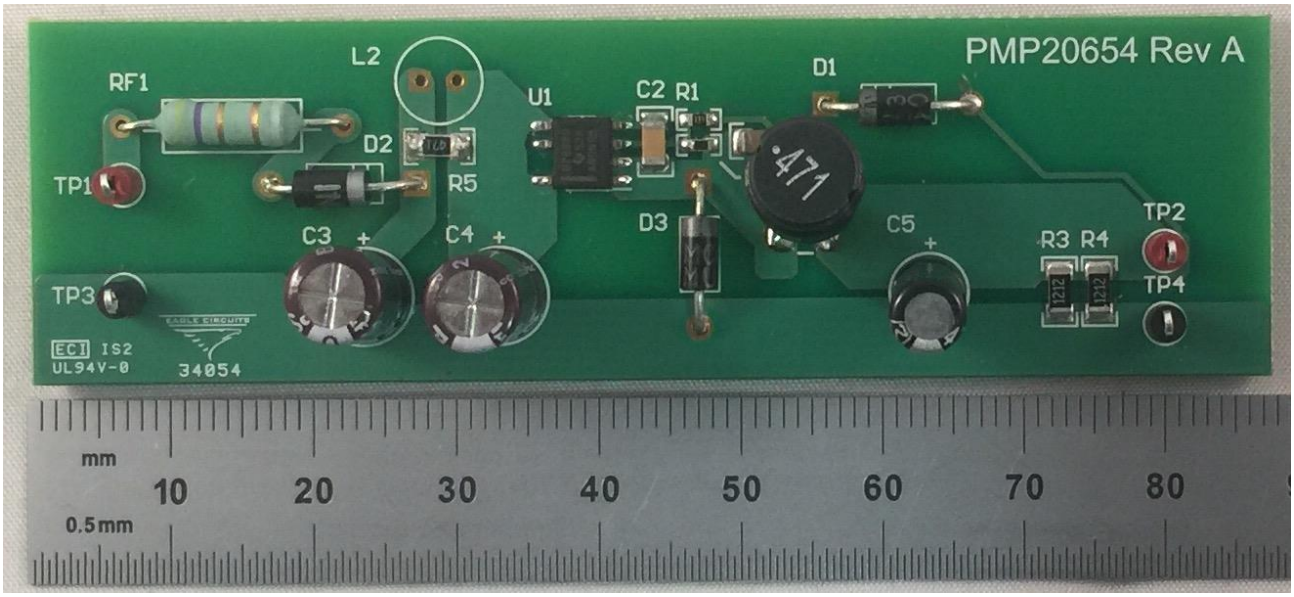
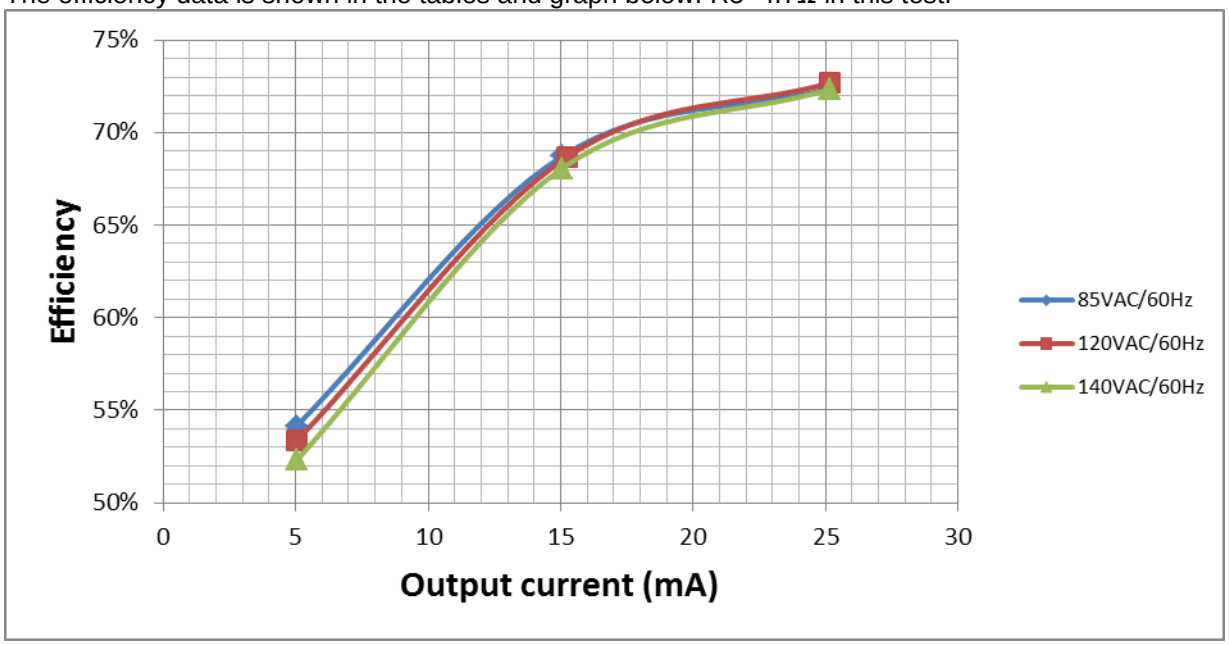
1 Photo

The photographs below show the PMP20654 Rev A assembly. This circuit was built on a PMP20654 Rev A PCB.



2 Converter Efficiency

The efficiency data is shown in the tables and graph below. R5=4.7Ω in this test.

