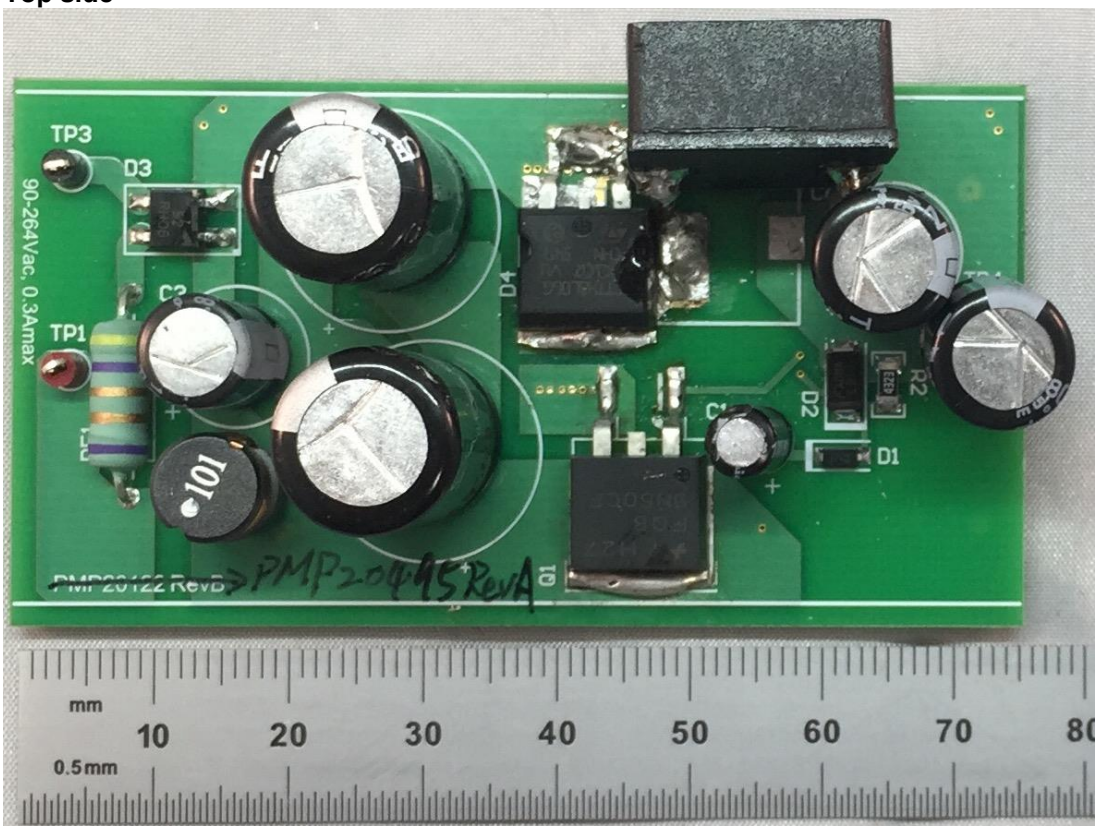
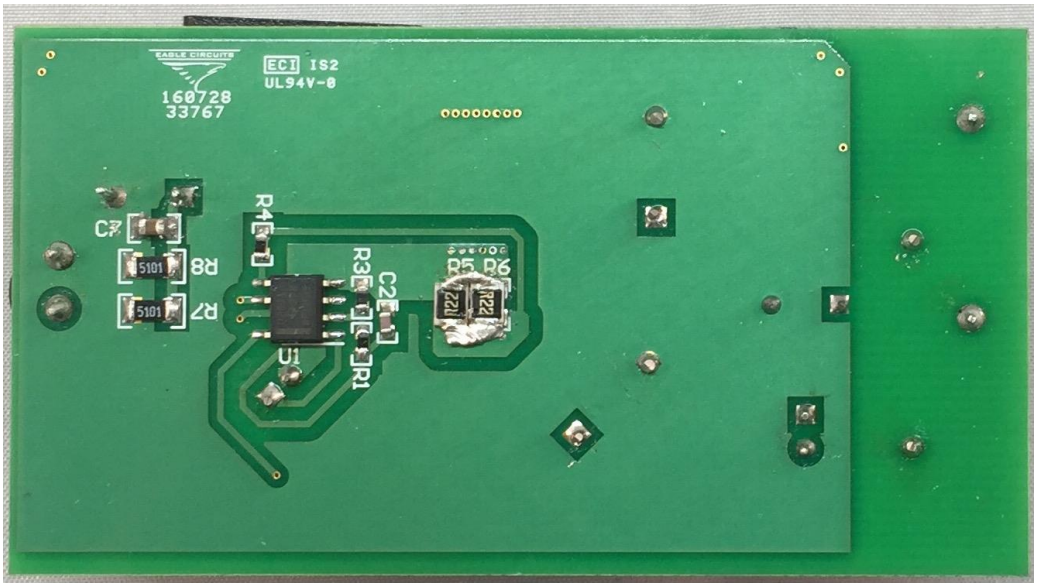
1 Photo

The photographs below show the PMP20495 Rev A assembly. PMP20495 Rev A circuit was built on PMP20122 Rev B PCB.

Top side

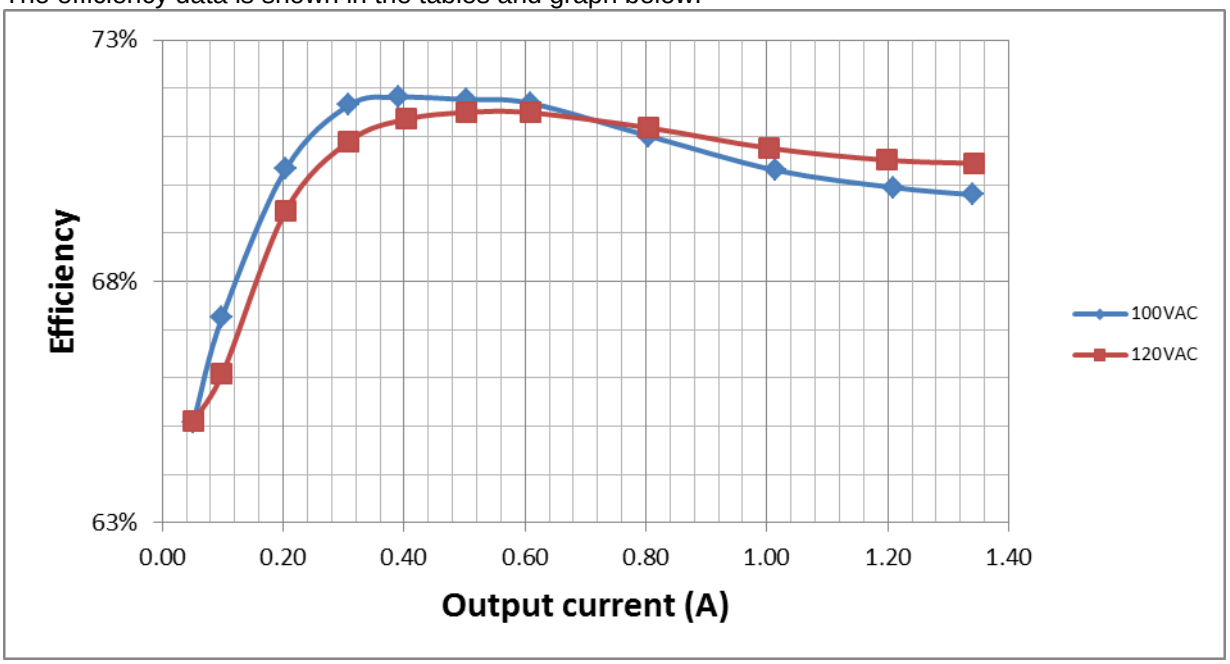


Bottom side



2 Converter Efficiency

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



V_{in}=100V_{AC}/60Hz

Vin(V)	Iin(mA)	P.F.	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Efficiency (%)
100.05	0.37	0.61	22.79	11.87	1.34	15.91	6.88	69.79%
100.08	0.34	0.61	20.50	11.86	1.21	14.34	6.16	69.95%
100.16	0.29	0.59	17.11	11.86	1.01	12.03	5.08	70.30%
100.05	0.23	0.57	13.45	11.86	0.81	9.55	3.90	71.01%
100.13	0.18	0.55	10.08	11.86	0.61	7.22	2.85	71.69%
99.96	0.16	0.54	8.33	11.86	0.50	5.98	2.35	71.77%
100.12	0.12	0.52	6.46	11.87	0.39	4.64	1.82	71.81%
100.15	0.10	0.50	5.12	11.87	0.31	3.67	1.45	71.65%
100.18	0.07	0.47	3.45	11.90	0.20	2.43	1.02	70.32%
100.01	0.04	0.43	1.76	11.95	0.10	1.18	0.58	67.26%
100.03	0.02	0.40	0.93	11.84	0.05	0.60	0.32	65.07%
100.05	0.00	0.31	0.08	11.97	0.00	0.00	0.08	0.00%

