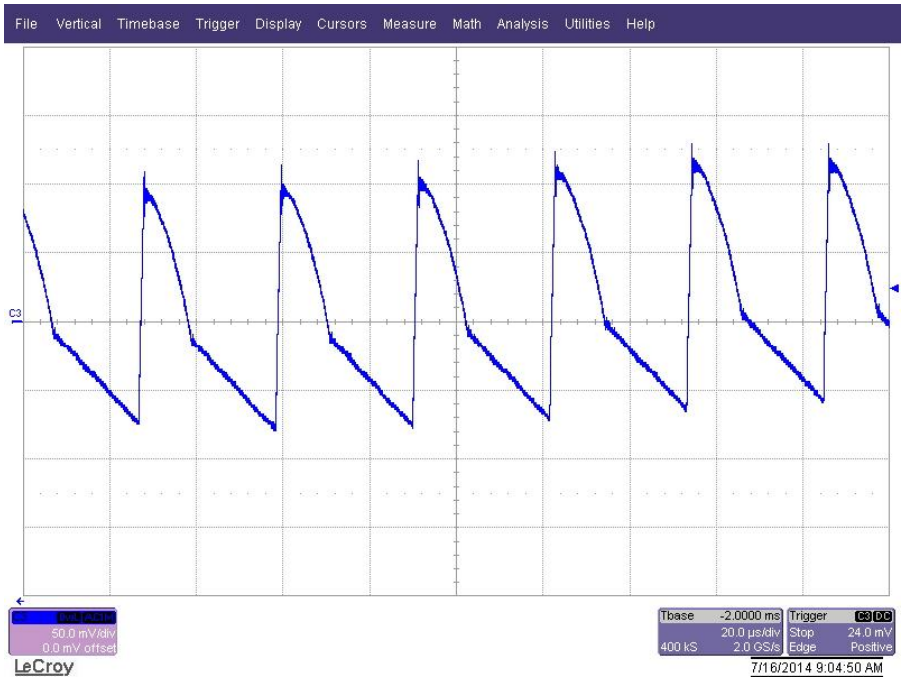
4.2 Start Up @ 120V_{AC}: no load.

5 Output Ripple Voltages

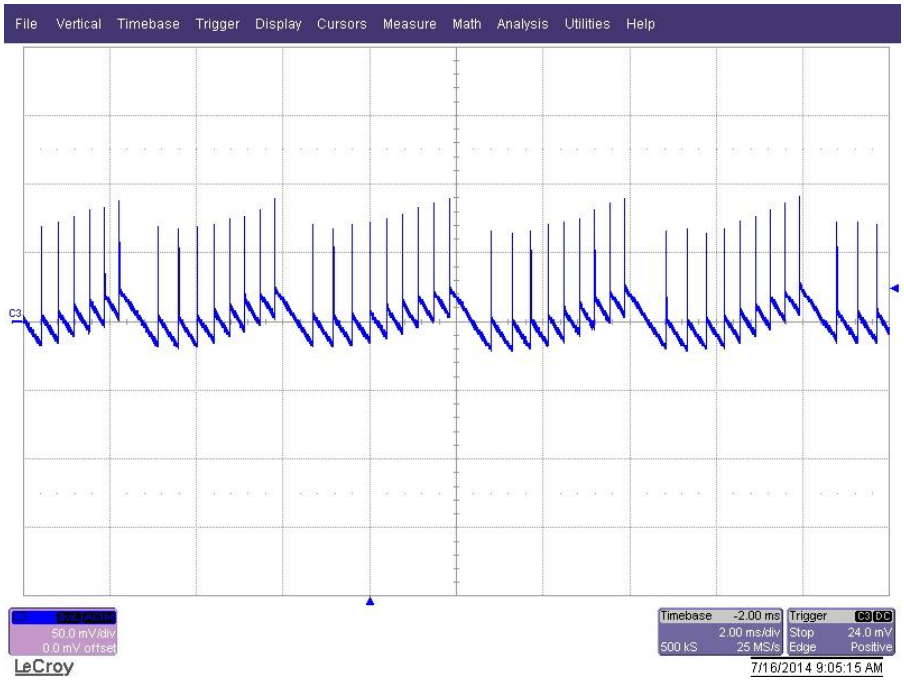
The output ripple voltages are shown in the plots below:

5.1 120V_{AC}/60Hz

5.1.1 15V/0.4A

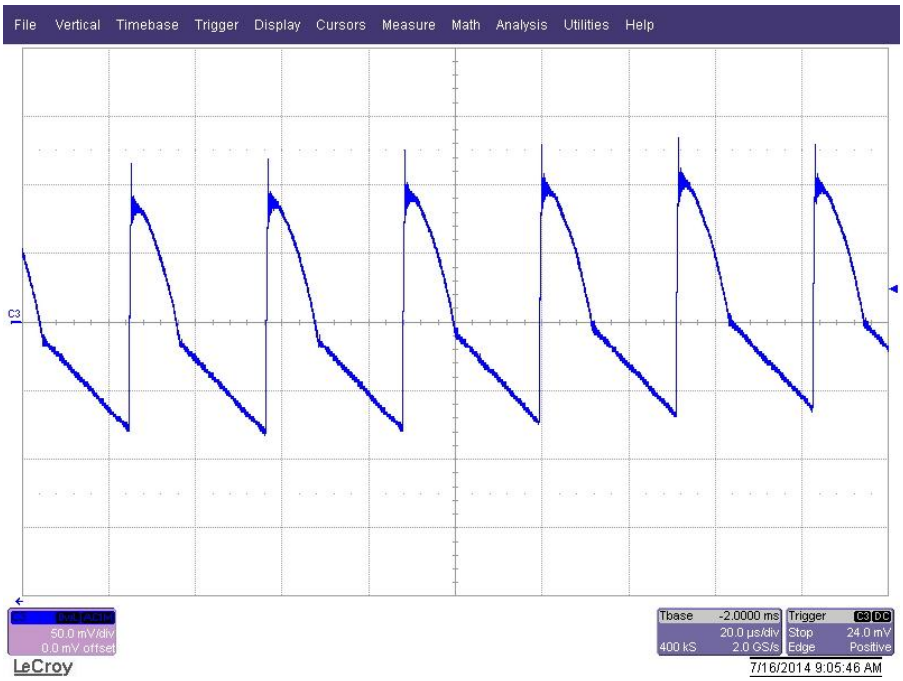


5.1.2 No load

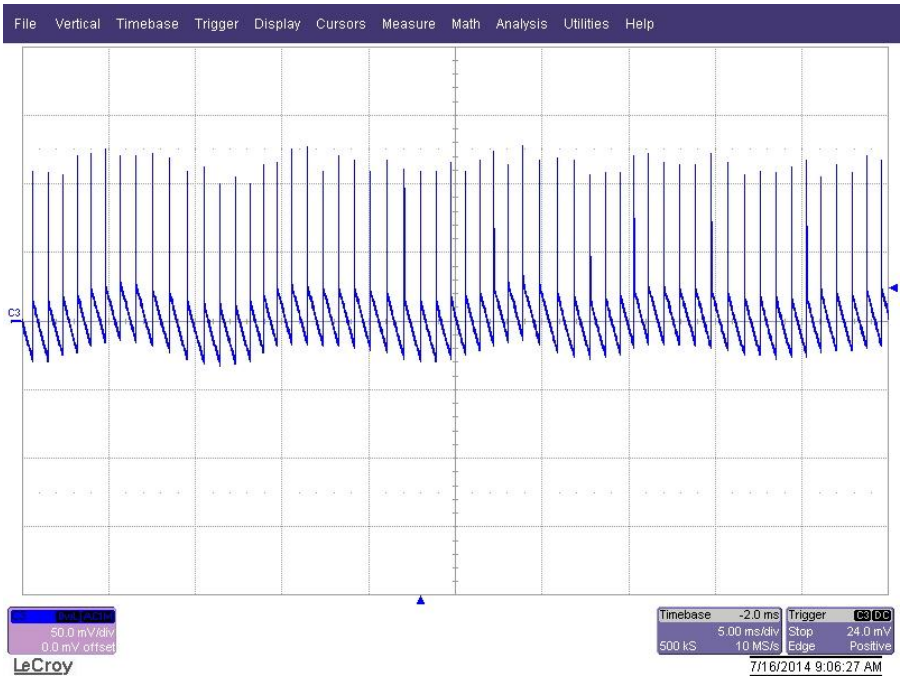


5.2 230V_{AC}/50Hz

5.2.1 15V/0.4A

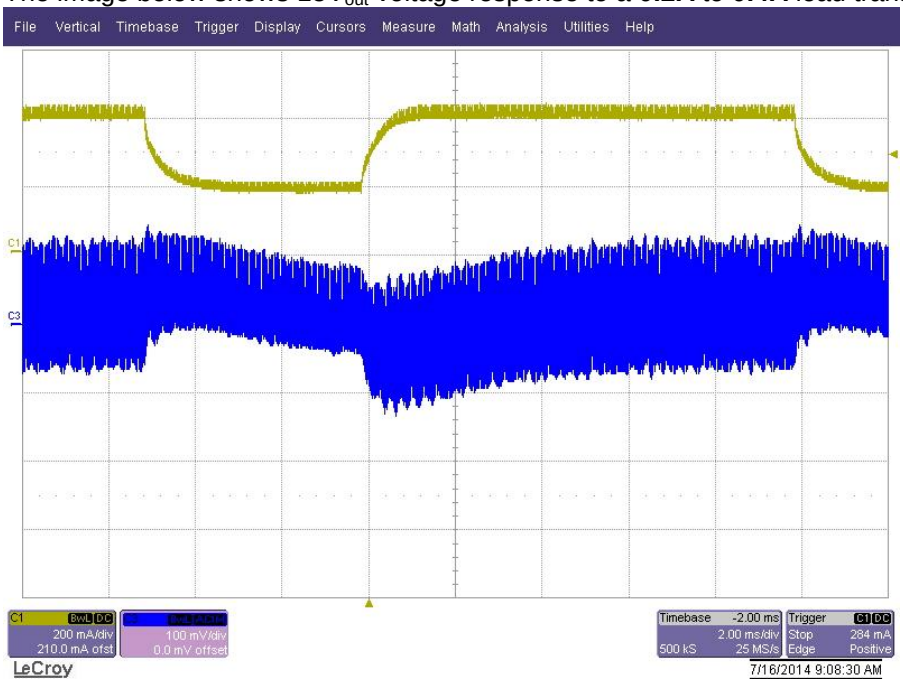


5.2.2 No load



6 Load Transient

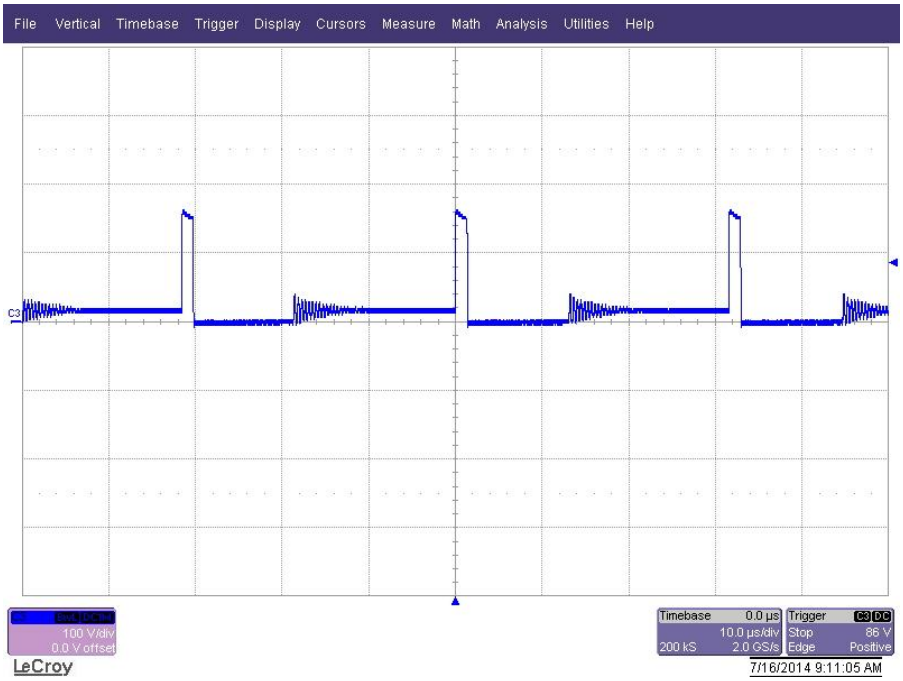
The image below shows $15V_{out}$ voltage response to a **0.2A** to **0.4A** load transient at $120V_{AC}$/60Hz input.



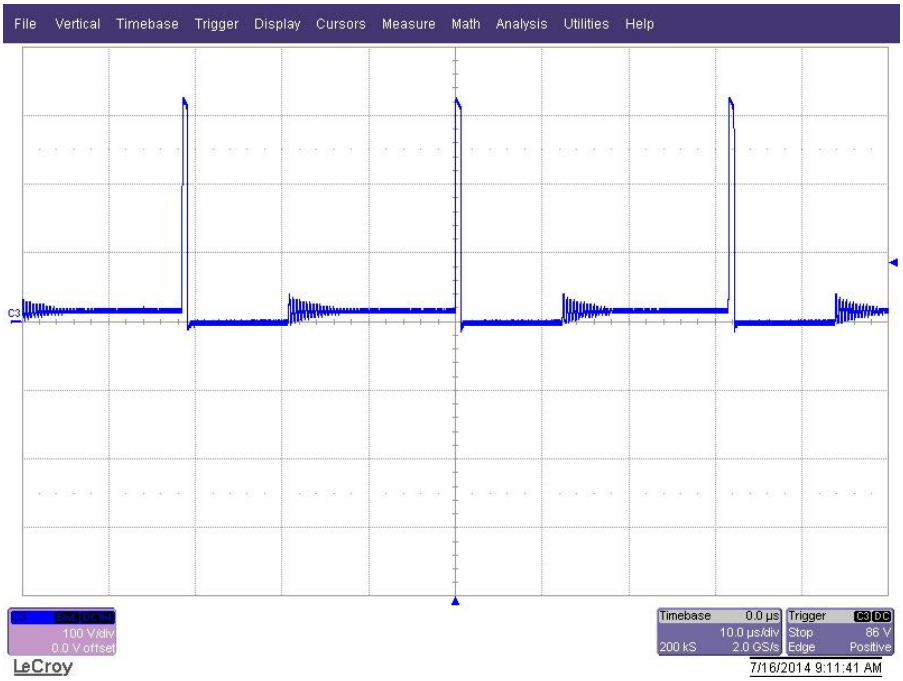
7 Switching Waveforms

The images below show key switching waveforms of PMP10319RevA. The waveforms are measured with 0.4A load current.

7.1 Diode D4 @ 120V_{AC}/60Hz



7.2 Diode D4 @ 230V_{AC}/50Hz



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