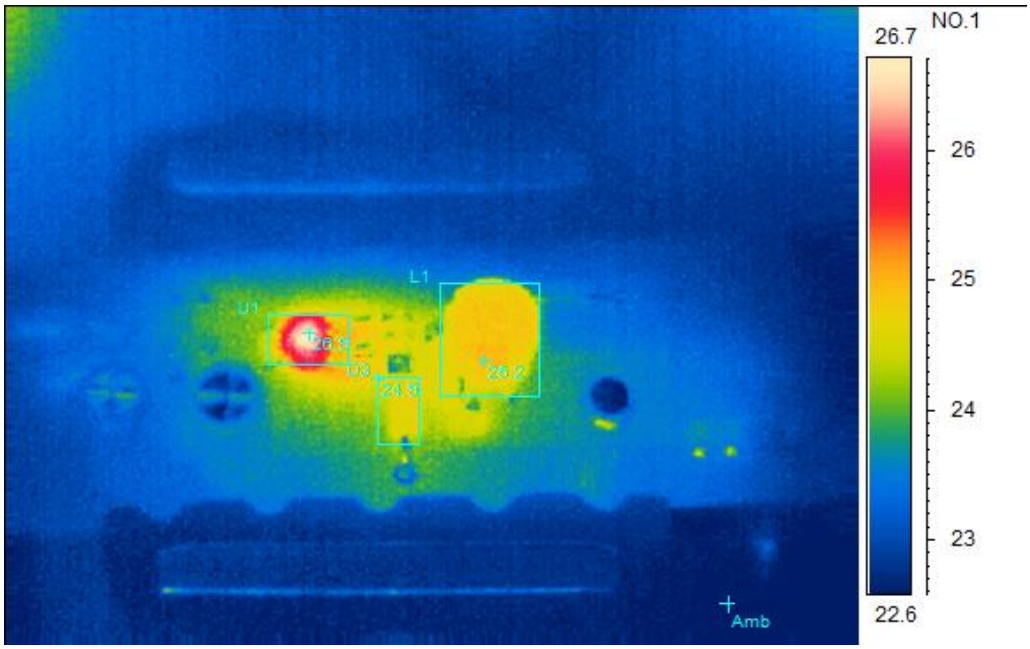


Vin(V)	Iin(mA)	Pin(W)	Vout(V)	Iout(mA)	Pout(W)	Losses(W)	Efficiency (%)
85.05	12.462	0.4001	11.5	25.18	0.28957	0.11053	72.37%
85.06	8.632	0.2541	11.59	15.07	0.174661	0.0794387	68.74%
85.06	4.417	0.10942	11.78	5.03	0.059253	0.0501666	54.15%
85.07	1.921	0.03768	12.25	0	0	0.03768	0.00%
120.06	10.054	0.3976	11.49	25.15	0.288974	0.1086265	72.68%
120.06	7.144	0.2572	11.58	15.26	0.176711	0.0804892	68.71%
120.07	3.7	0.11154	11.77	5.06	0.059556	0.0519838	53.39%
120.07	1.663	0.04049	12.27	0	0	0.04049	0.00%
140.09	9.236	0.399	11.48	25.14	0.288607	0.1103928	72.33%
140.09	6.506	0.2562	11.58	15.06	0.174395	0.0818052	68.07%
140.09	3.463	0.11341	11.77	5.04	0.059321	0.0540892	52.31%
140.09	1.564	0.004224	12.29	0	0	0.004224	0.00%

3 Thermal Images

The thermal images below show a top view and bottom view of the board under 120V_{AC}/60Hz input condition. The ambient temperature was 20ºC with no forced air flow. The output was at full load: 12V/25mA. R5=4.7Ω in this test.

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

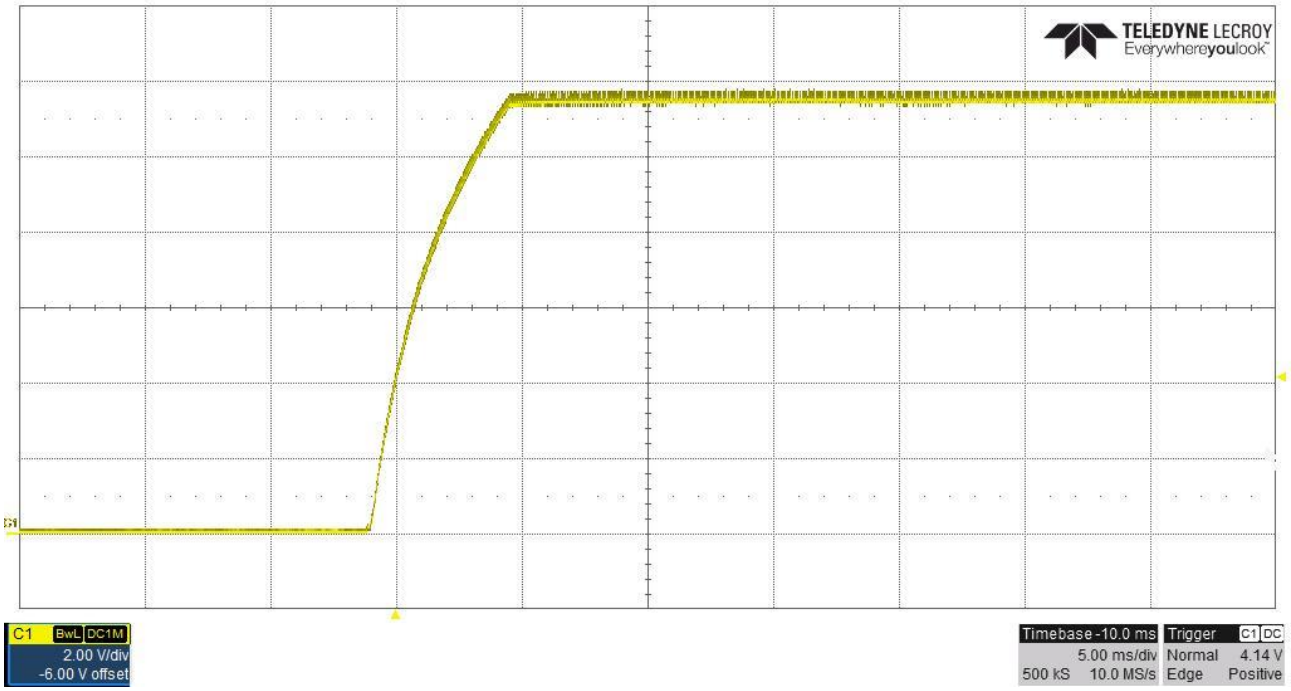


Spot analysis	Value
Amb Temperature	22.4°C
Area analysis	**Value**
U1Max	26.9°C
D3Max	24.9°C
L1Max	25.2°C

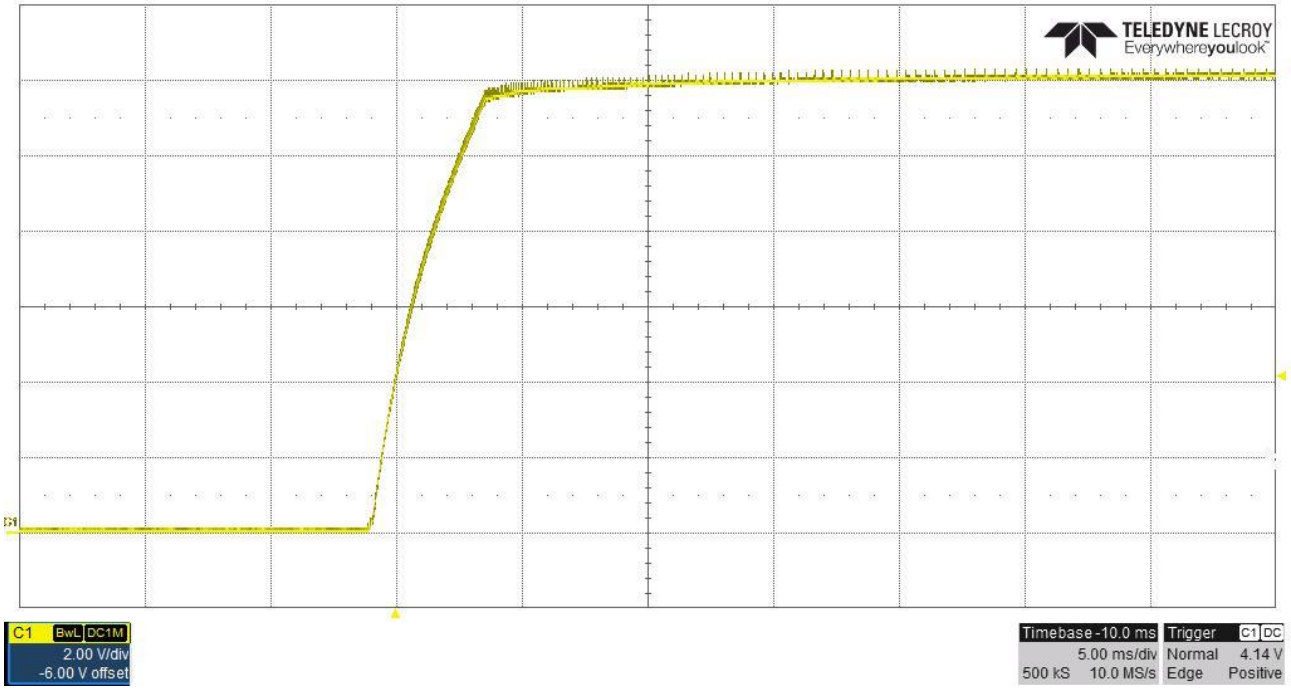
4 Startup Waveforms

The output voltages at startup are shown in the images below. R5=4.7Ω in this test.