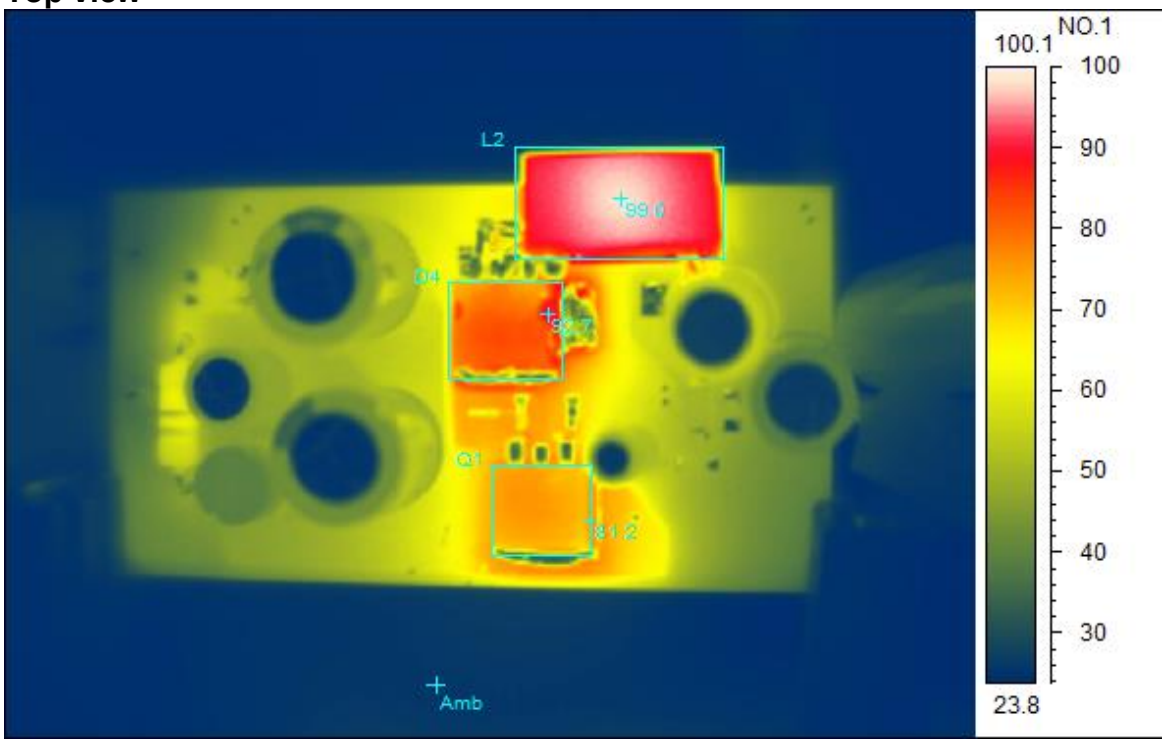
V_{in}=120V_{AC}/50Hz

Vin(V)	Iin(mA)	P.F.	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Efficiency (%)
120.05	0.32	0.59	22.63	11.87	1.34	15.94	6.69	70.44%
120.10	0.29	0.58	20.15	11.86	1.20	14.21	5.94	70.51%
120.05	0.25	0.56	16.81	11.86	1.00	11.90	4.92	70.76%
120.03	0.20	0.55	13.41	11.86	0.81	9.55	3.87	71.18%
119.98	0.16	0.53	10.09	11.85	0.61	7.22	2.88	71.49%
120.02	0.14	0.51	8.35	11.85	0.50	5.97	2.38	71.50%
120.05	0.11	0.50	6.70	11.86	0.40	4.78	1.92	71.36%
120.11	0.09	0.48	5.17	11.87	0.31	3.67	1.51	70.90%
120.14	0.06	0.45	3.49	11.89	0.20	2.43	1.07	69.46%
120.08	0.04	0.41	1.79	11.94	0.10	1.18	0.61	66.07%
120.09	0.02	0.38	0.94	11.83	0.05	0.62	0.33	65.11%
120.12	0.00	0.30	0.08	11.96	0.00	0.00	0.08	0.00%

3 Thermal Images

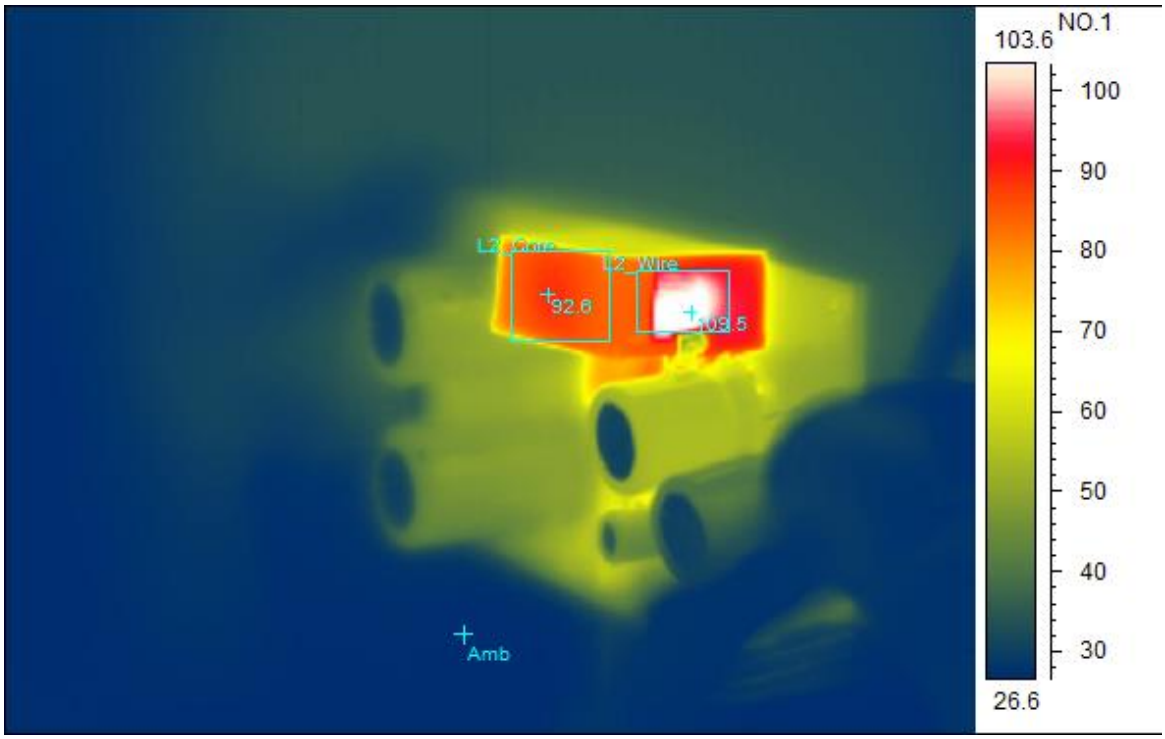
The thermal images below show board thermal images under 12V/1.34A output condition. The ambient temperature was 25ºC with no forced air flow. The output was at 12V/1.34A.

V_{in}=100V_{AC}/60Hz
Top view



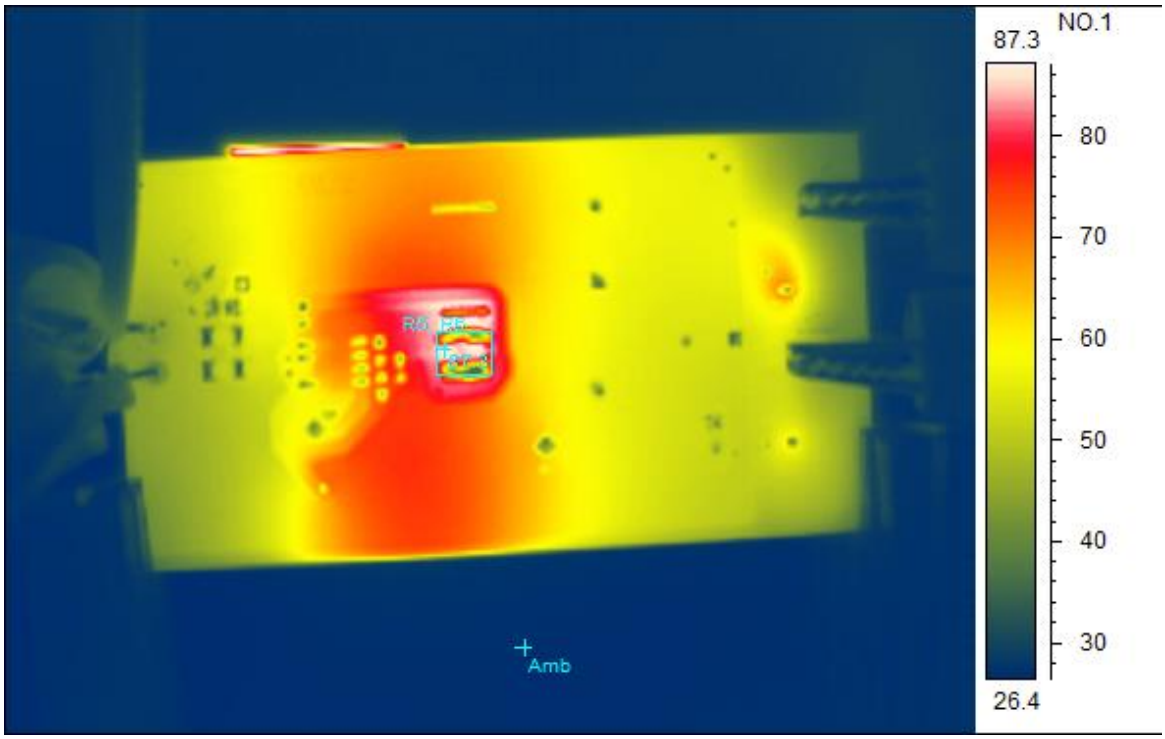
Spot analysis	Value
Amb Temperature	26.6°C
Area analysis	**Value**
L2Max	99.0°C
D4Max	92.7°C
Q1Max	81.2°C

V_{in}=100V_{AC}/60Hz
Side view



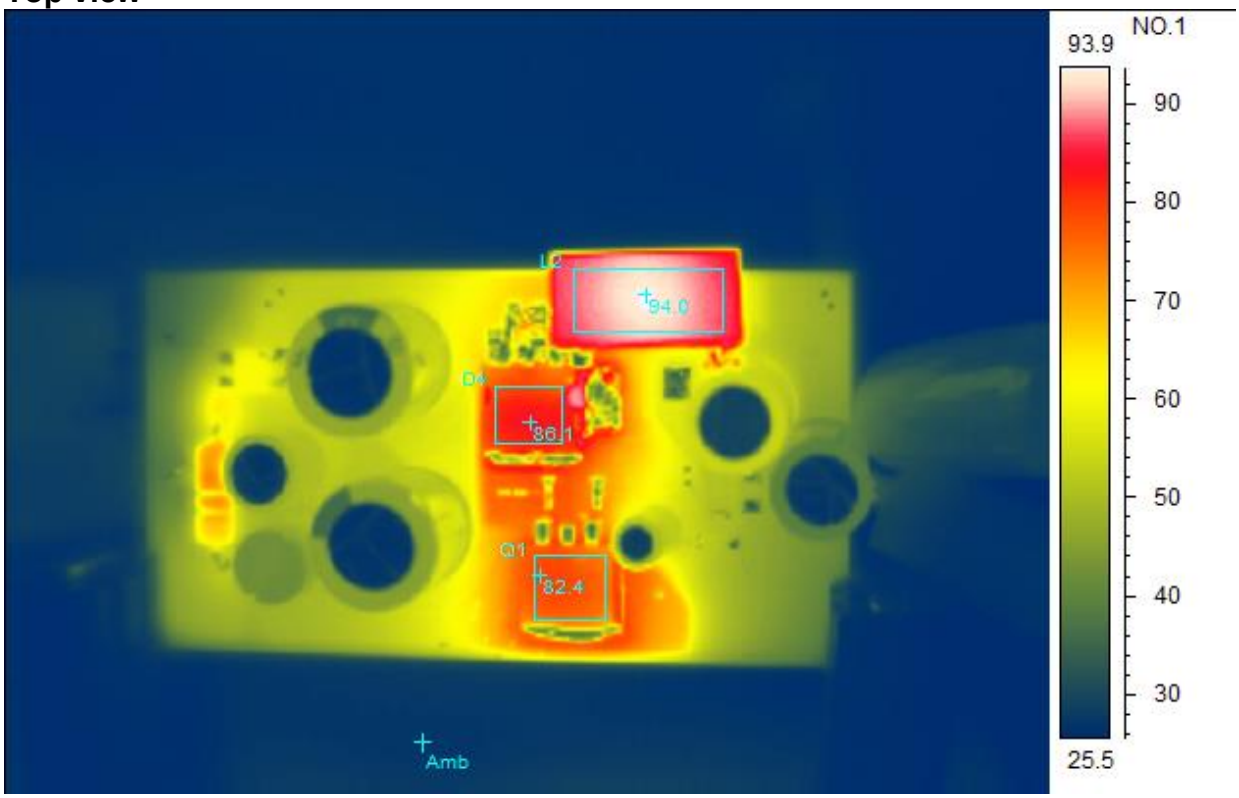
Spot analysis	Value
Amb Temperature	27.0°C
Area analysis	**Value**
L2_CoreMax	92.6°C
L2_WireMax	109.5°C

