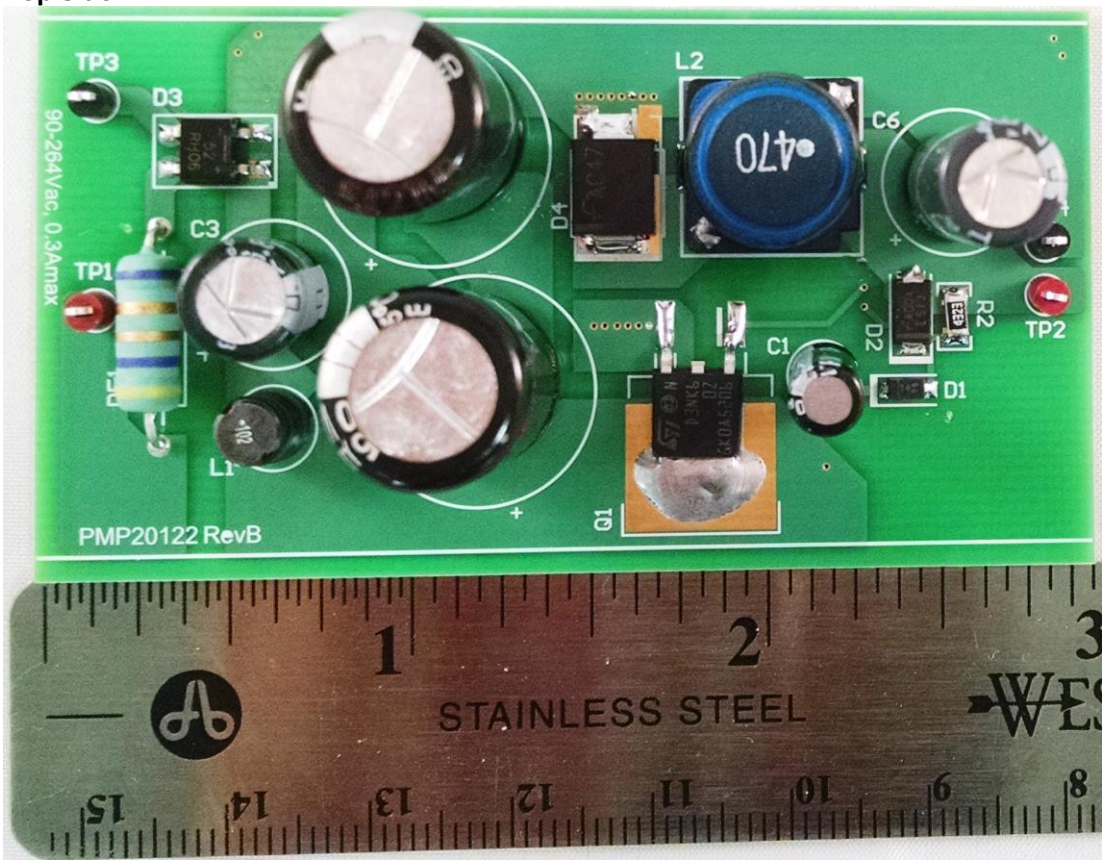
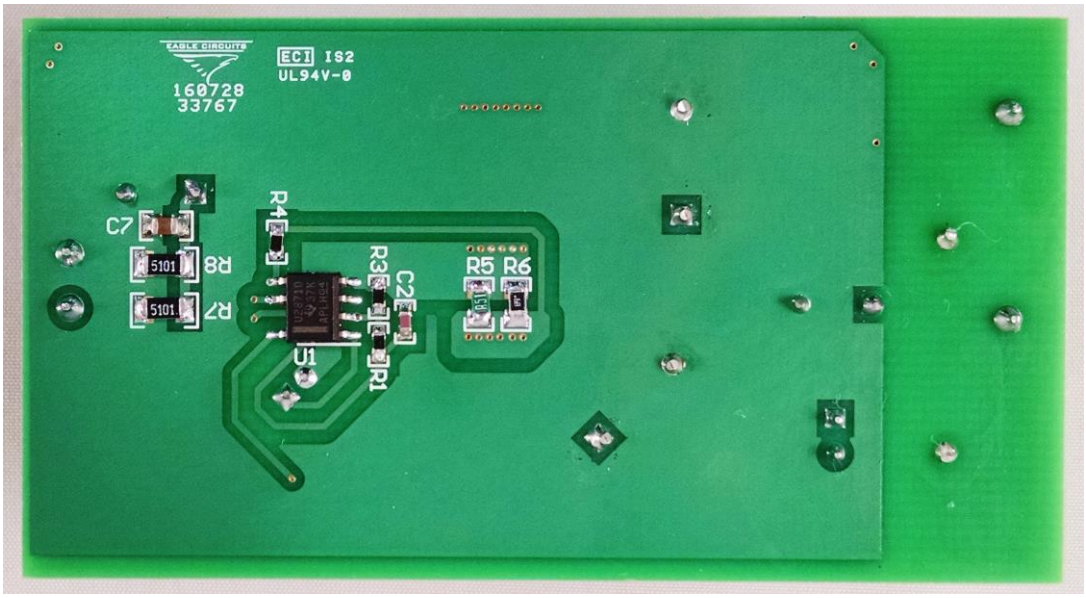
1 Photo

The photographs below show the PMP20122 Rev B assembly.