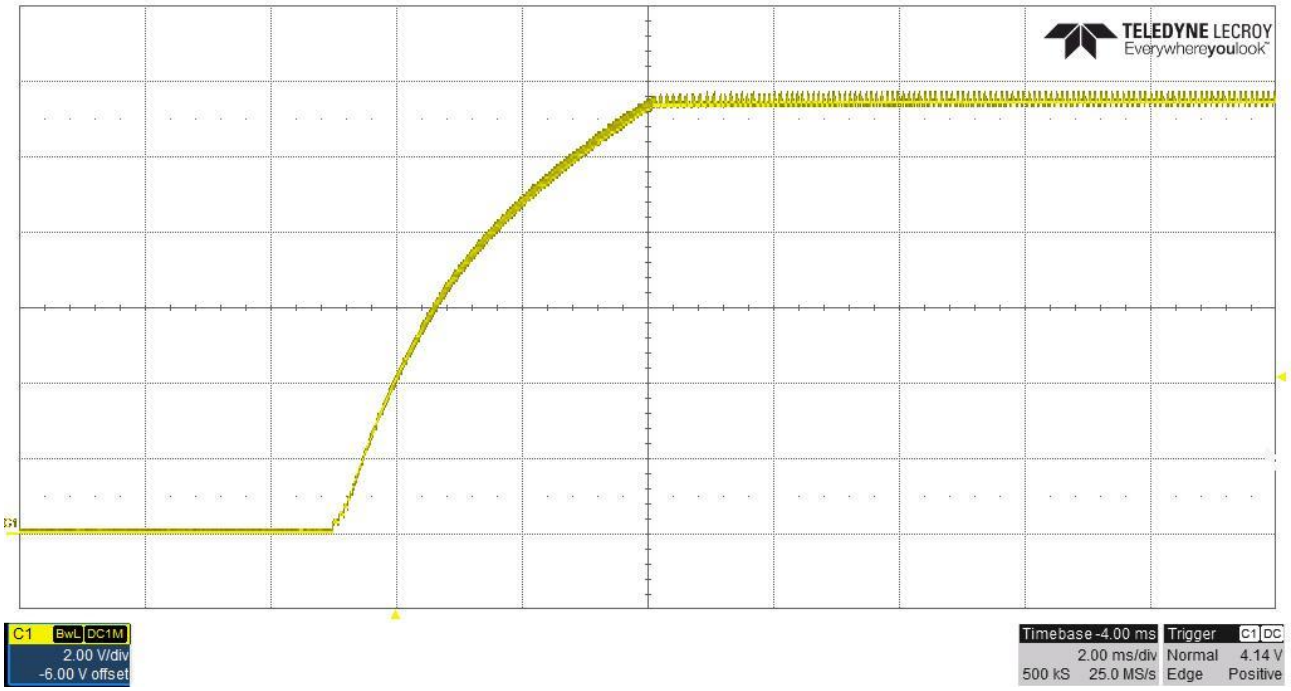
4.1 Start Up @ 85V_{AC}: 12V/25mA.



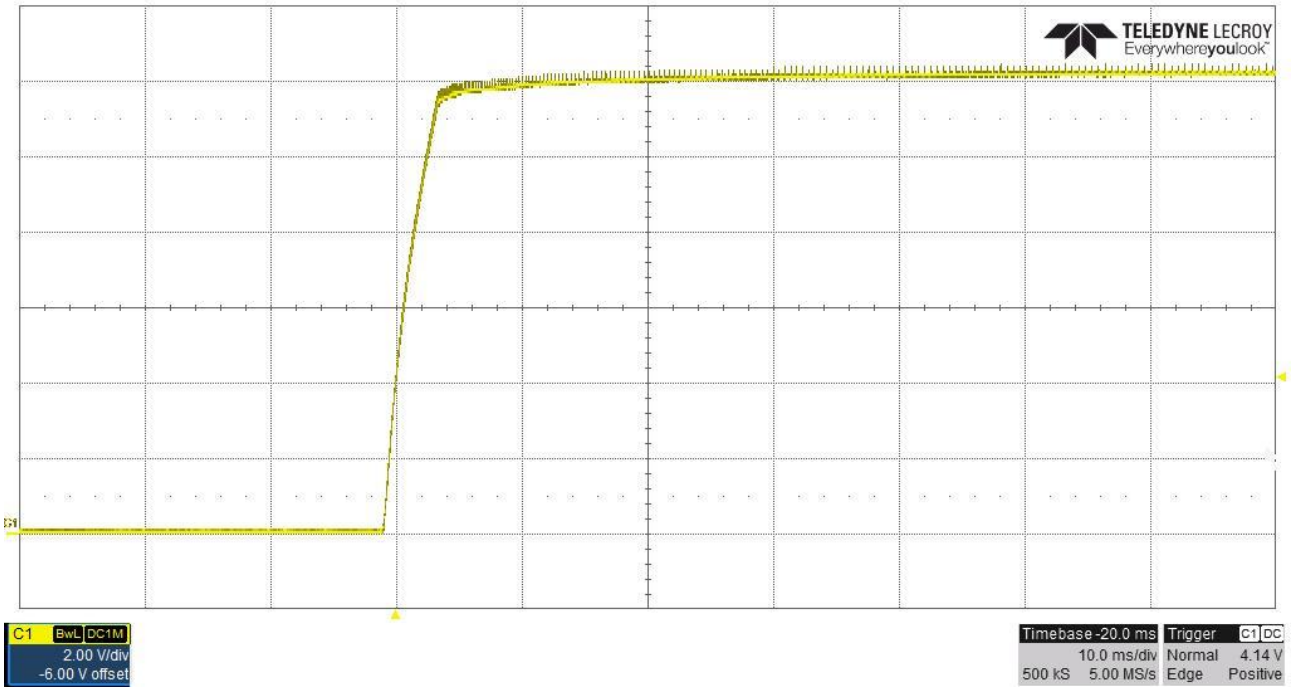
4.2 Start Up @ 85V_{AC}: no load.