V_{in}=100V_{AC}/60Hz
Bottom view



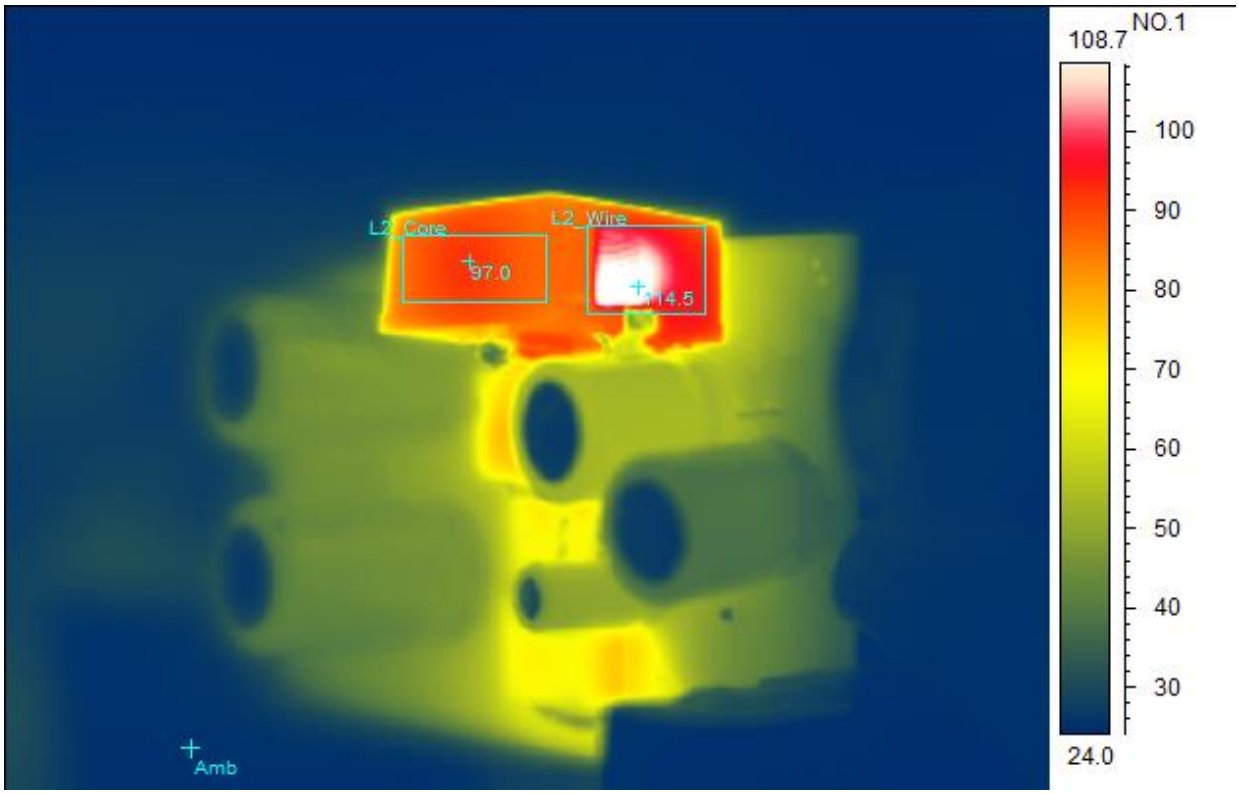
Spot analysis	Value
Amb Temperature	27.1°C
Area analysis	**Value**
R5, R6Max	87.3°C

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



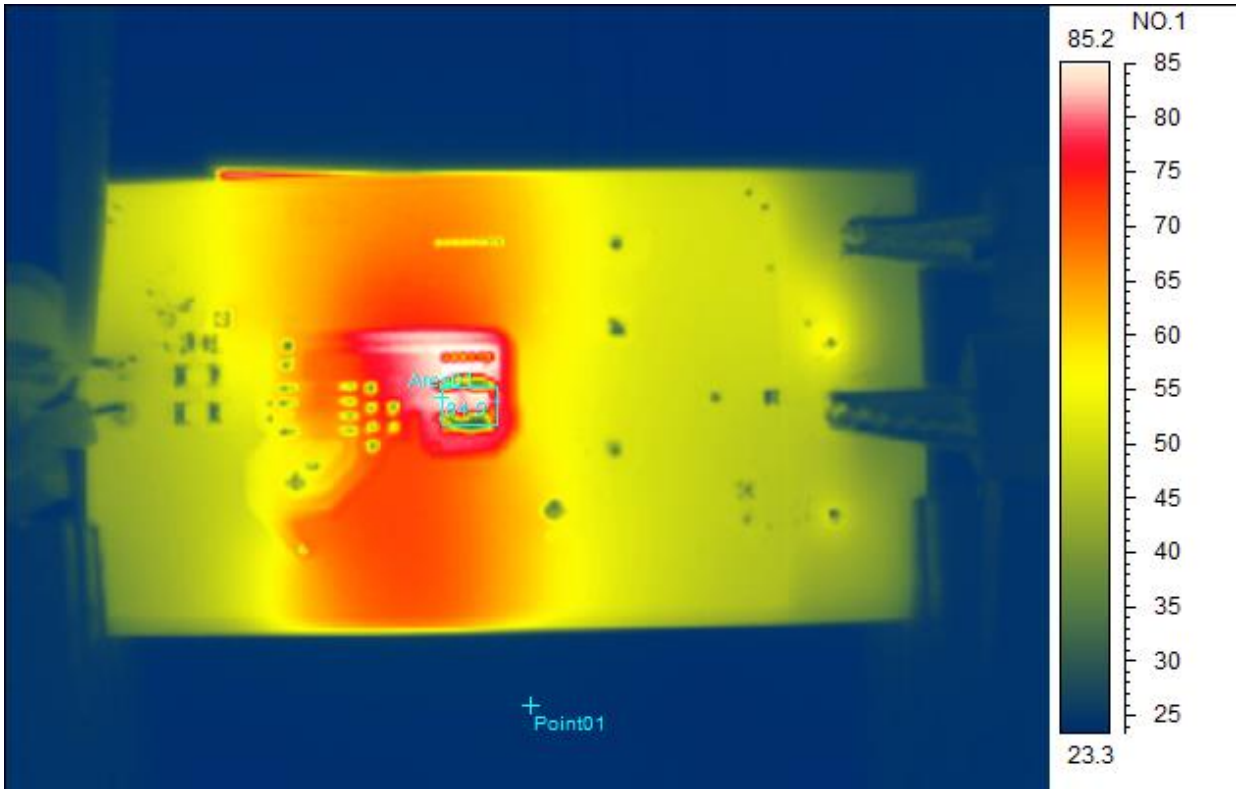
Spot analysis	Value
Amb Temperature	27.6°C
Area analysis	**Value**
L2Max	94.0°C
D4Max	86.1°C
Q1Max	82.4°C

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



Spot analysis	Value
Amb Temperature	25.3°C
Area analysis	**Value**
L2_WireMax	114.5°C
L2_CoreMax	97.0°C

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

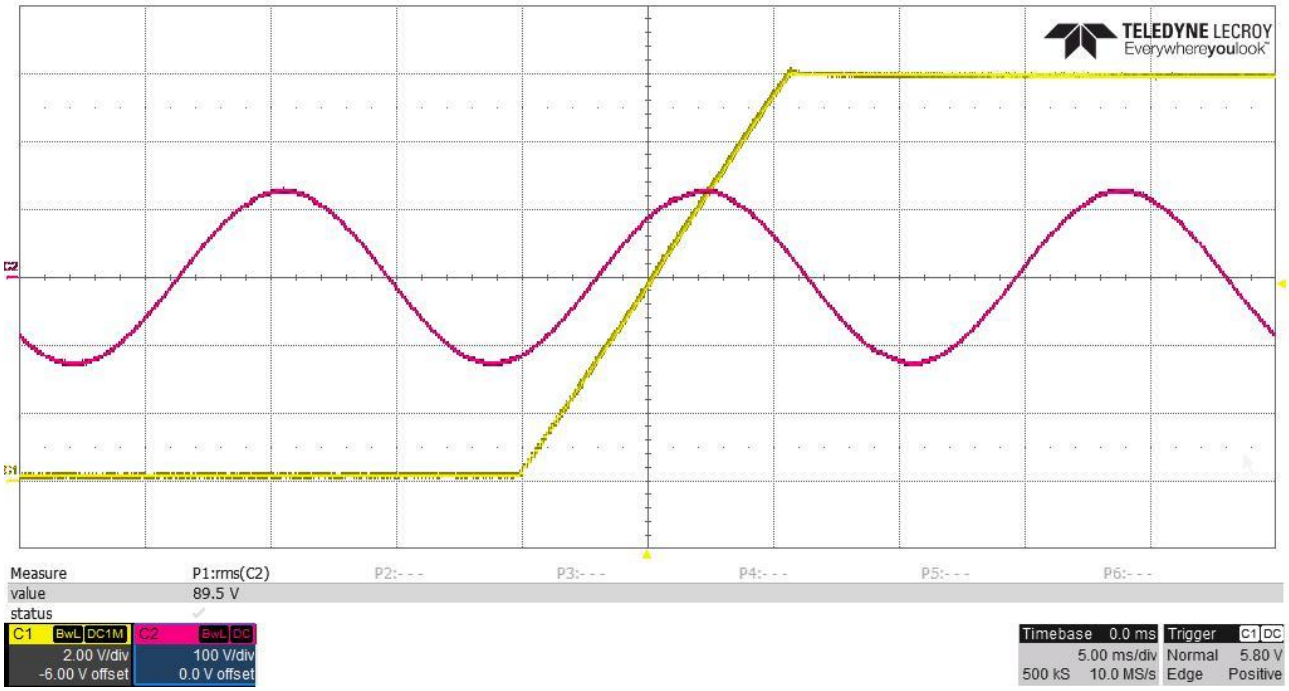


Spot analysis	Value
Point01Temperature	24.2°C
Area analysis	**Value**
Area01Max	84.9°C