Top side

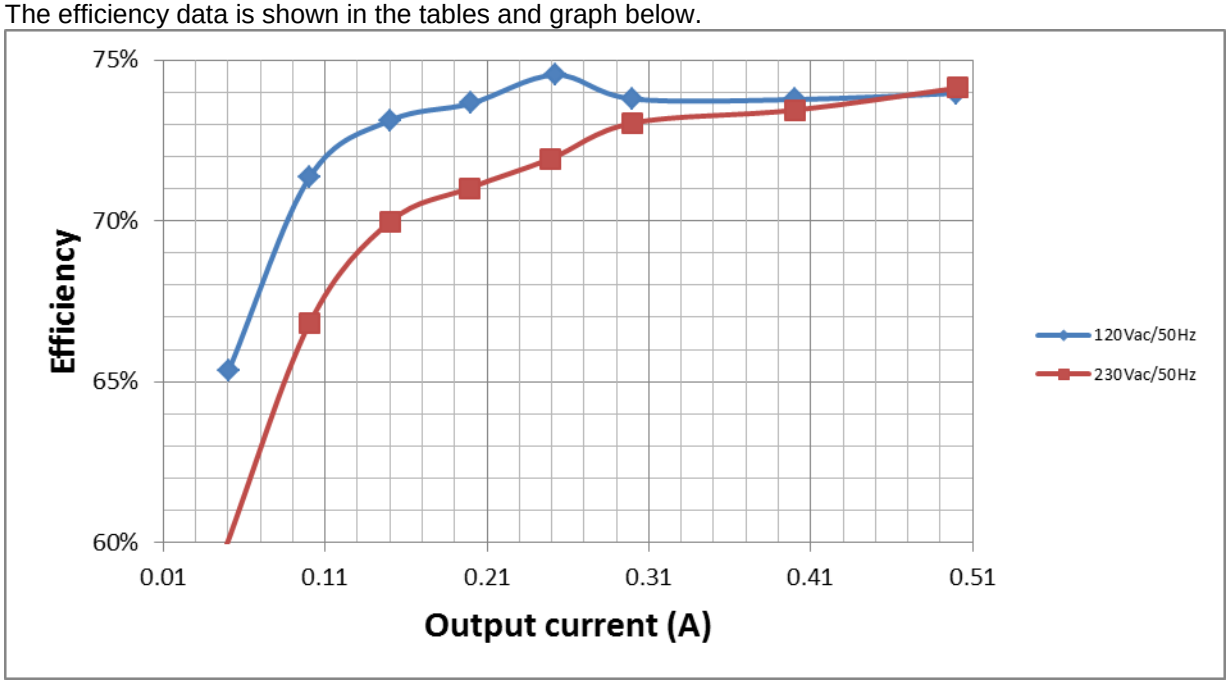


Bottom side



2 Converter Efficiency

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



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

Vin(V)	Iin(mA)	P.F.	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Eff (%)
120.07	127.25	0.53	8.10	11.98	0.50	5.99	2.11	73.97%
120.09	105.71	0.51	6.47	11.94	0.40	4.78	1.70	73.77%
120.12	82.57	0.49	4.85	11.93	0.30	3.58	1.27	73.79%
120.13	70.04	0.48	4.03	11.92	0.25	3.00	1.03	74.54%
120.15	57.99	0.47	3.24	11.92	0.20	2.39	0.85	73.65%
120.17	45.31	0.45	2.45	11.92	0.15	1.79	0.66	73.13%
120.18	32.51	0.43	1.68	11.94	0.10	1.20	0.48	71.36%
120.20	19.22	0.40	0.92	11.98	0.05	0.60	0.32	65.33%
120.22	2.55	0.32	0.10	11.96	0.00	0.00	0.10	0.00%

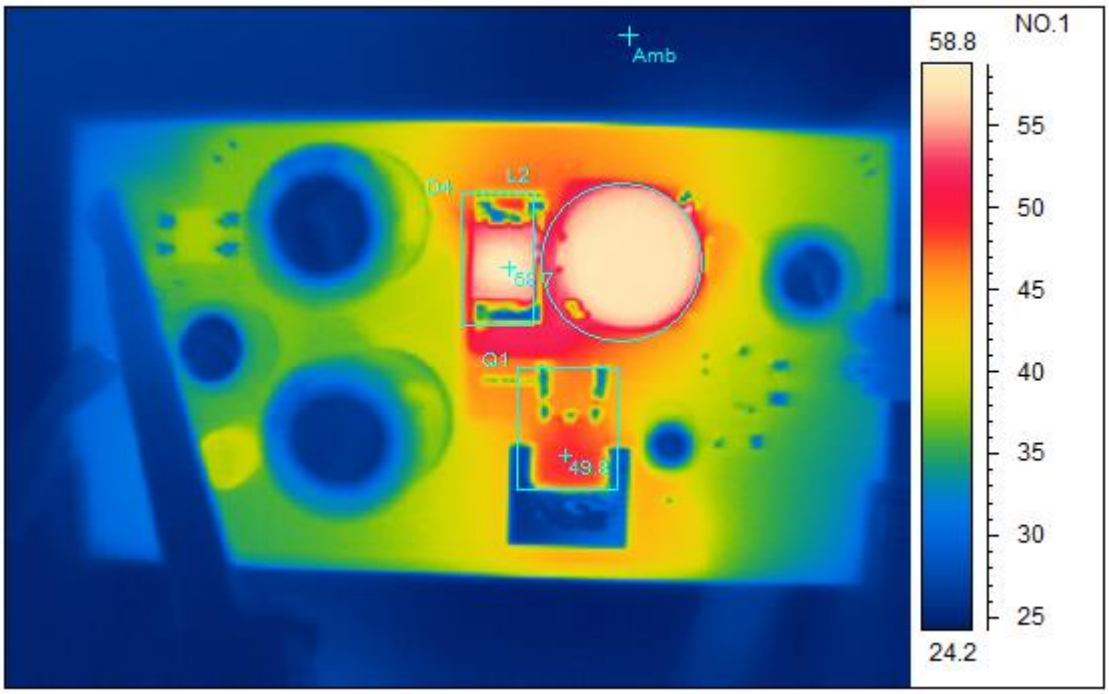
Vin=230V_{AC}/50Hz

Vin(V)	Iin(mA)	P.F.	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Eff (%)
230.00	82.60	0.44	8.10	11.99	0.50	6.01	2.10	74.13%
230.00	68.22	0.42	6.51	11.96	0.40	4.78	1.73	73.44%
230.00	53.15	0.41	4.90	11.94	0.30	3.58	1.32	73.04%
230.00	45.50	0.40	4.13	11.93	0.25	2.97	1.16	71.93%
230.00	37.48	0.39	3.34	11.92	0.20	2.37	0.97	71.02%
230.00	29.70	0.38	2.56	11.92	0.15	1.79	0.77	69.98%
230.00	21.50	0.37	1.79	11.93	0.10	1.20	0.59	66.81%
230.01	11.82	0.34	0.96	11.93	0.05	0.57	0.39	59.77%
230.01	1.87	0.34	0.01	11.94	0.00	0.00	0.01	0.00%

3 Thermal Images

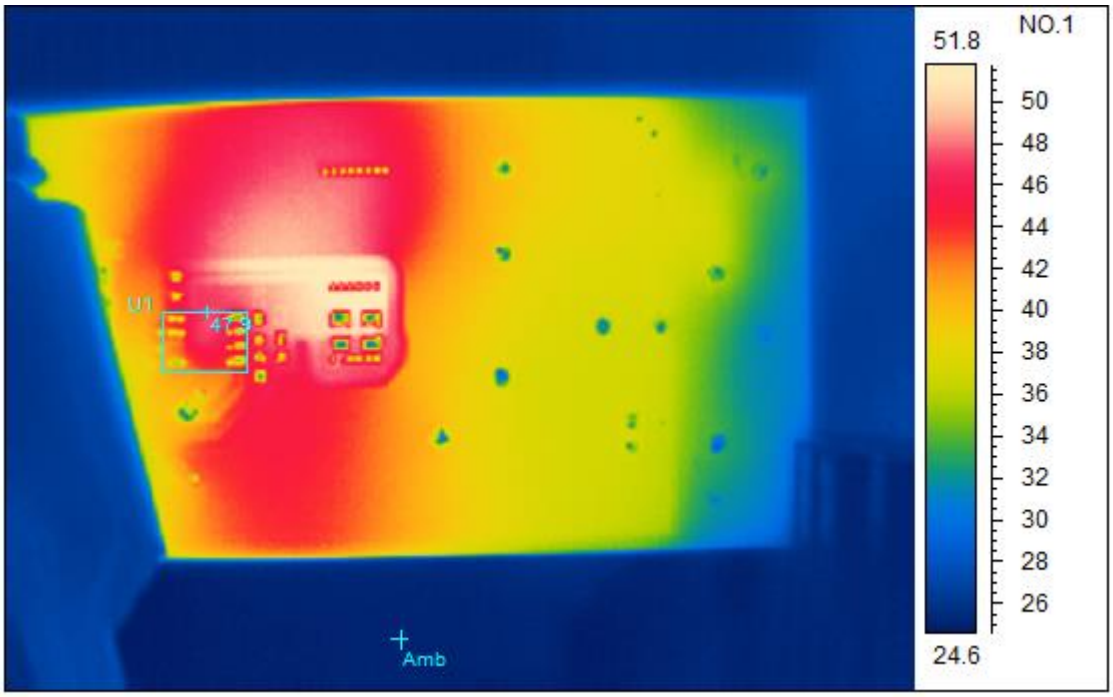
The thermal images below show a top view and bottom view of the board under 120V_{AC}/60Hz and 230V_{AC}/50Hz input conditions. The ambient temperature was 25ºC with no forced air flow. The output was at 12V/0.5A.