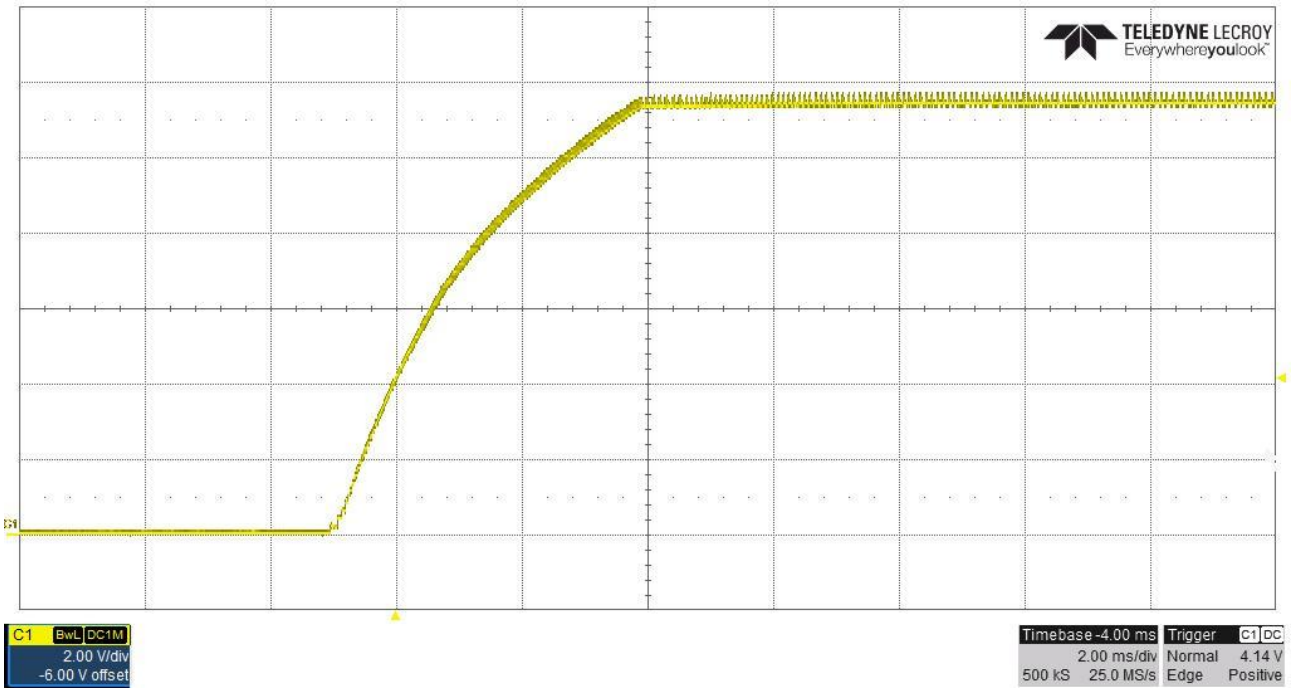
4.3 Start Up @ 120V_{AC}: 12V/25mA.



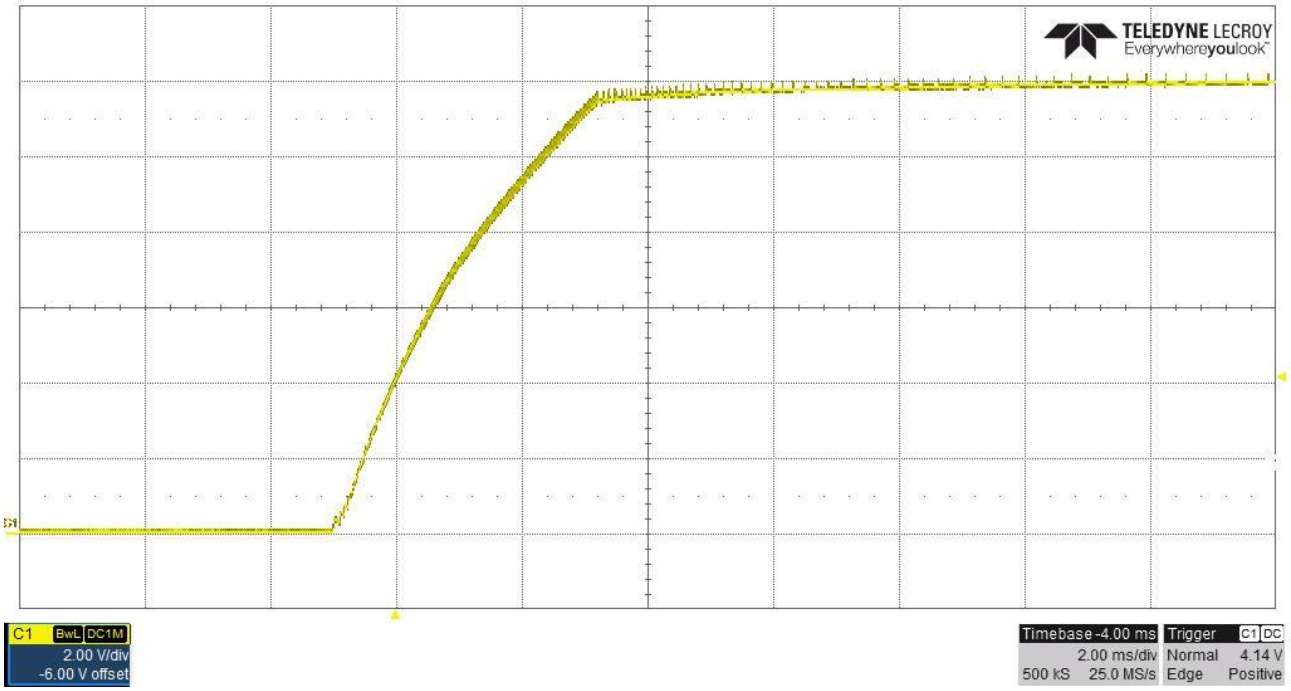
4.4 Start Up @ 120V_{AC}: no load.



4.5 Start Up @ 140V_{AC}: 12V/25mA.



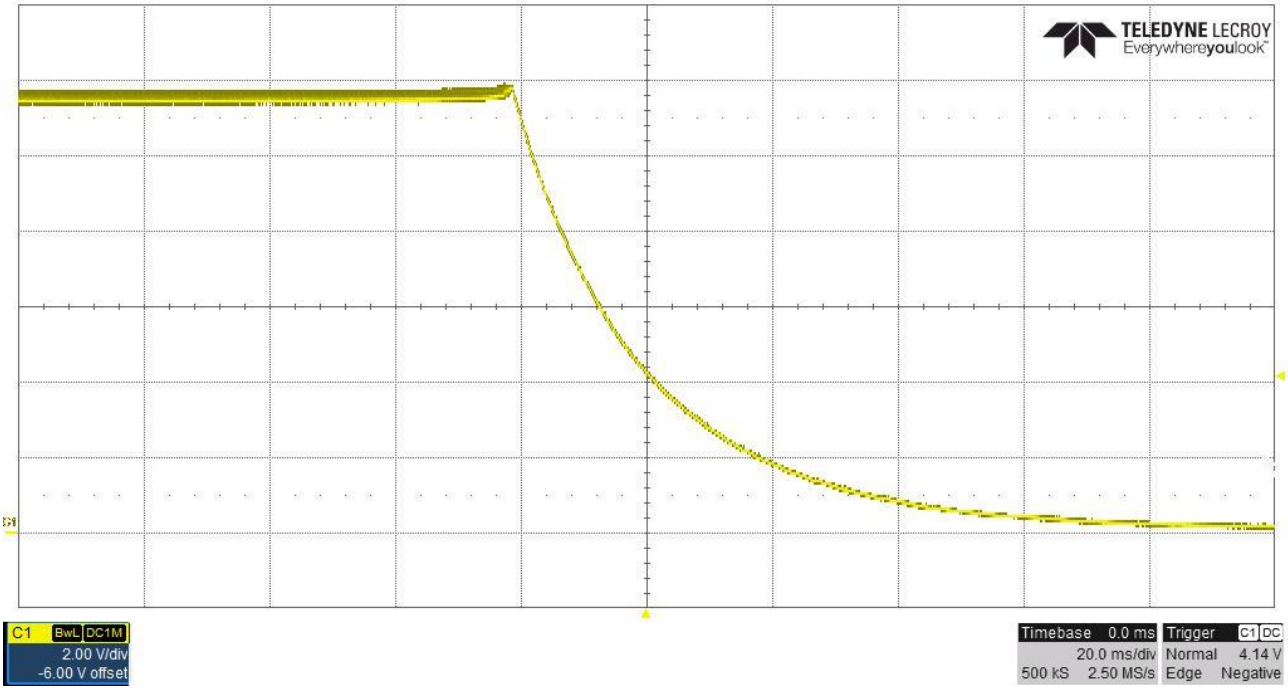
4.6 Start Up @ 140V_{AC}: no load.