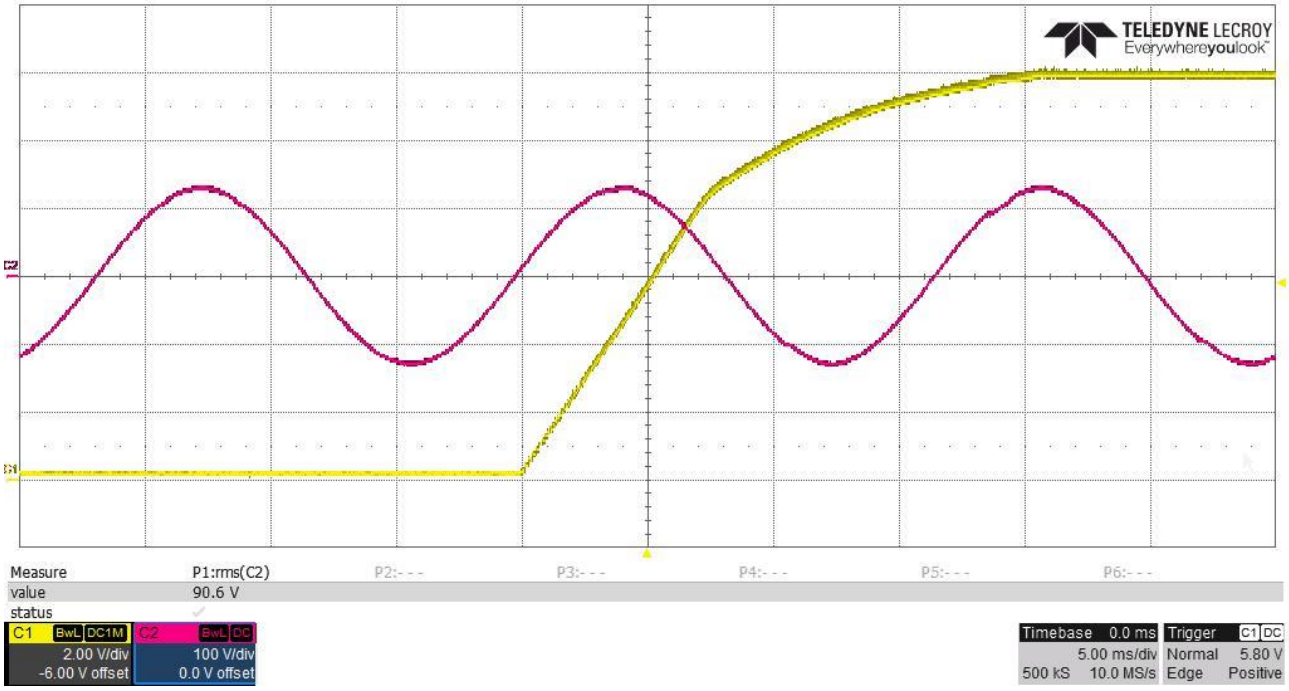
4 Startup Waveforms

The output voltages at startup are shown in the images below. CH1: V_{out}, CH2: V_{in}.

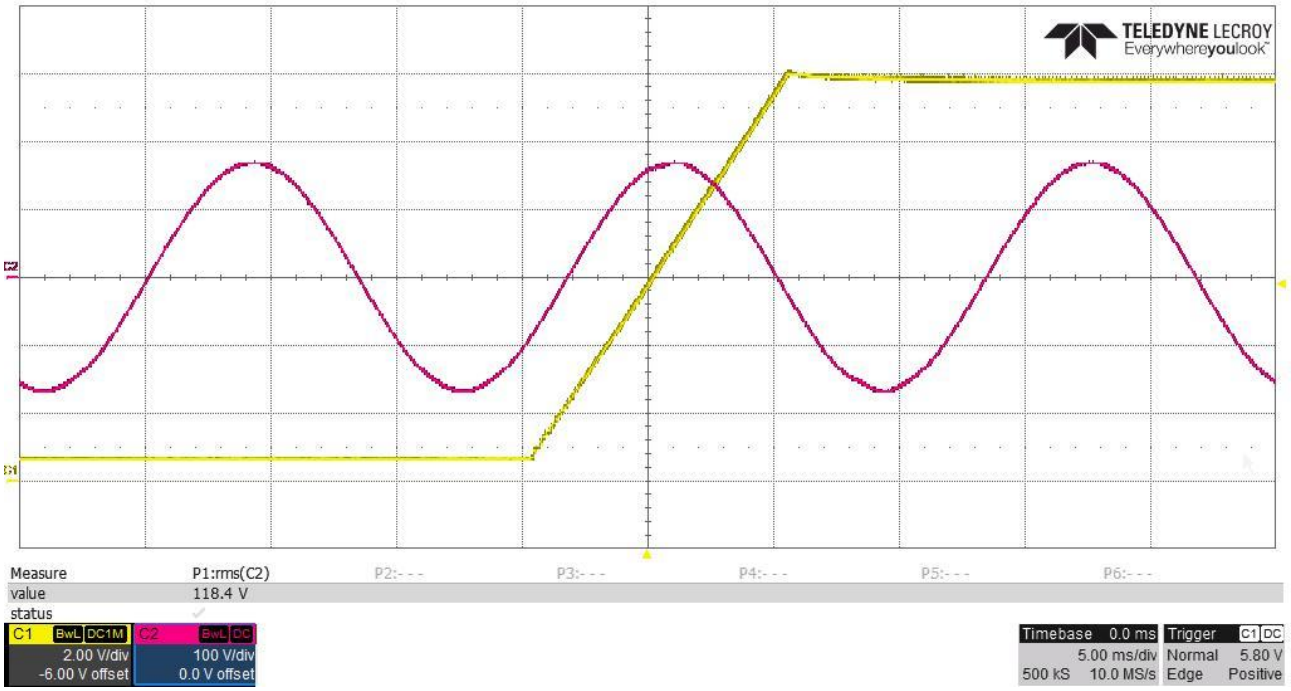
4.1 Start Up @ 90V_{AC}/60Hz: 12V no load.



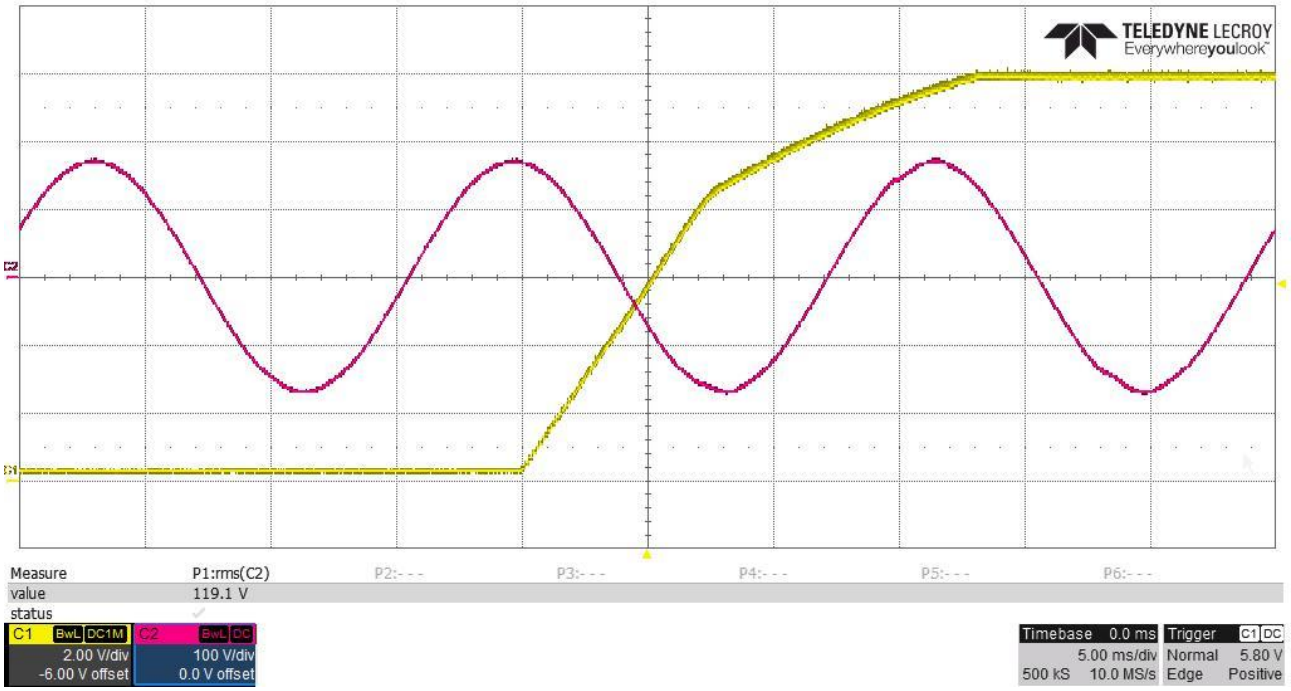
4.2 Start Up @ 90V_{AC}/60Hz: 12V/8.8Ω load (CR mode).