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



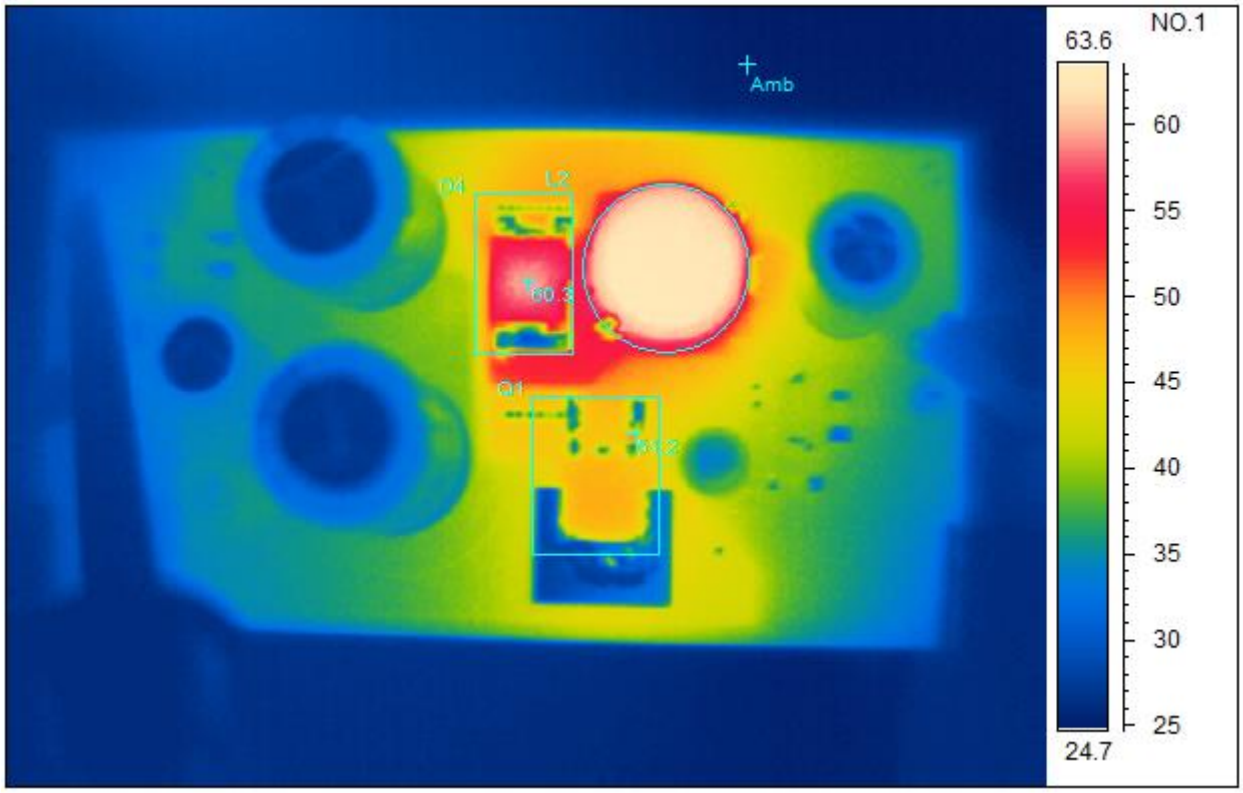
Spot analysis	Value
Amb Temperature	24.7°C
Area analysis	**Value**
D4Max	58.7°C
L2 Max	58.2°C
Q1 Max	49.8°C

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



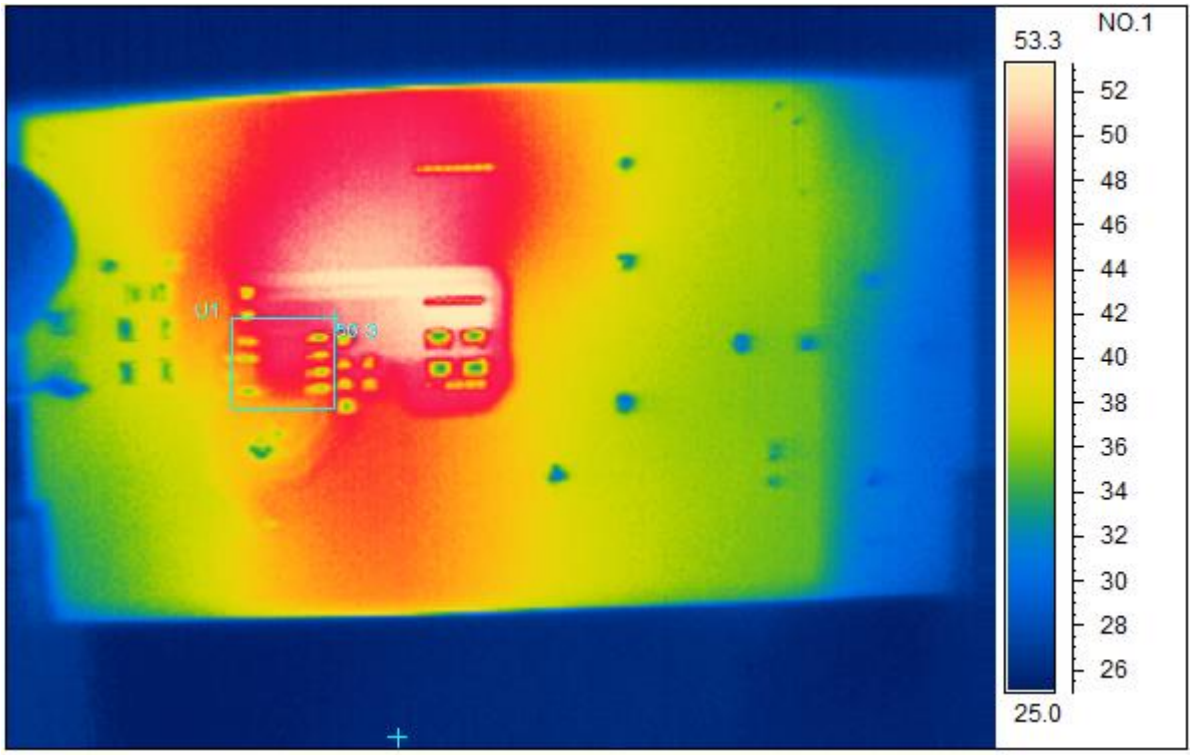
Spot analysis	Value
Amb Temperature	25.1°C
Area analysis	**Value**
U1 Max	47.9°C

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



Spot analysis	Value
Amb Temperature	25.2°C
Area analysis	**Value**
D4Max	60.3°C
L2 Max	63.3°C
Q1 Max	51.2°C