5 Turn off

The output voltage at turn off transient is shown in the image below at full load (12V/25mA). R5=4.7Ω in this test.

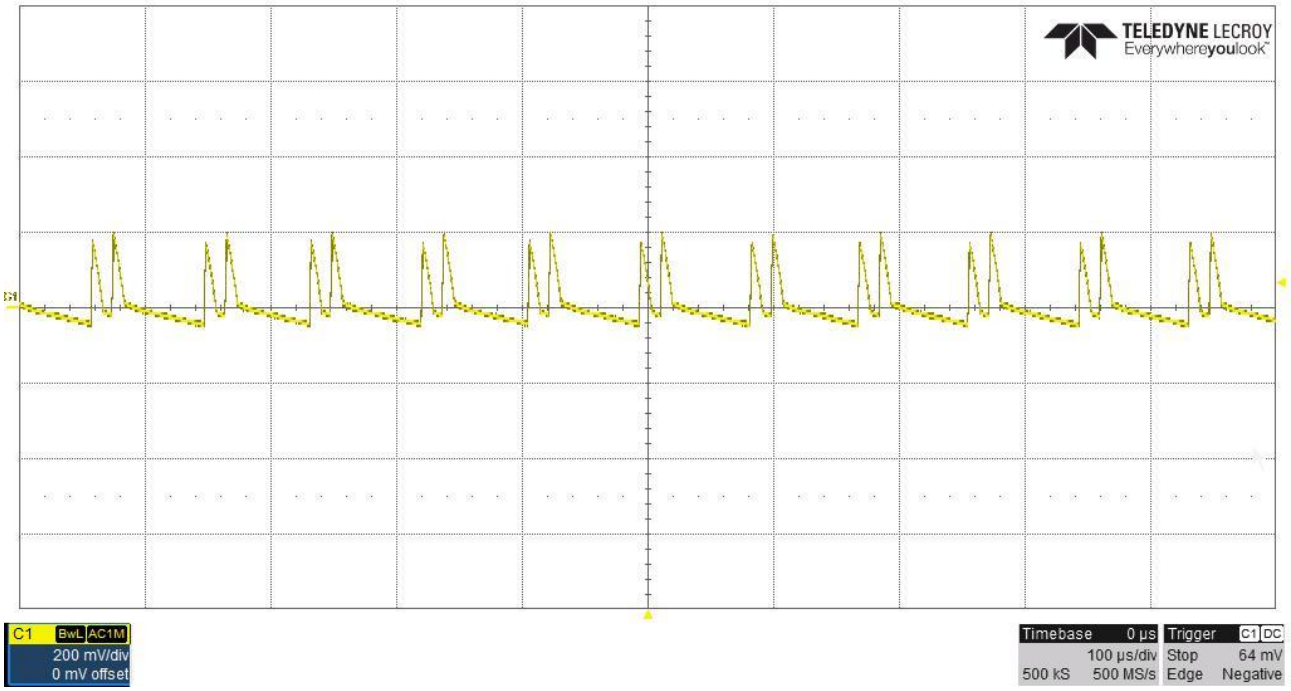
5.1 Turn off @ 120V_{AC}: 12V/25mA.



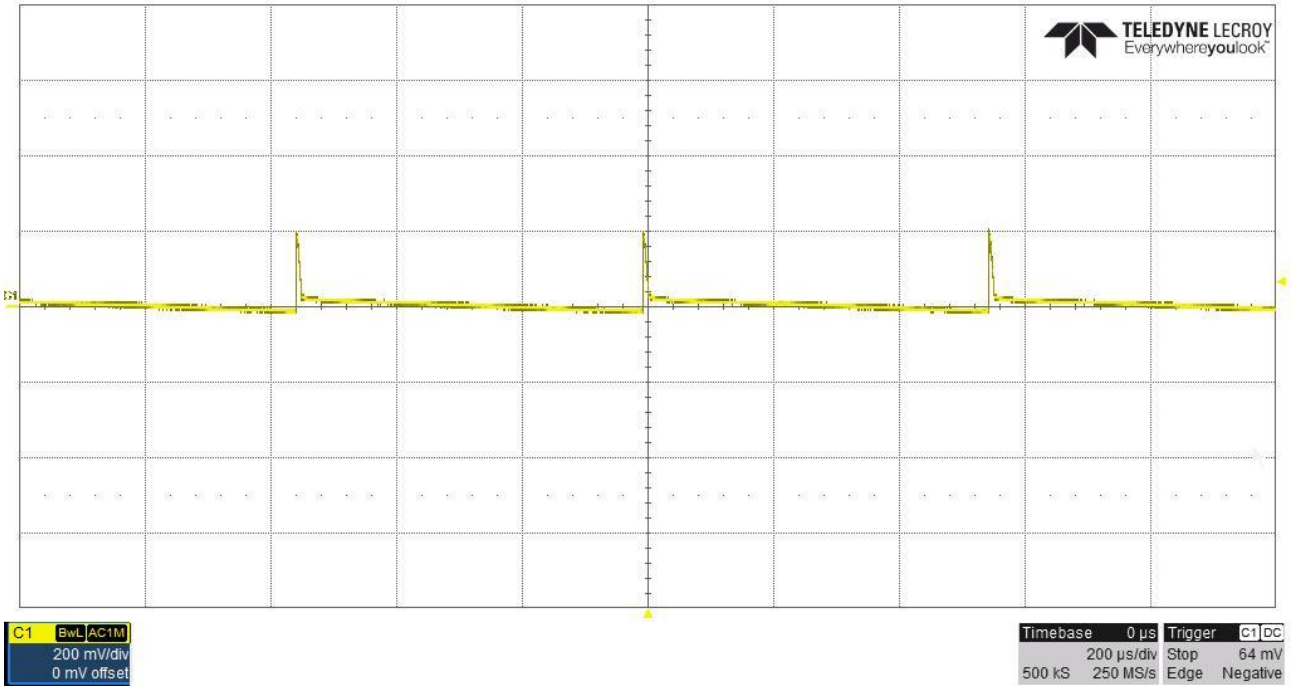
6 Output Ripple Voltages

The output ripple voltages are shown in the plots below. R5=4.7Ω in this test.