4.3 Start Up @ 120V_{AC}/60Hz: 12V no load.

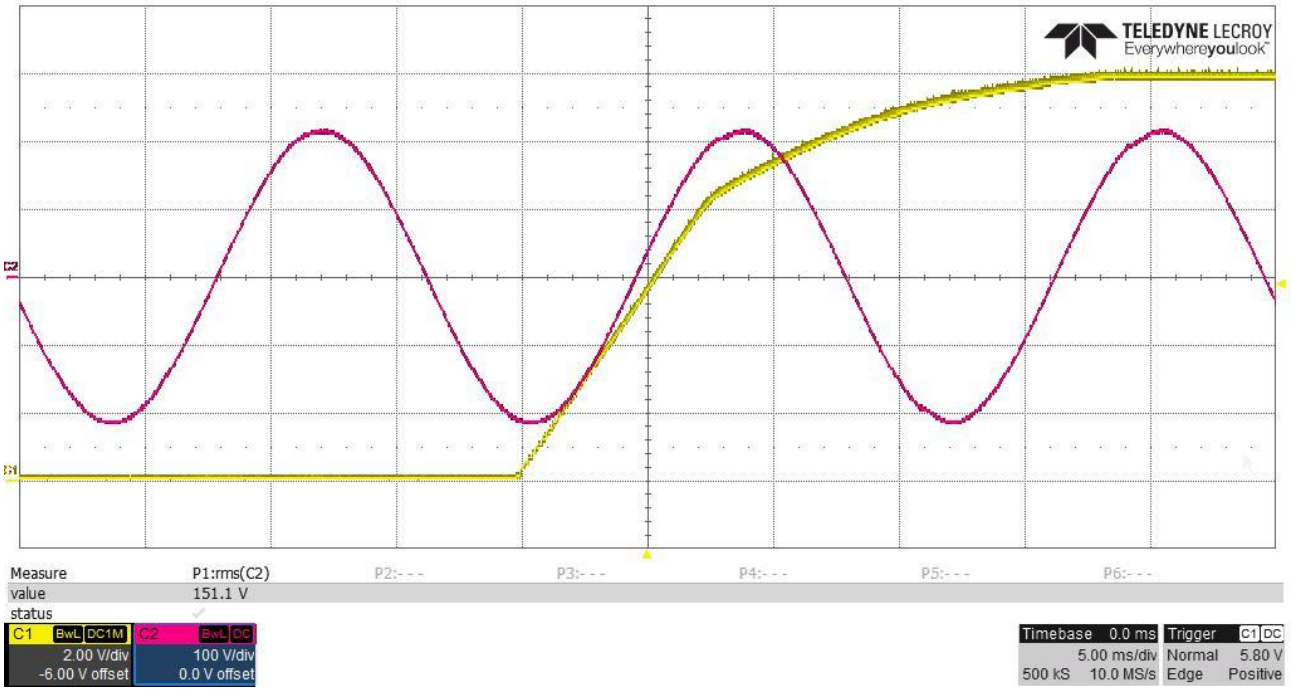


4.4 Start Up @ 120V_{AC}/60Hz: 12V/8.8Ω load (CR mode).



4.5 Start Up @ 150V_{AC}/60Hz: 12V no load.

4.6 Start Up @ 150V_{AC}/60Hz: 12V/8.8Ω load (CR mode).

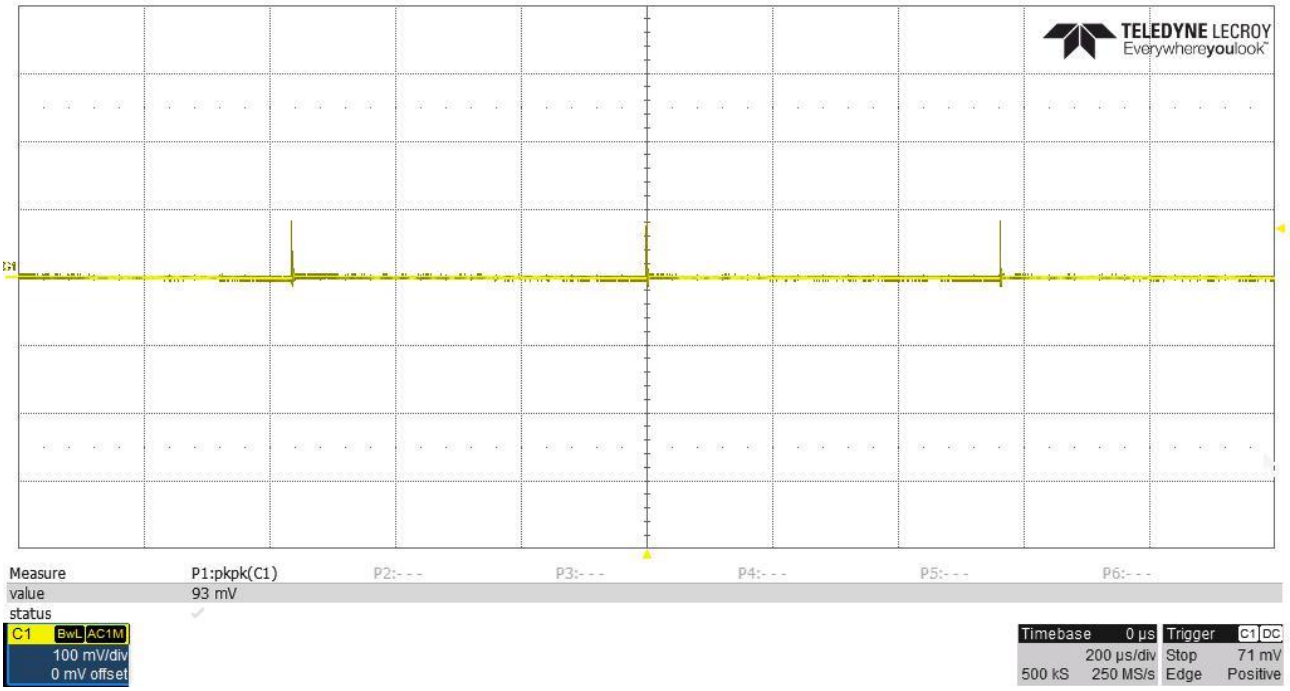


5 Output Ripple Voltages

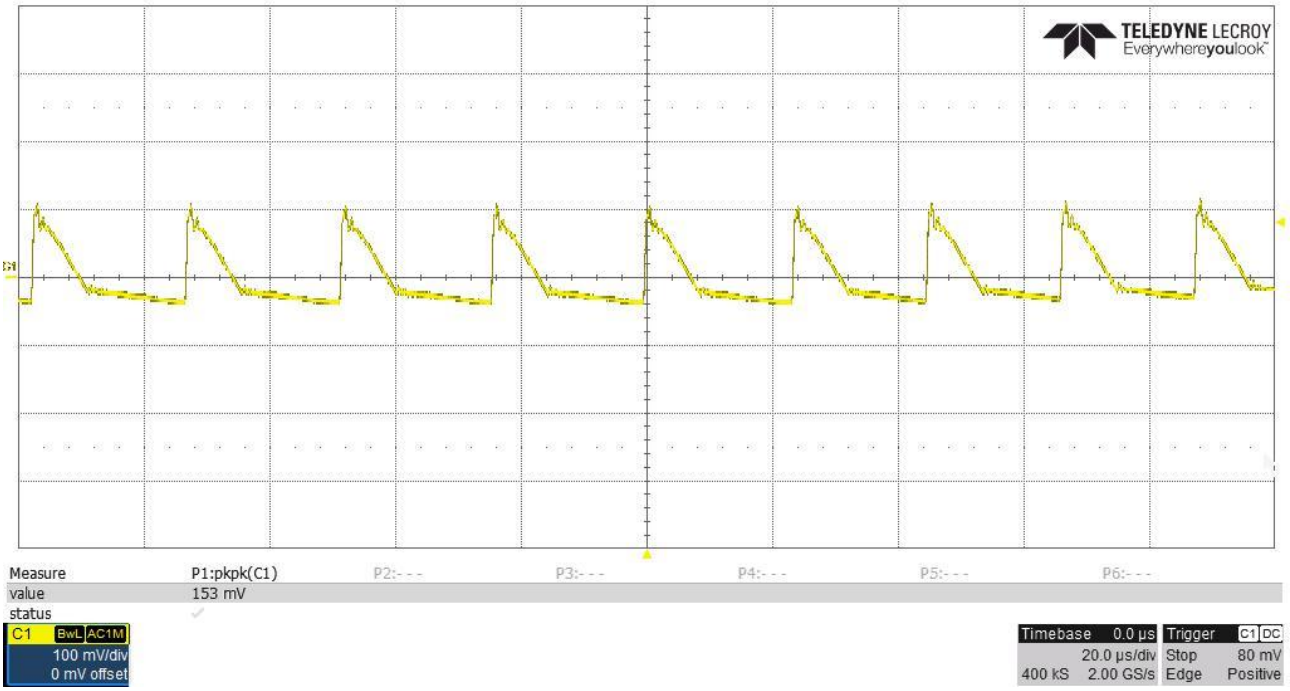
The output ripple voltages are shown in the plots below:

5.1 100V_{AC}/60Hz

5.1.1 No load



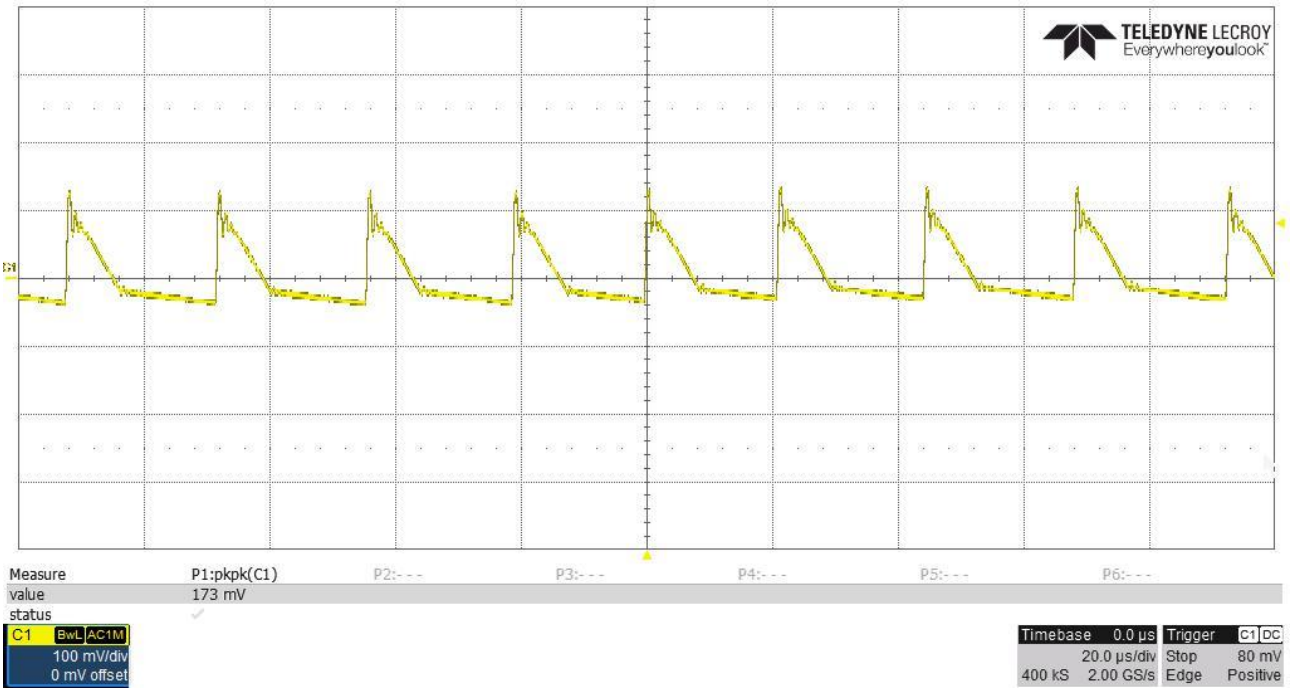
5.1.2 12V/8.8Ω load (CR mode)