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

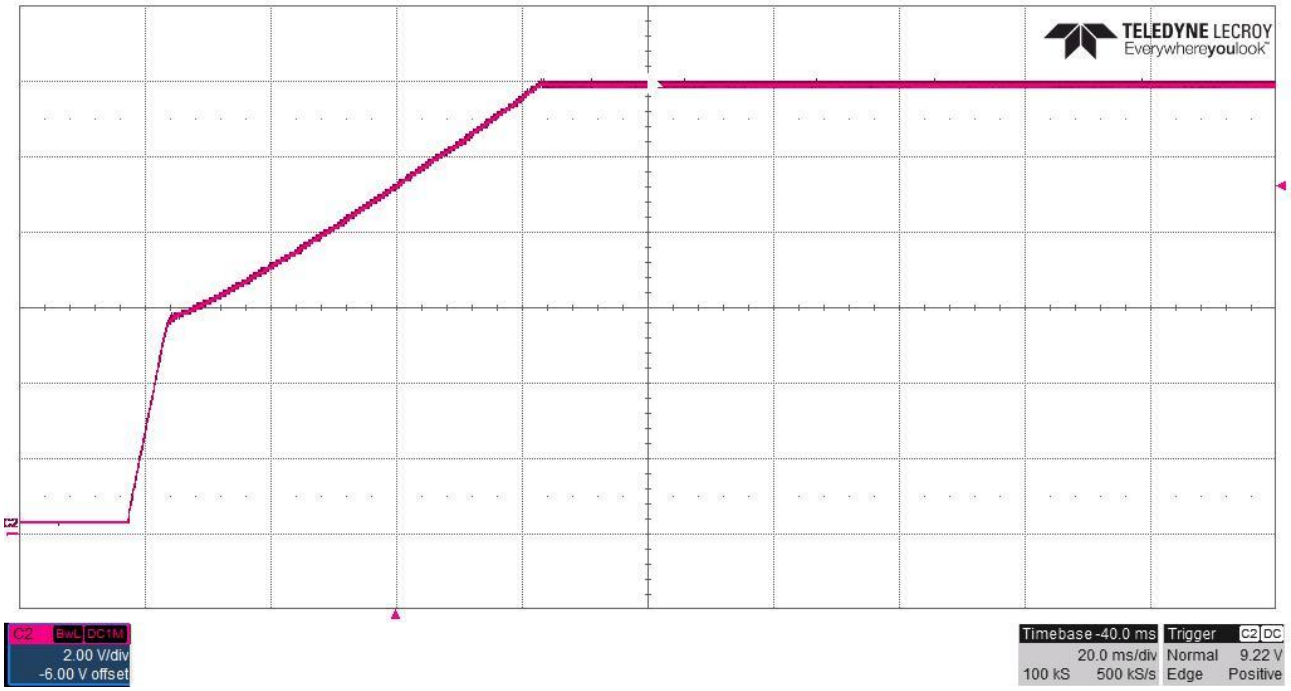


Spot analysis	Value
Amb Temperature	25.7°C
Area analysis	**Value**
L2Max	50.3°C

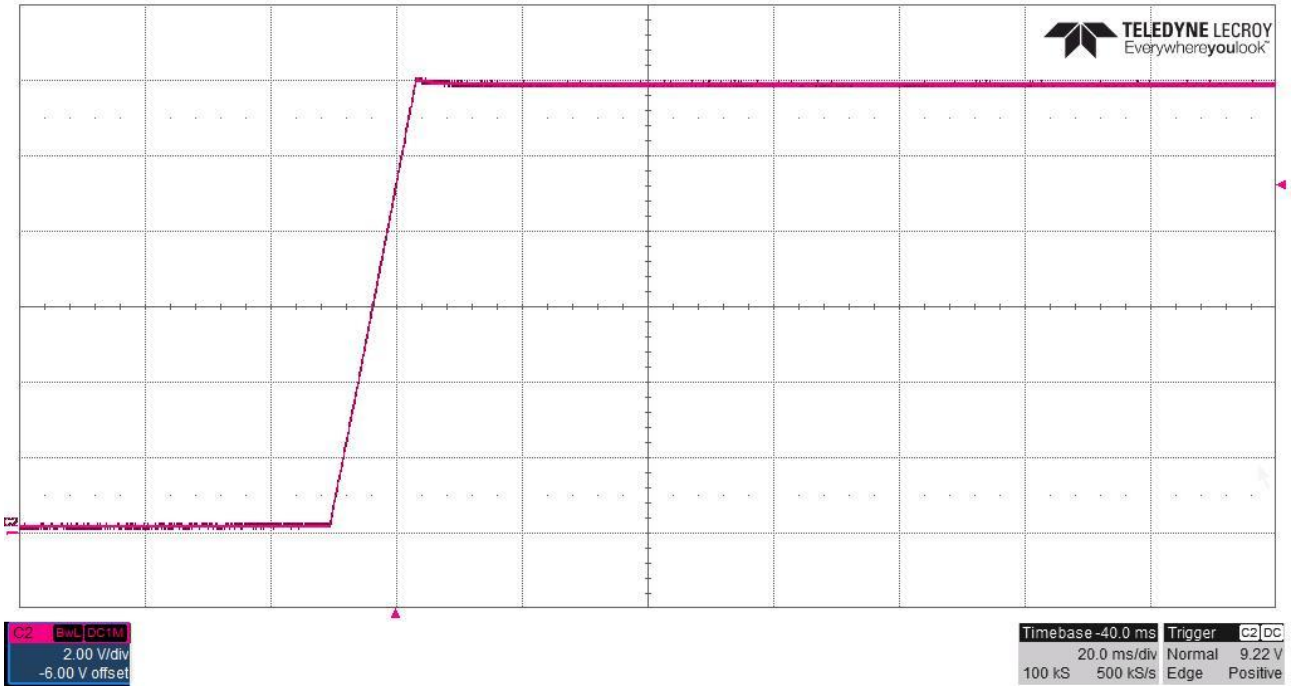
4 Startup Waveforms