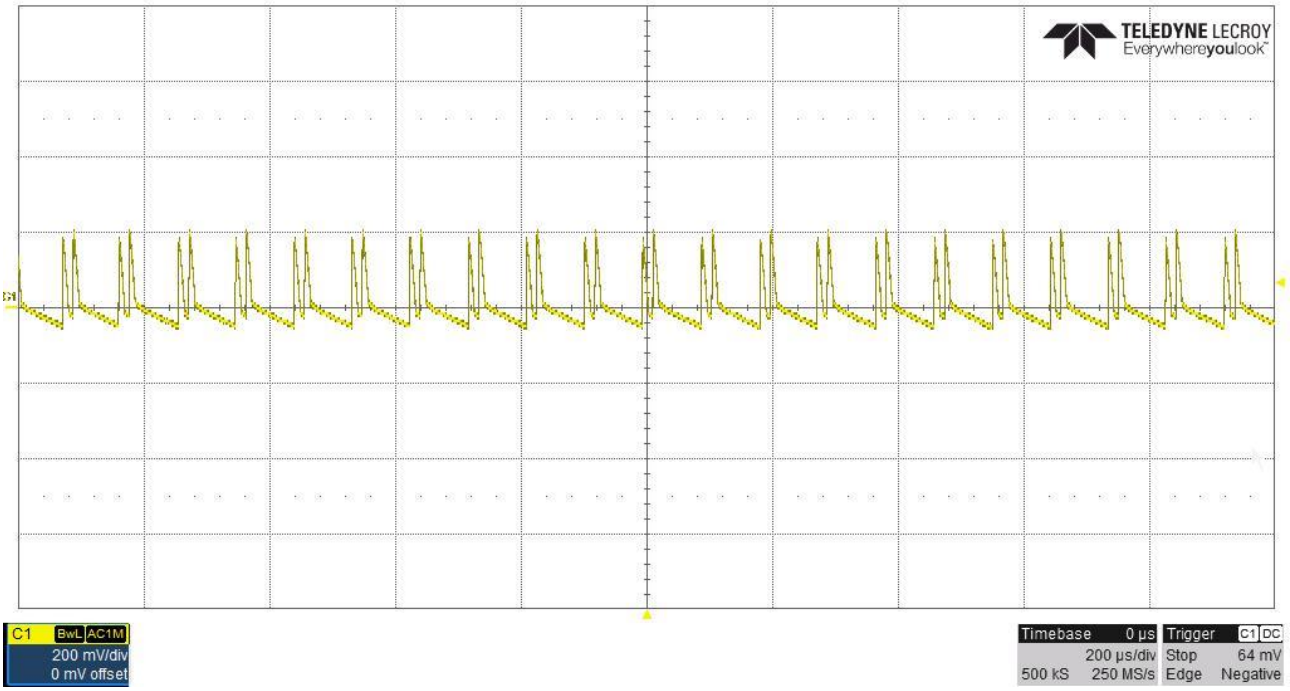
6.1 $85V_{AC}$: 12V/25mA:



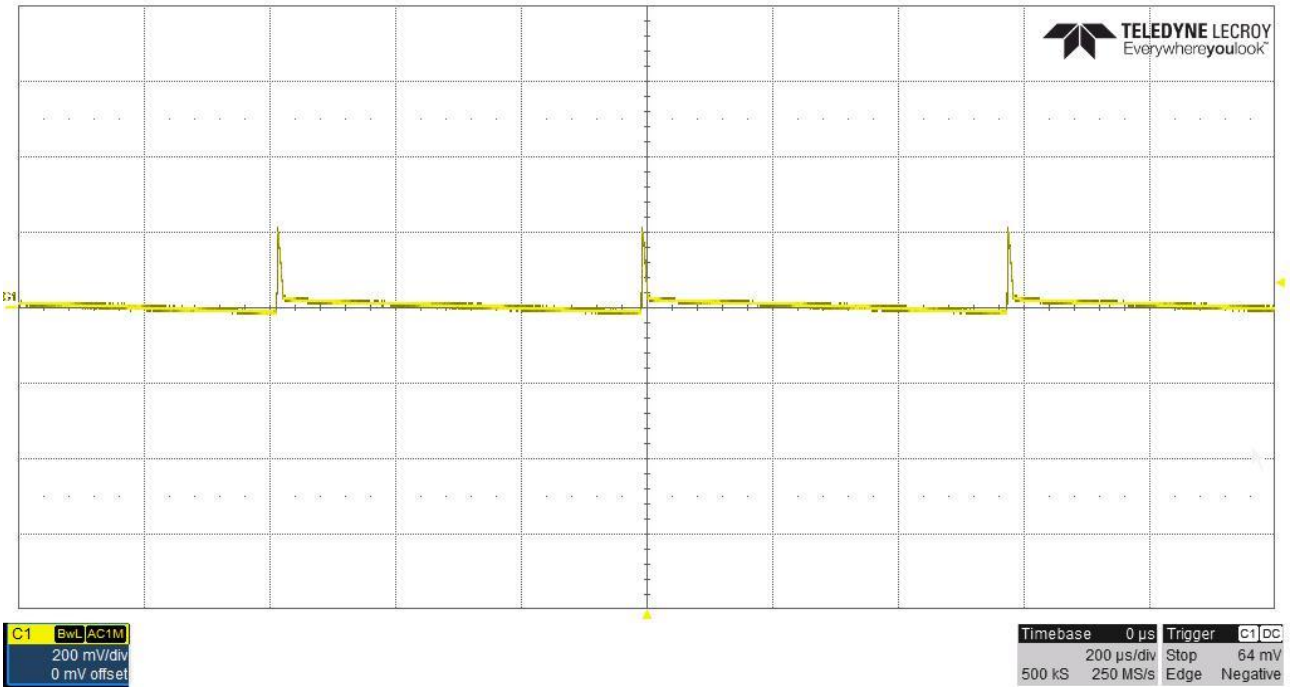
6.2 $85V_{AC}$: no load:



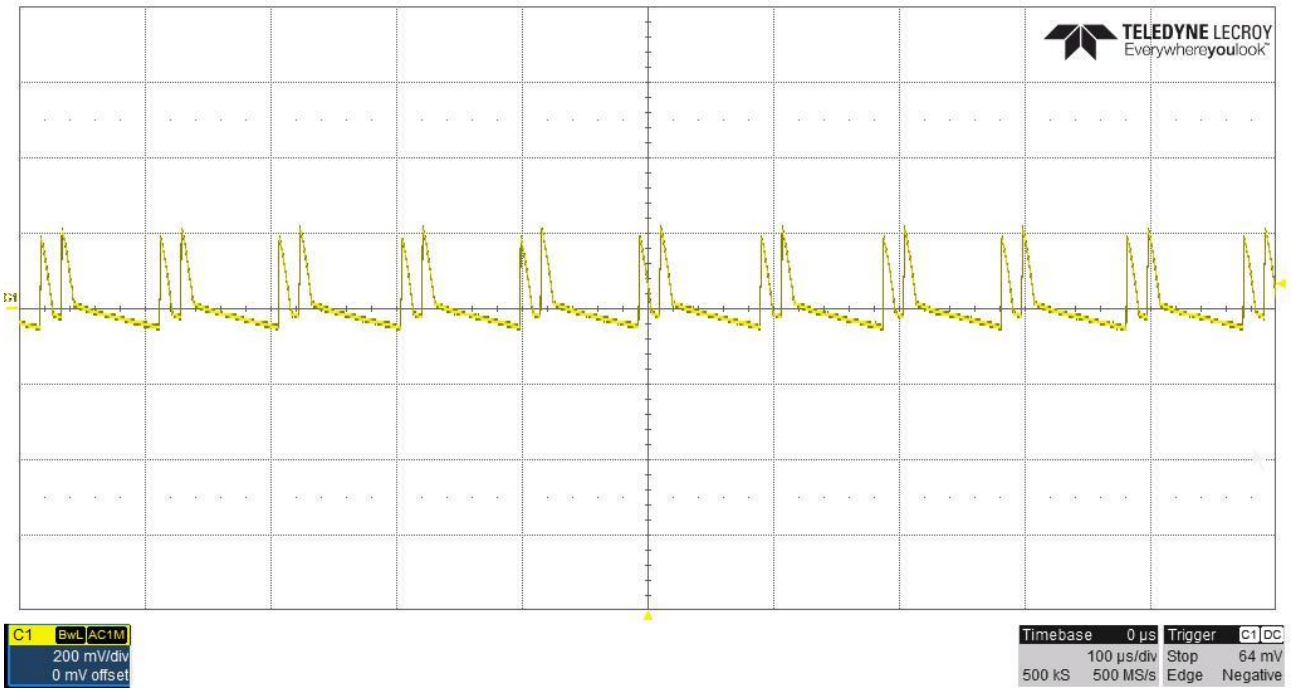
6.3 $120V_{AC}$: 12V/25mA:



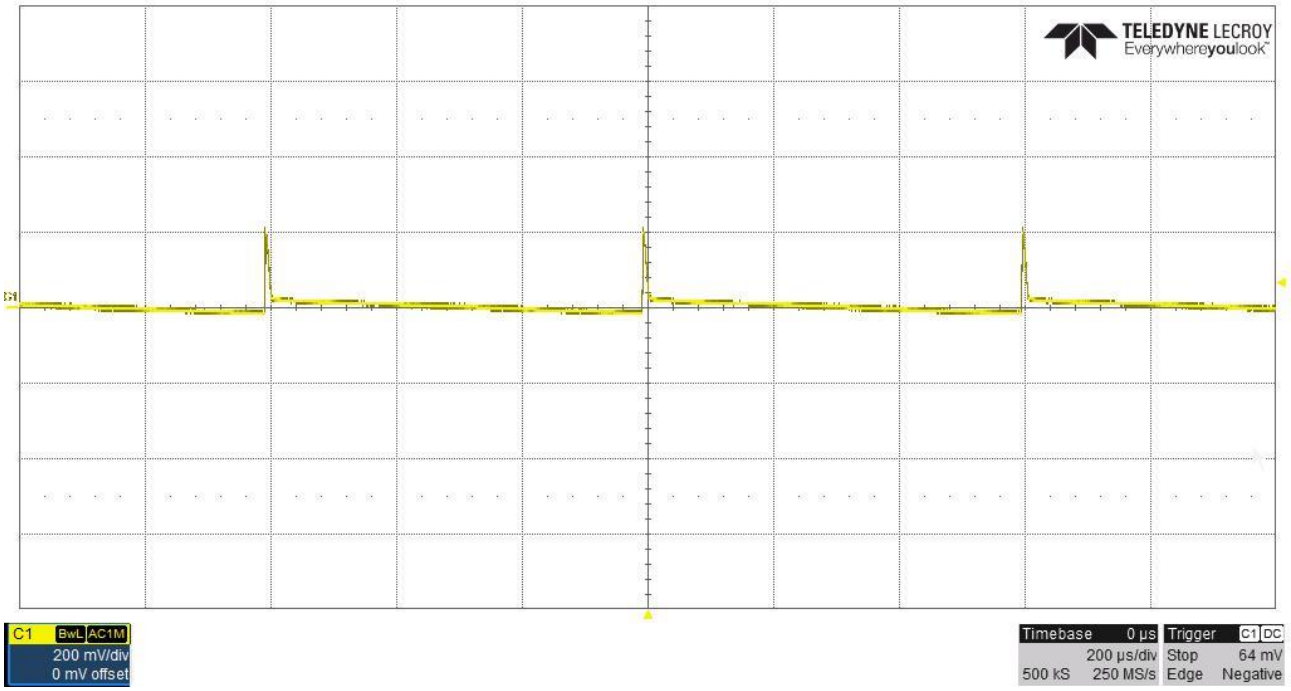
6.4 $120V_{AC}$: no load:



6.5 $140V_{AC}$: 12V/25mA:



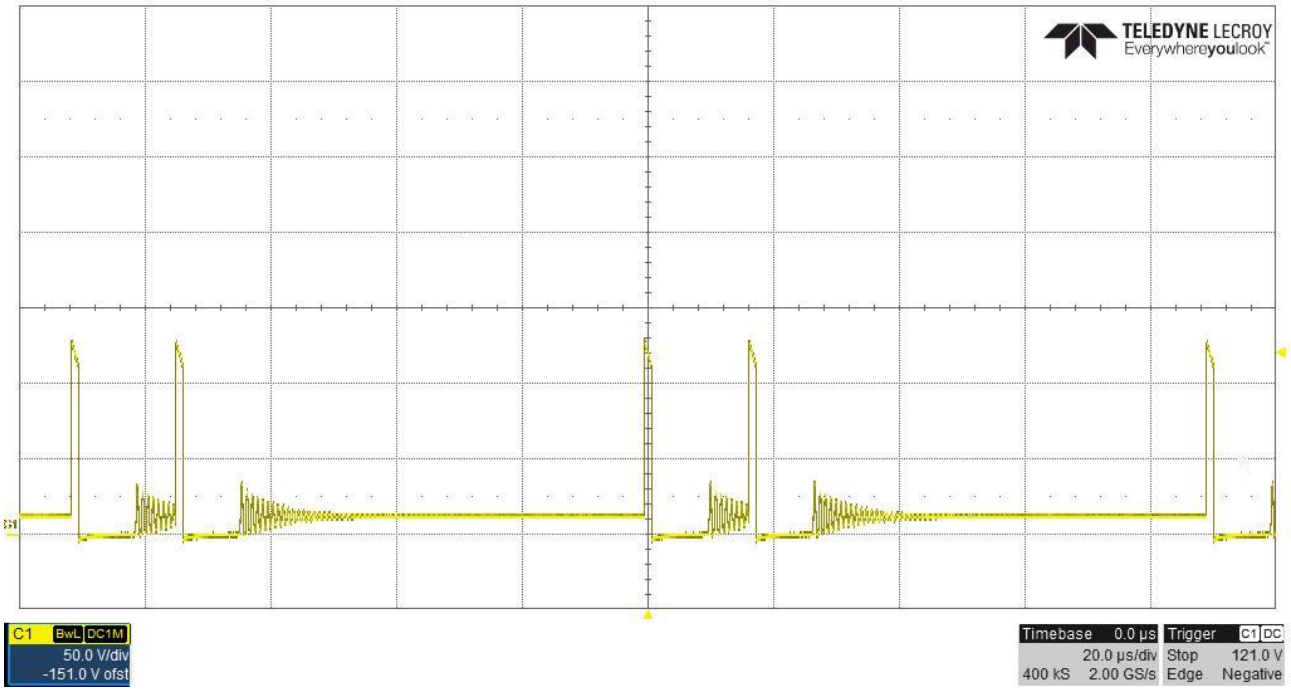
6.6 $140V_{AC}$: no load:



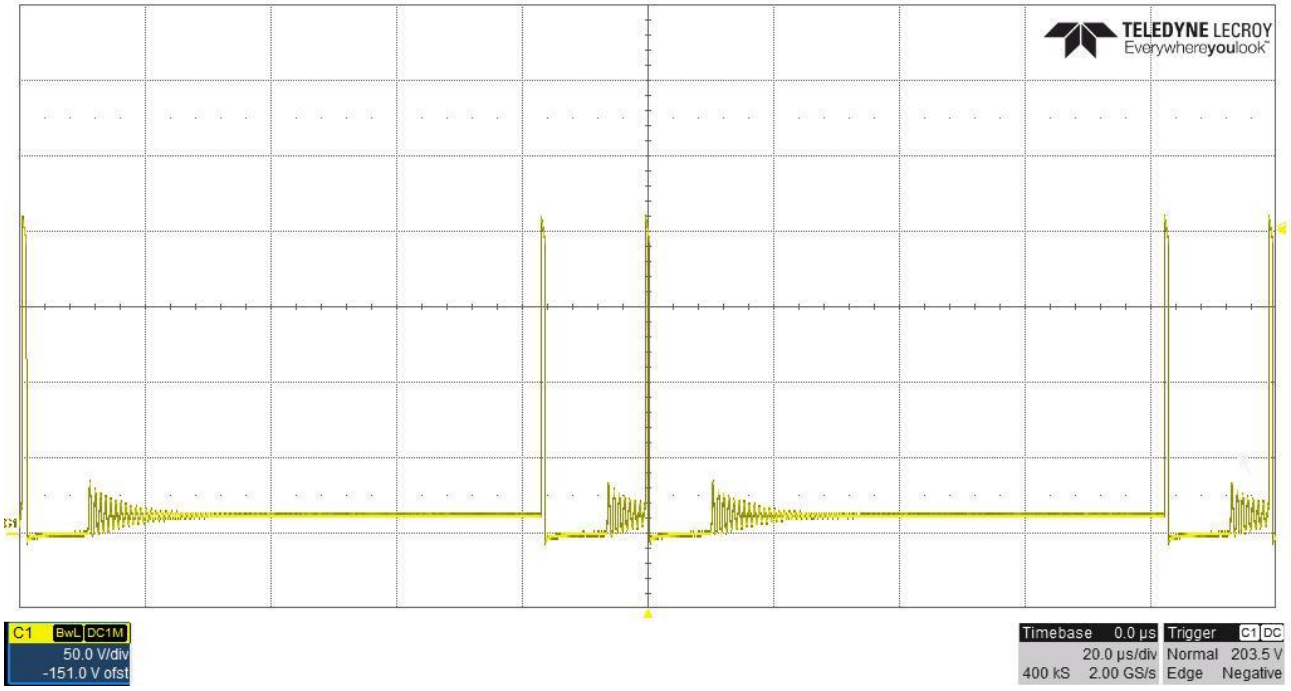
7 Switching Waveforms

The images below show key switching waveforms of PMP20654RevA. The waveforms are measured with 25mA full load. R5=4.7Ω in this test.

7.1 Diode D3 @ 85V_{AC}/60Hz



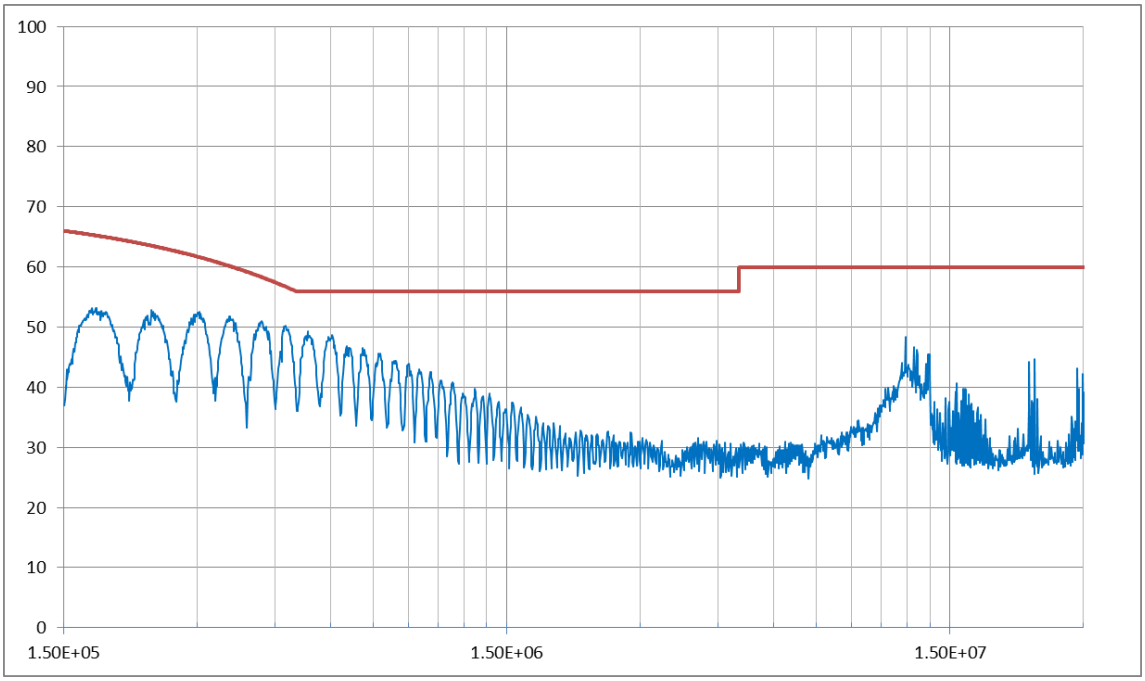
7.2 Diode D3 @ 140V_{AC}/60Hz



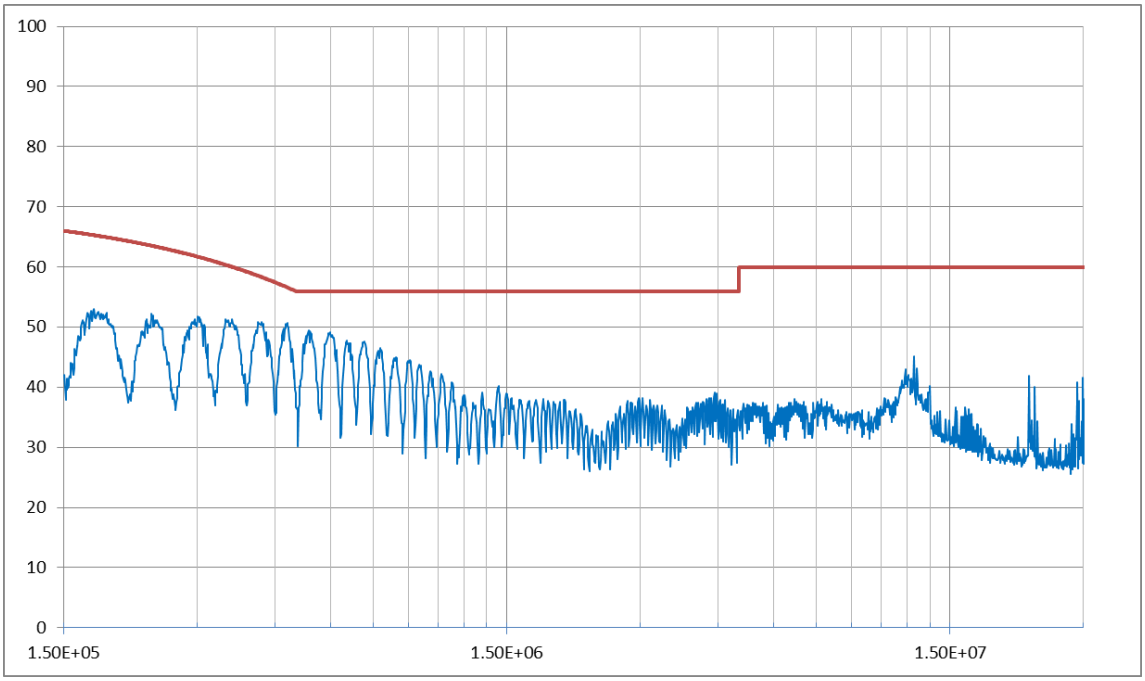
8 Conduction EMI

Conducted EMI of PMP20654 Rev A was tested at the condition of V_{IN}=120V_{AC} and 12V/25mA output. The following curves show the peak scan results with maximum hold. **R5=470Ω** in this test.

Line 1



Line 2



Trace073csv

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