5.2 120V_{AC}/60Hz

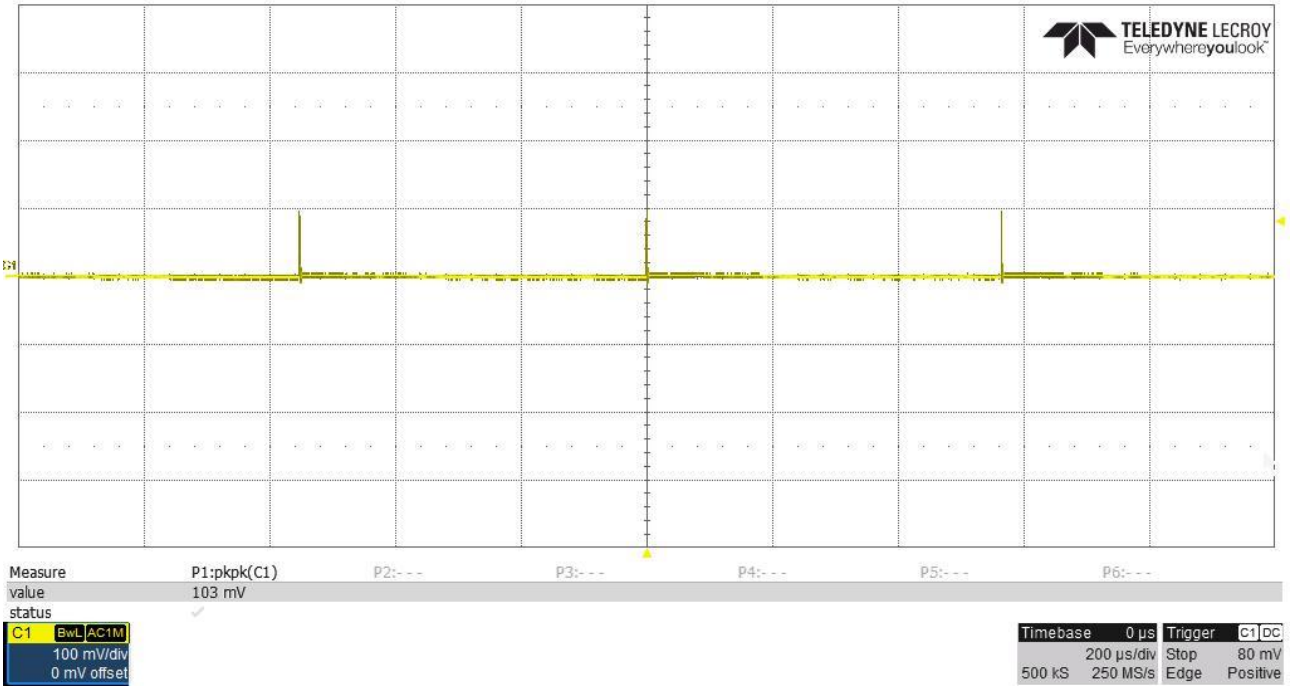
5.2.1 No load

5.2.2 12V/8.8Ω load (CR mode)