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

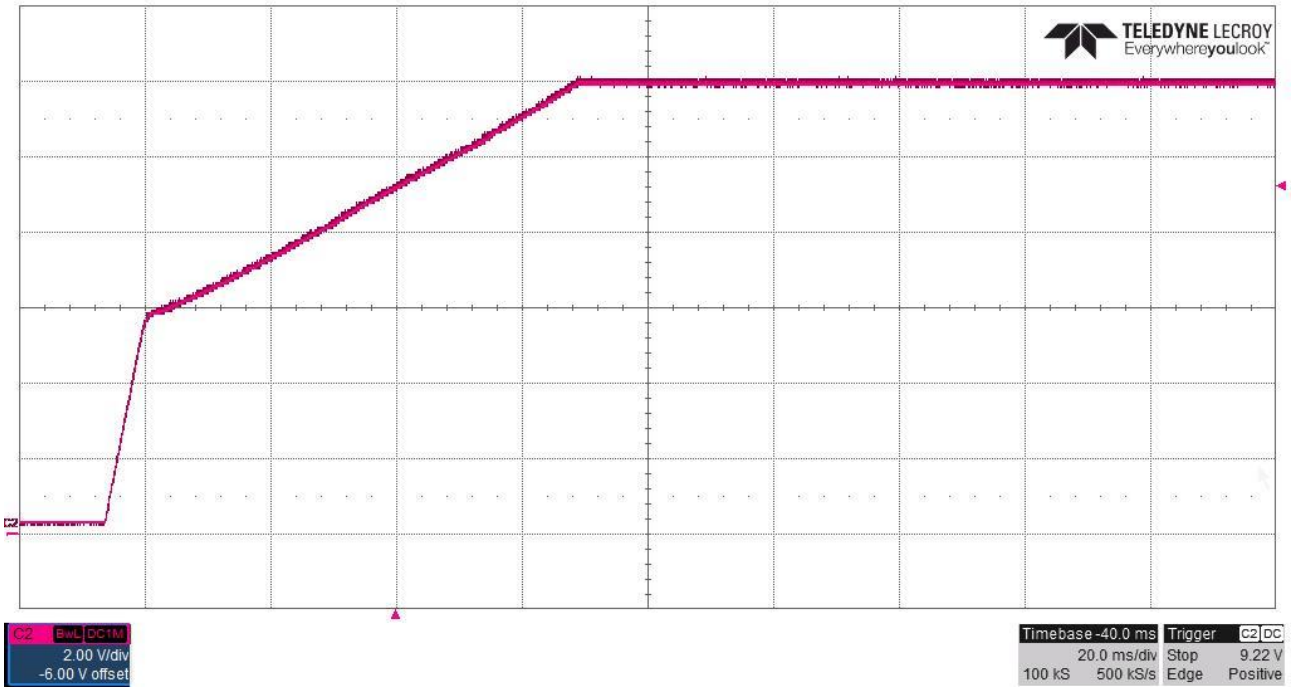
4.1 Start Up @ 120V_{AC}/60Hz: 12V/0.5A.



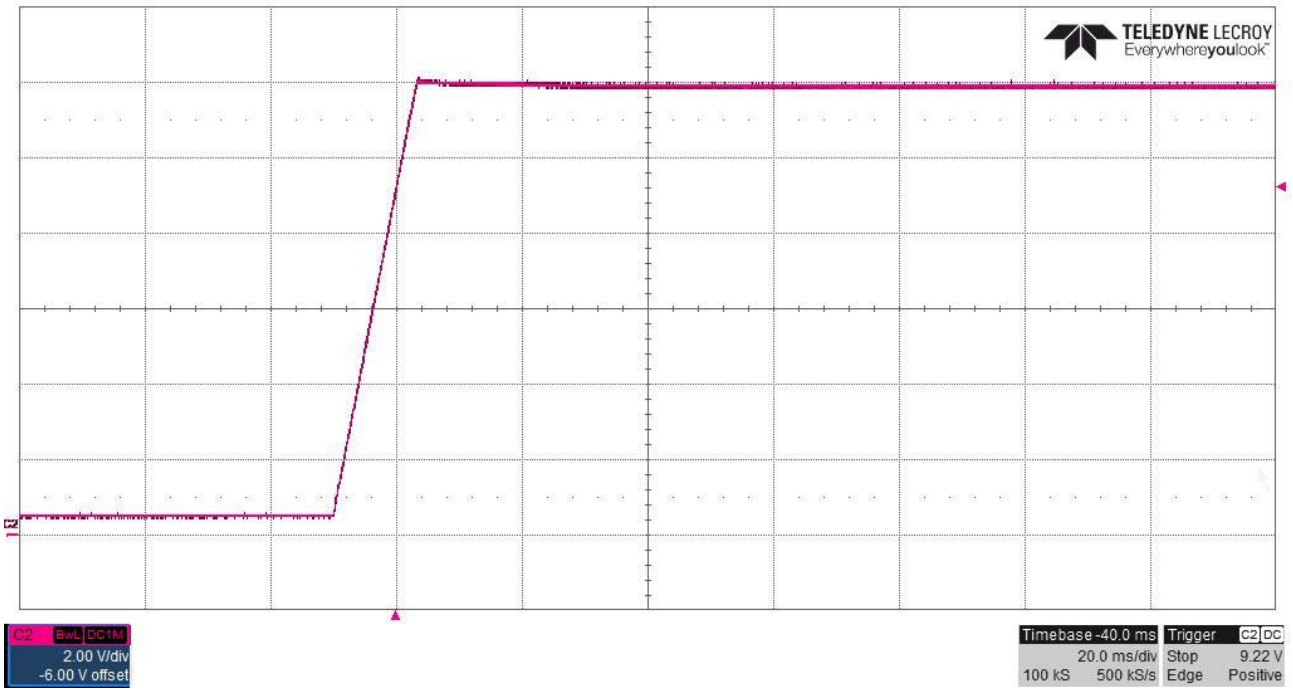
4.2 Start Up @ 120V_{AC}/60Hz: no load.