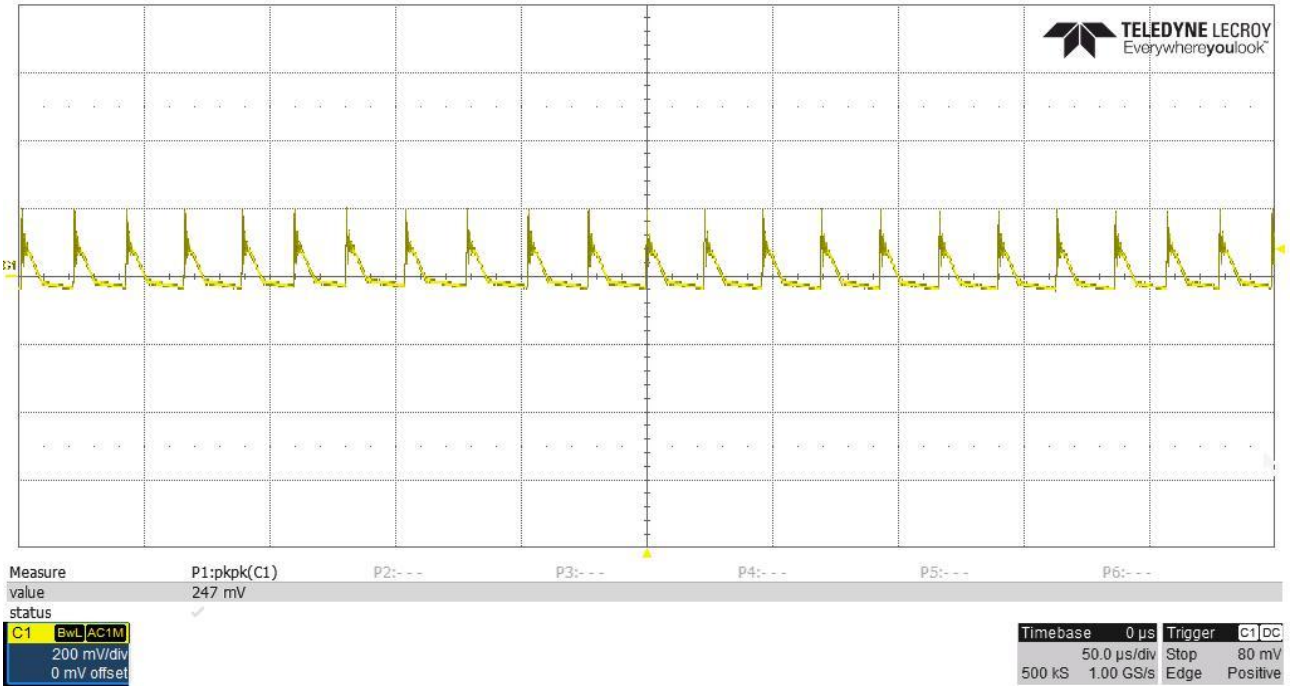


5.3 150V_{AC}/60Hz

5.3.1 No load

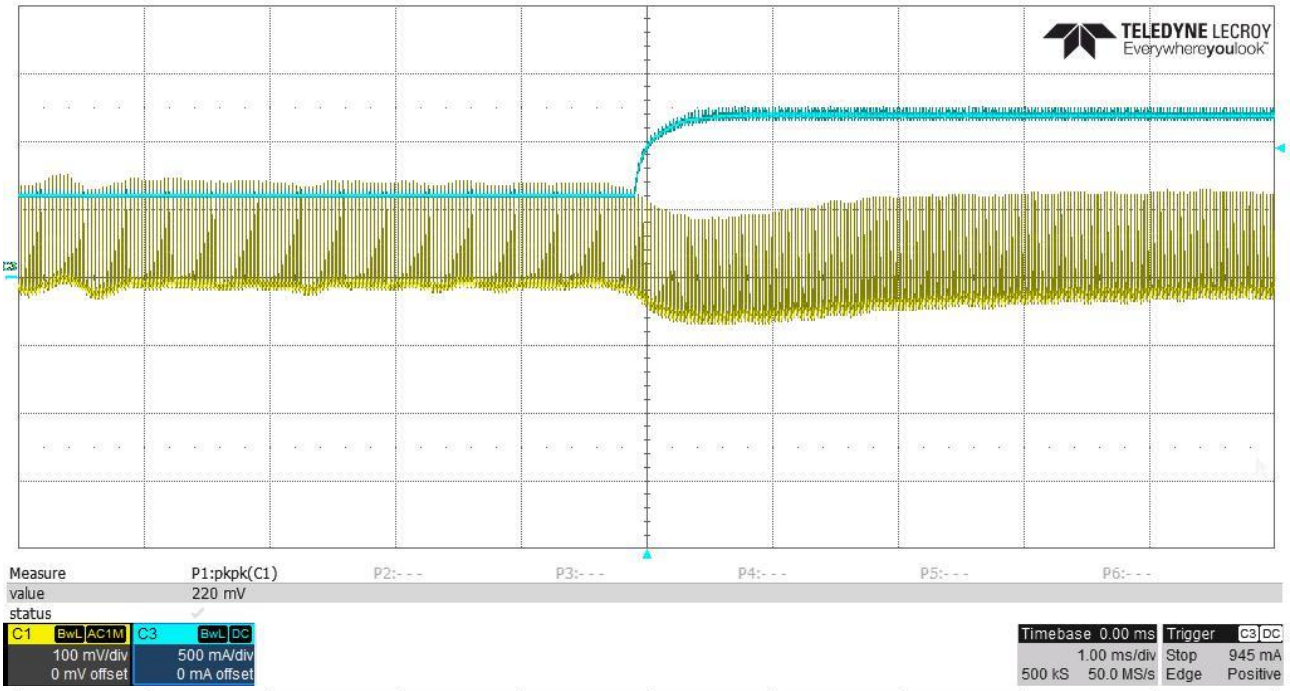


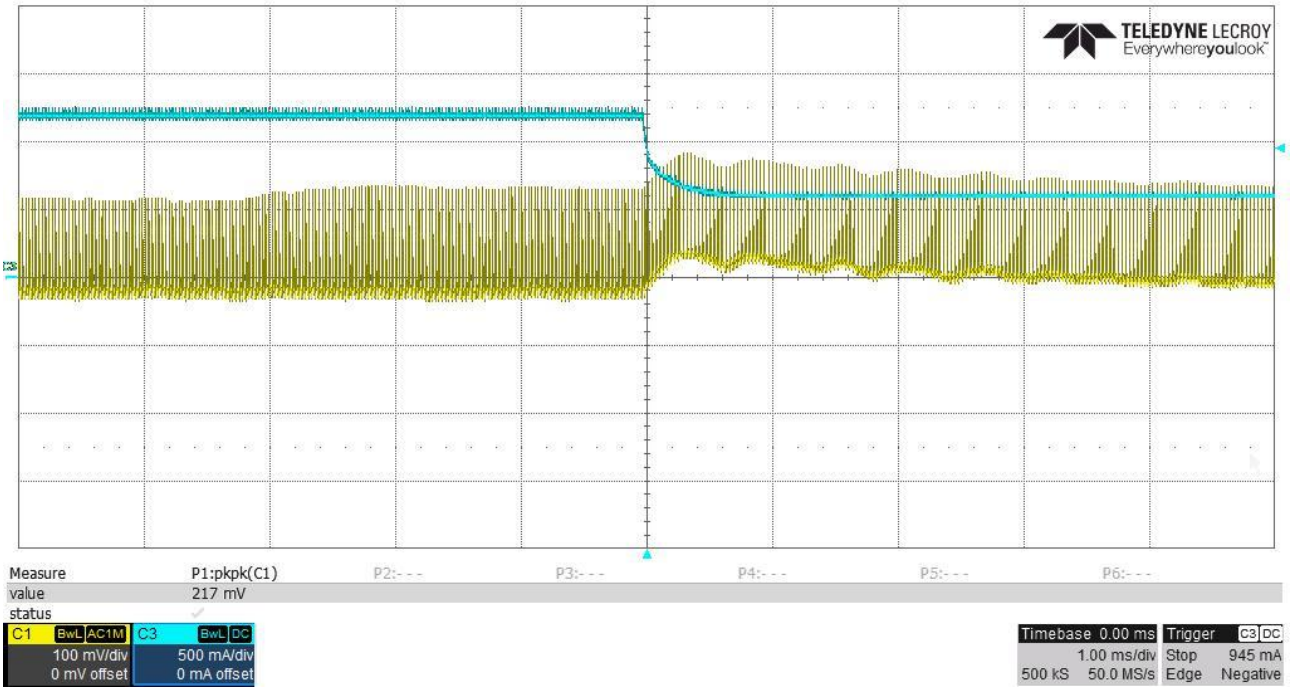
5.3.2 12V/8.8Ω load (CR mode)



6 Load Transient

The image below shows 12V_{out} voltage response to a **0.6A** to **1.2A** load transient at 120V_{AC}/60Hz input.

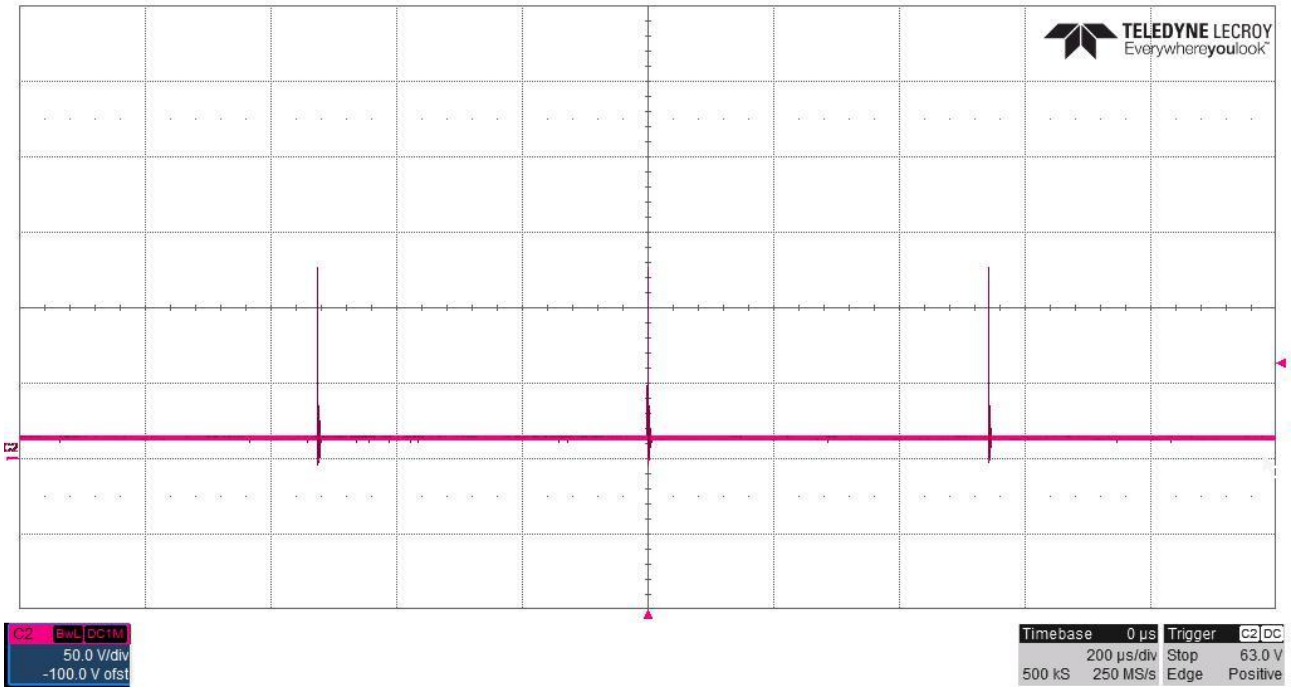




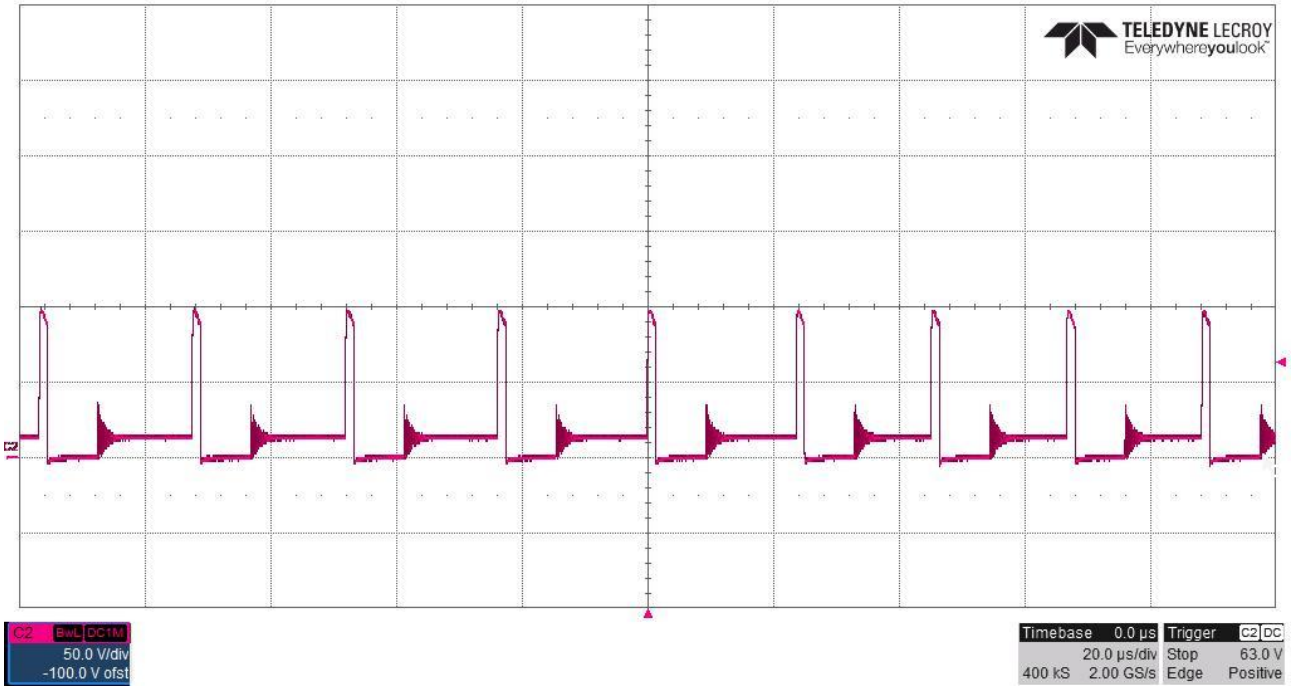
7 Switching Waveforms

The images below show key switching waveforms of PMP20495RevA.

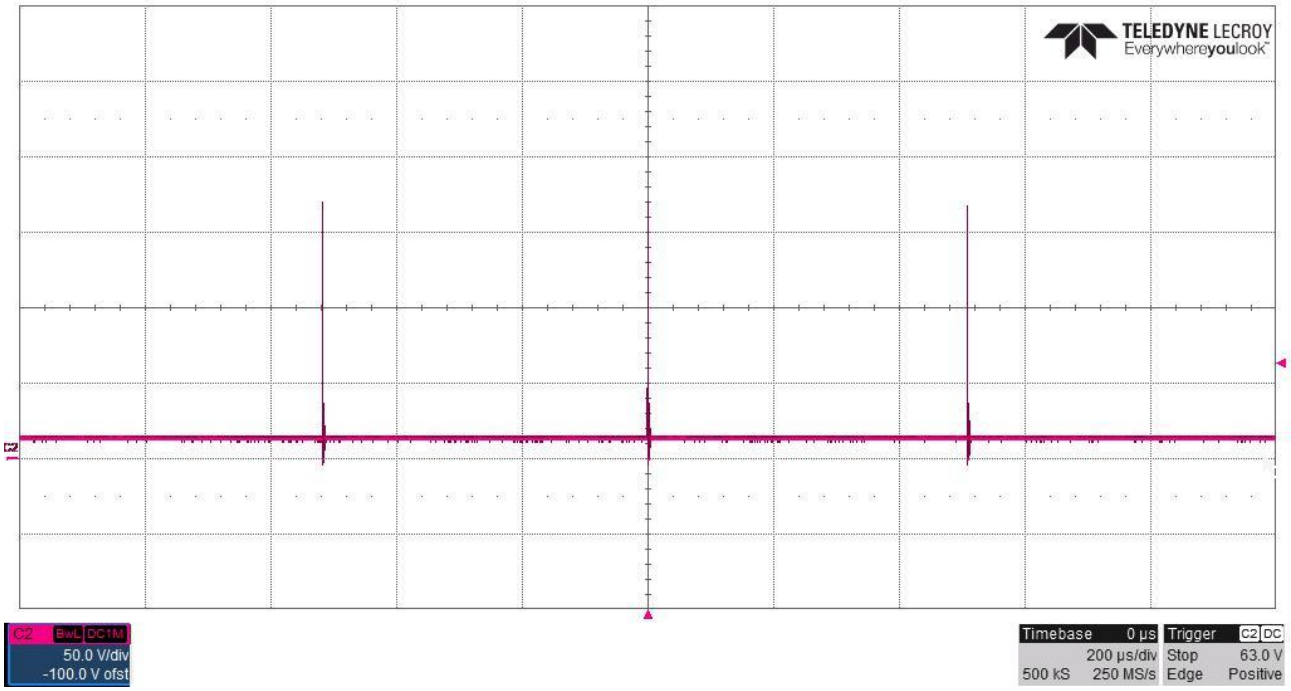
7.1 Diode D4 @ 90V_{AC}/60Hz, No load



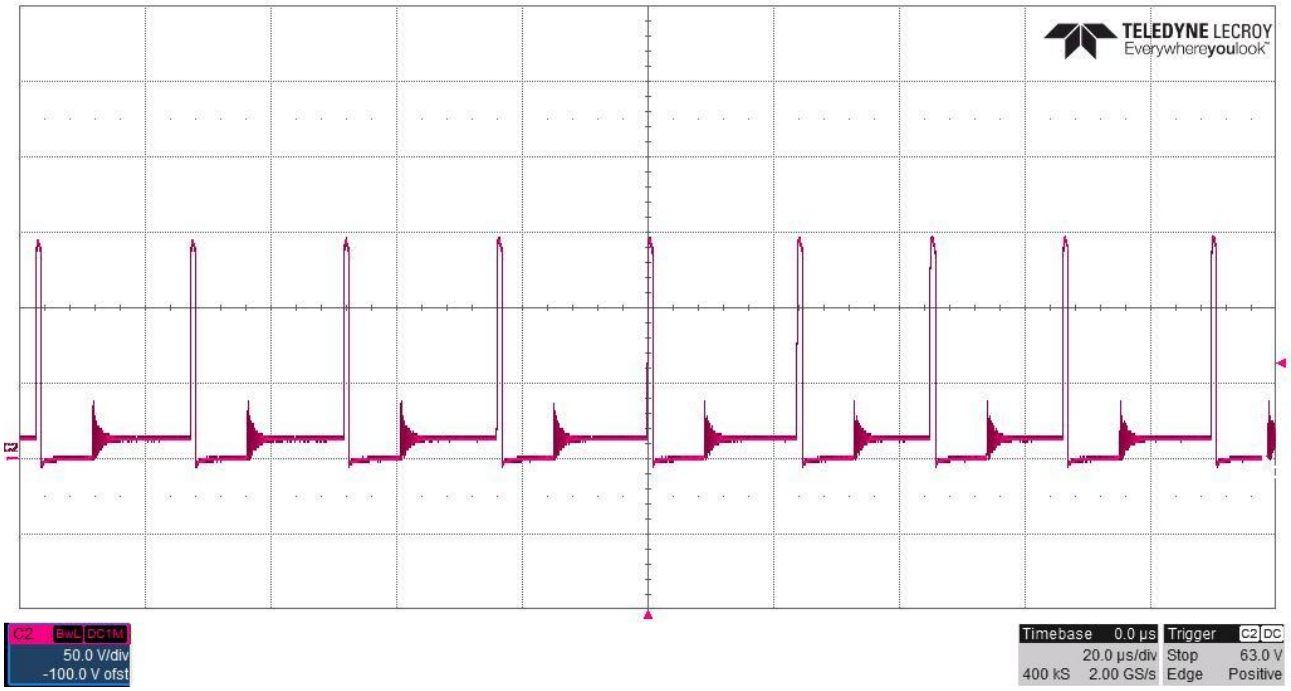
7.2 Diode D4 @ 90V_{AC}/60Hz, 12V/8.8Ω load



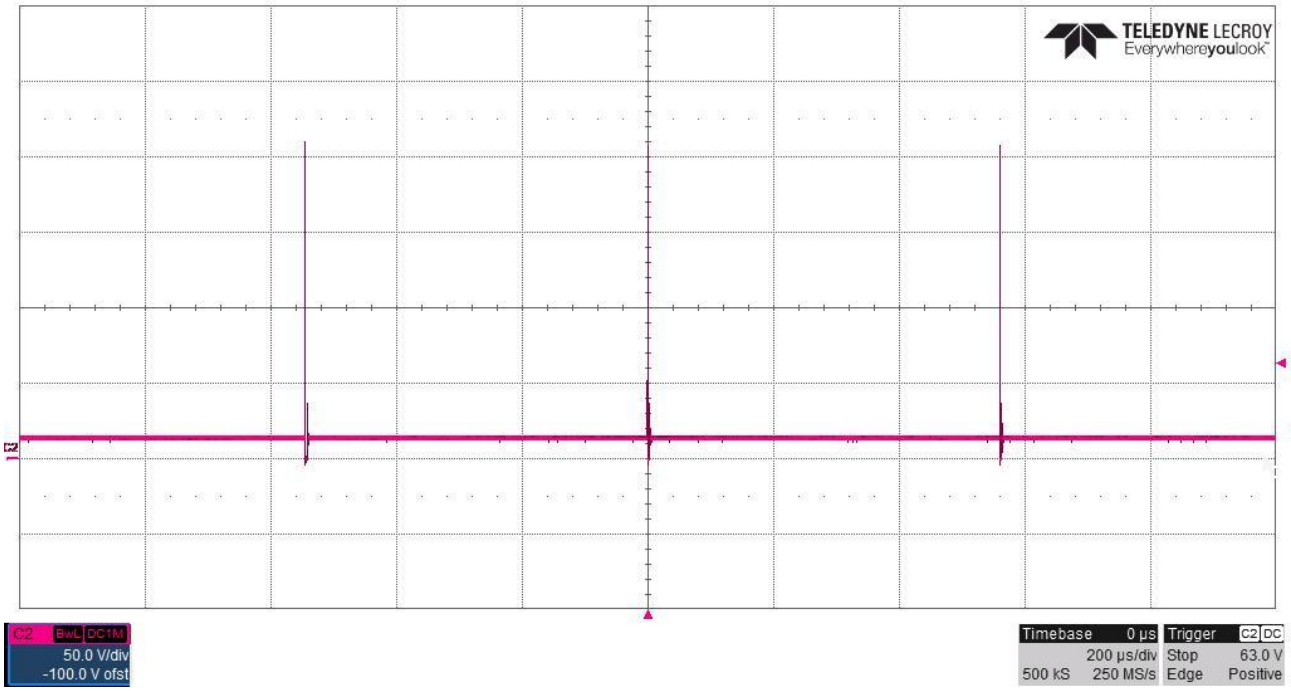
7.3 Diode D4 @ 120V_{AC}/60Hz, No load



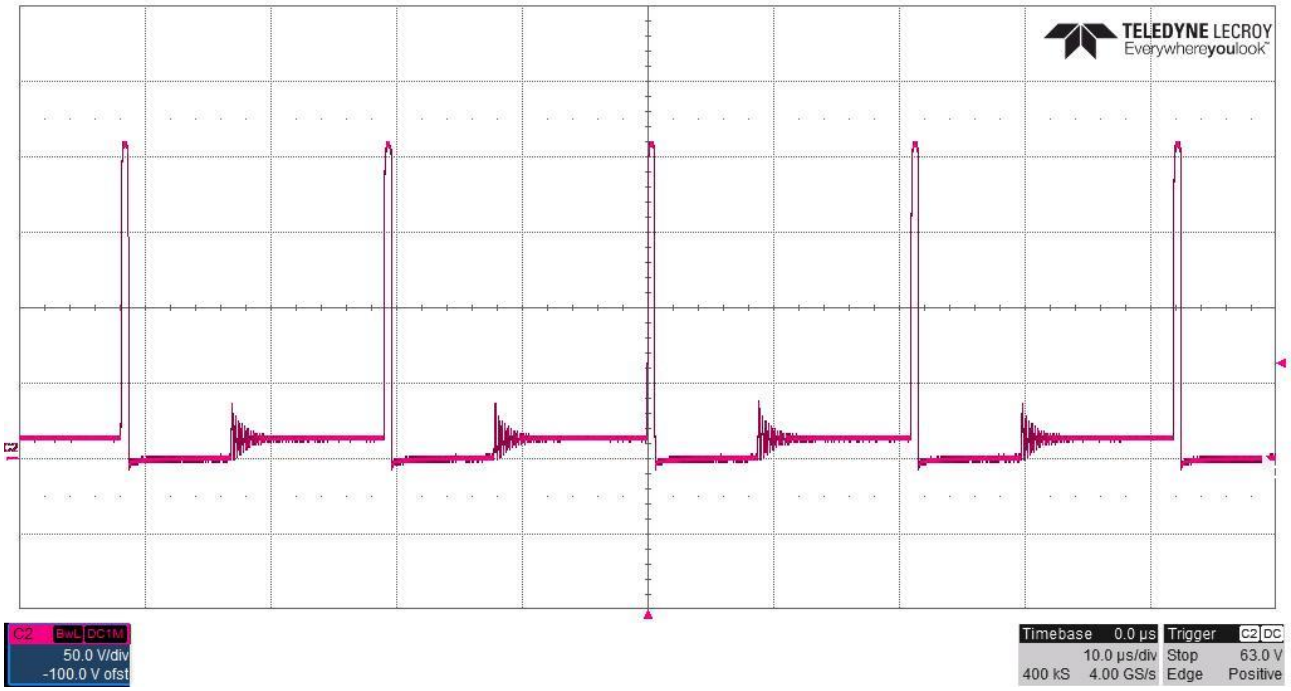
7.4 Diode D4 @ 120V_{AC}/60Hz, 12V/8.8Ω load



7.5 Diode D4 @ 150V_{AC}/60Hz, No load



7.6 Diode D4 @ 150V_{AC}/60Hz, 12V/8.8Ω load



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