4.3 Start Up @ 230V_{AC}/50Hz: 12V/0.5A.



4.4 Start Up @ 230V_{AC}/50Hz: no load.

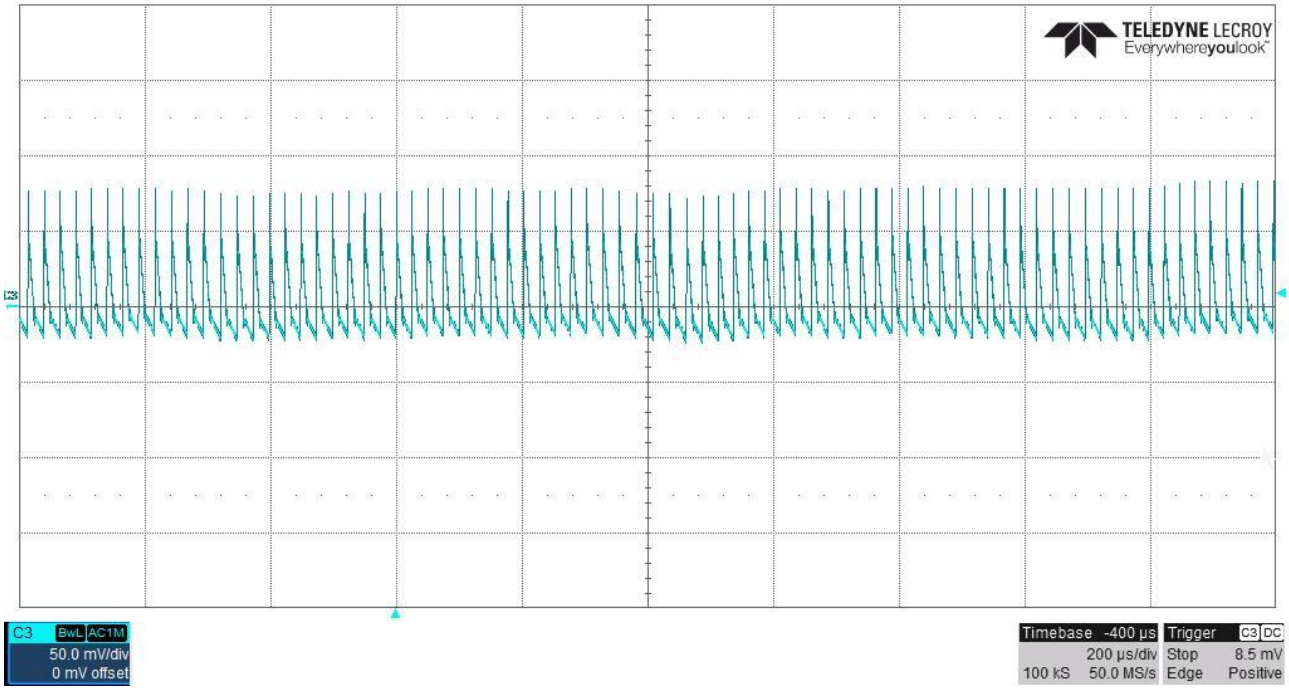


5 Output Ripple Voltages

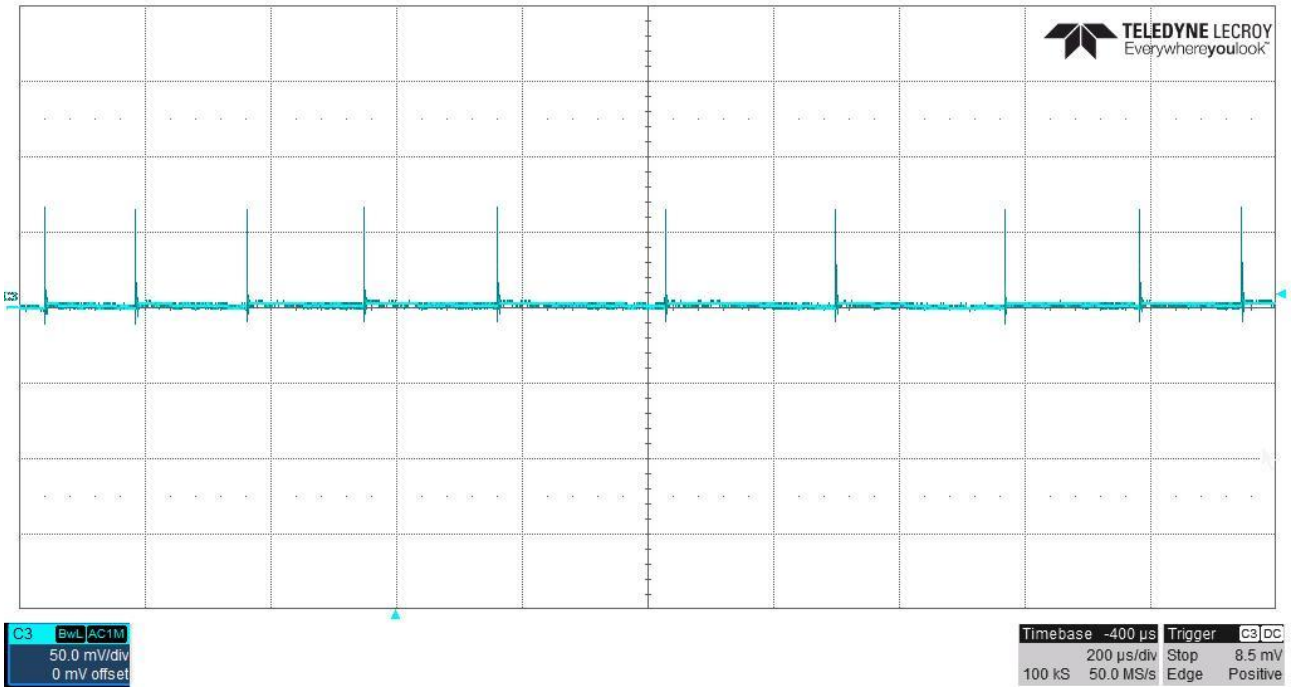
The output ripple voltages are shown in the plots below:

5.1 120V_{AC}/60Hz

5.1.1 12V/0.5A

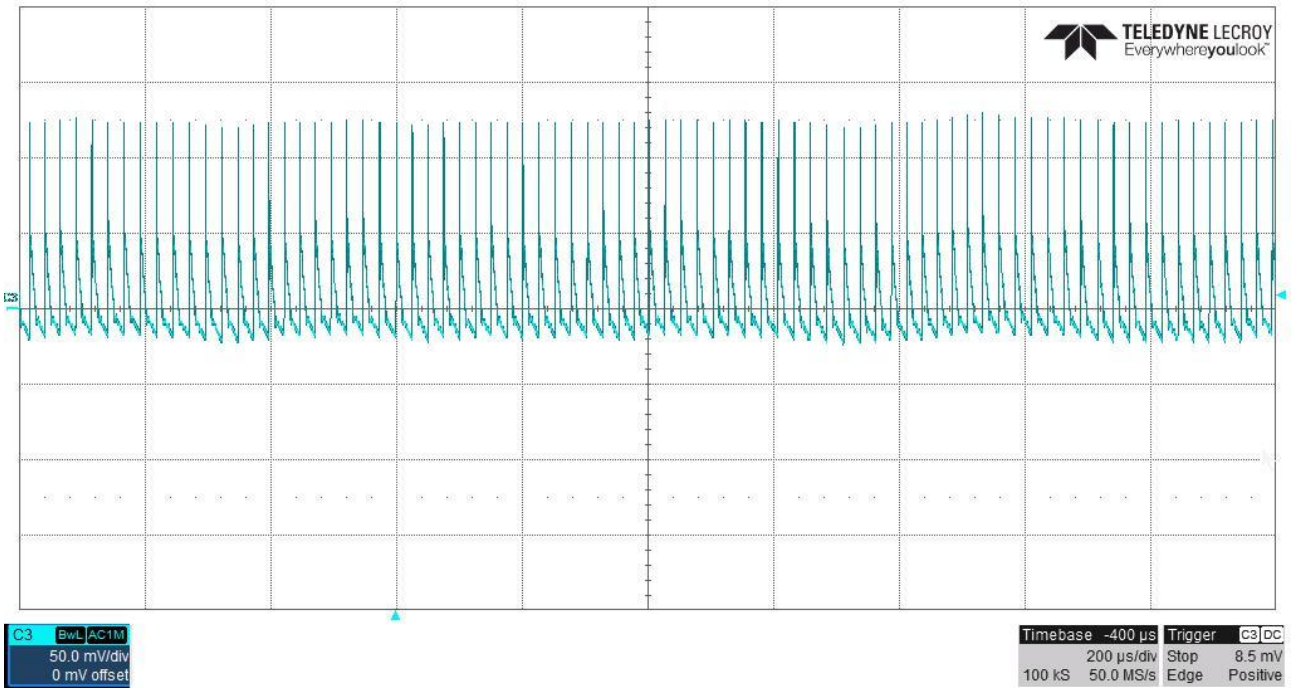


5.1.2 No load

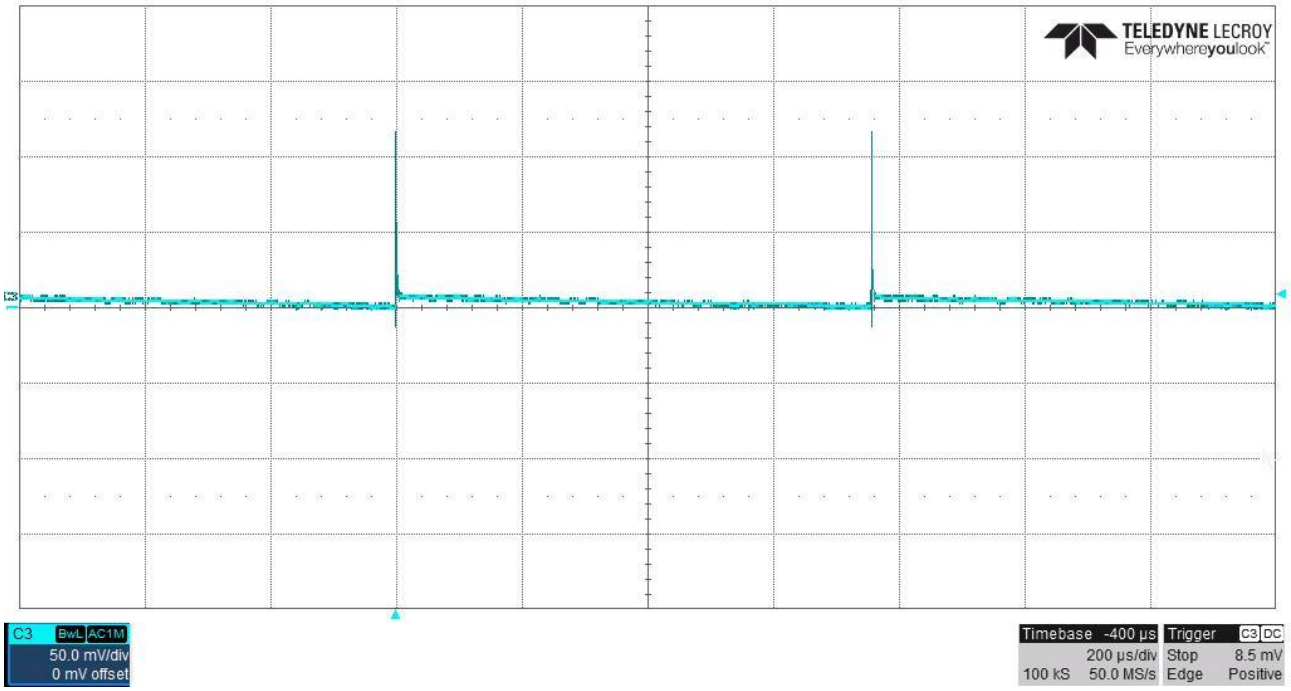


5.2 230V_{AC}/50Hz

5.2.1 12V/0.5A

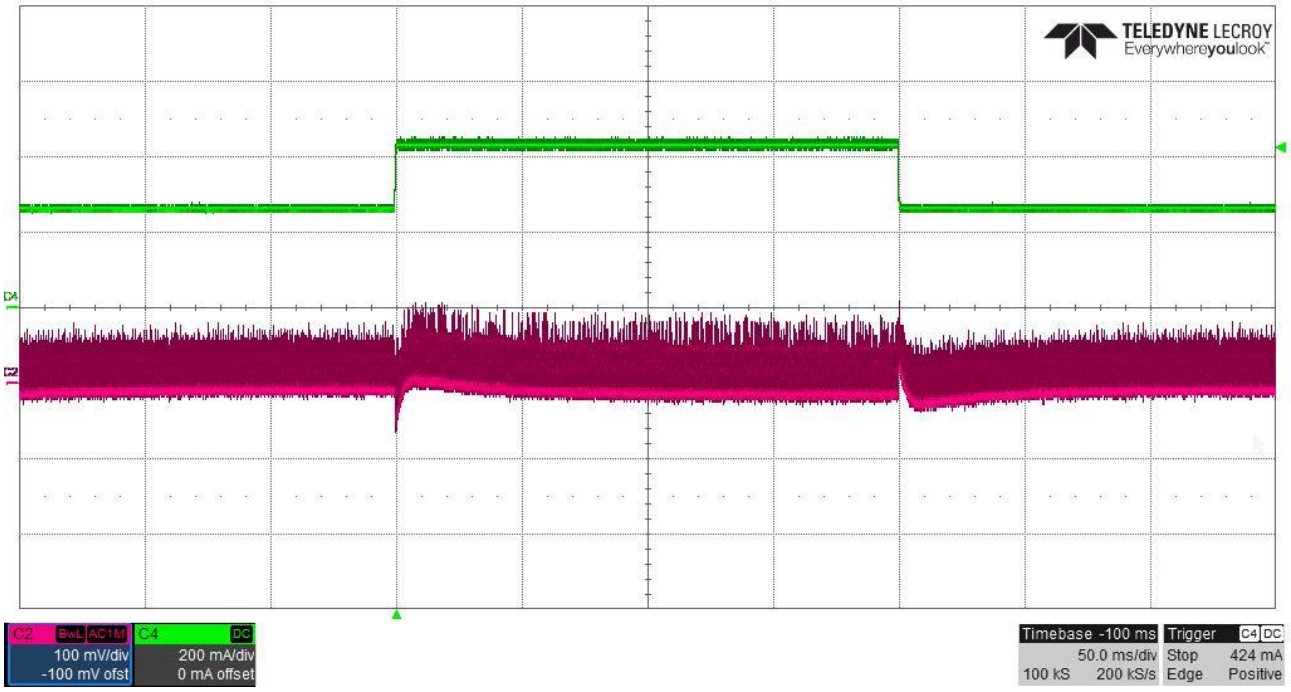


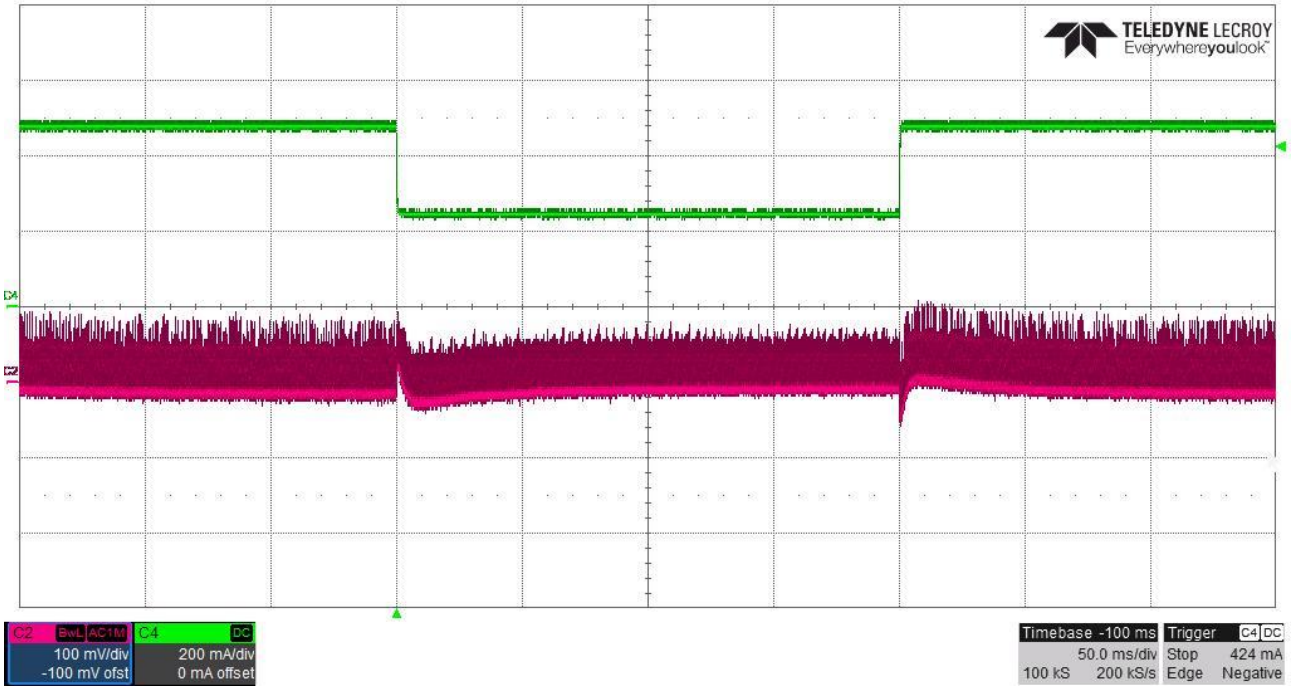
5.2.2 No load


TELEDYNE LECROY
Everywhereyoulook
C3 BwL AC1M
50.0 mV/div
0 mV offset
Timebase -400 µs
200 µs/div
100 kS 50.0 MS/s
Trigger C3 DC
Stop 8.5 mV
Edge Positive

6 Load Transient

The image below shows 12V_{out} voltage response to a **0.25A** to **0.5A** load transient at 120V_{AC}/60Hz input.

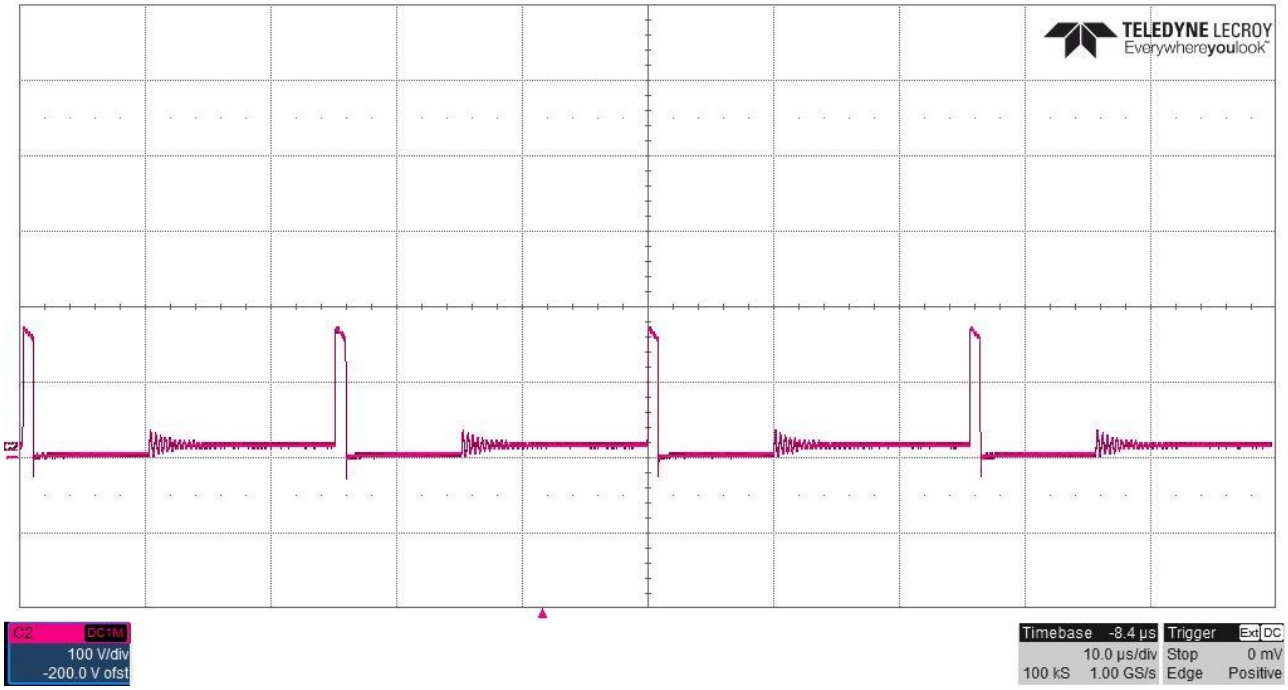




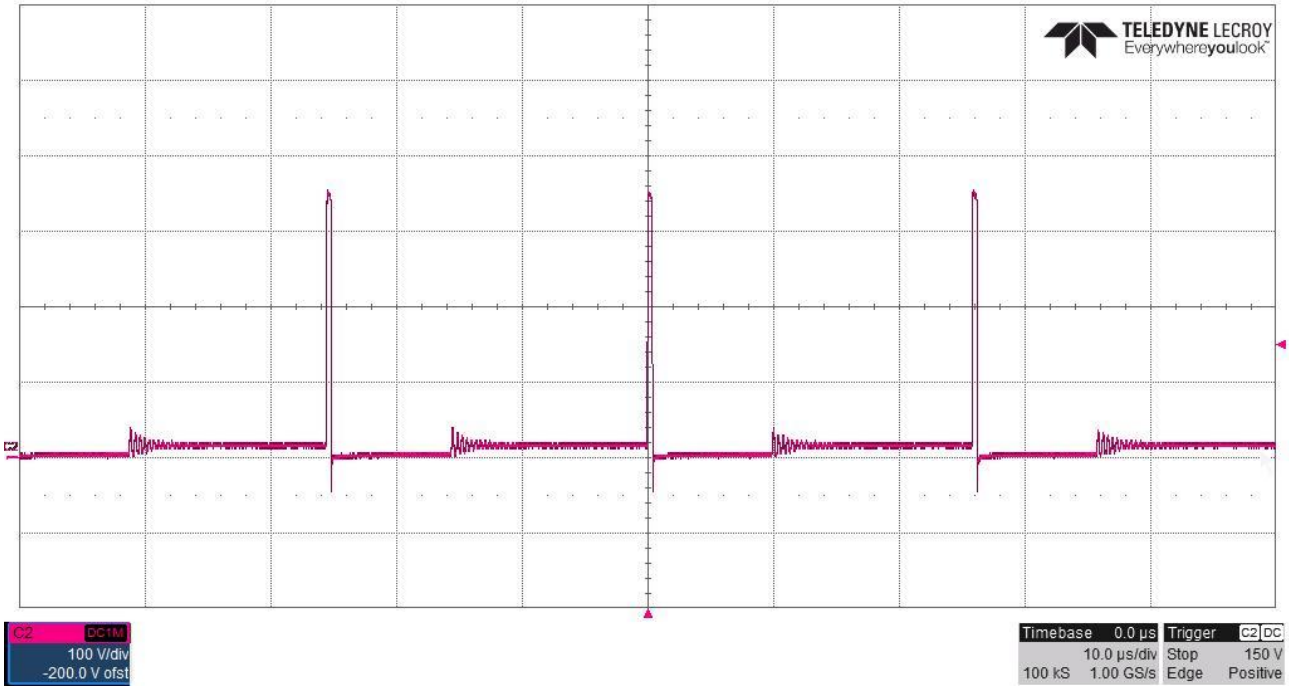
7 Switching Waveforms

The images below show key switching waveforms of PMP20122RevB. The waveforms are measured with 0.5A load current.

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



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



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