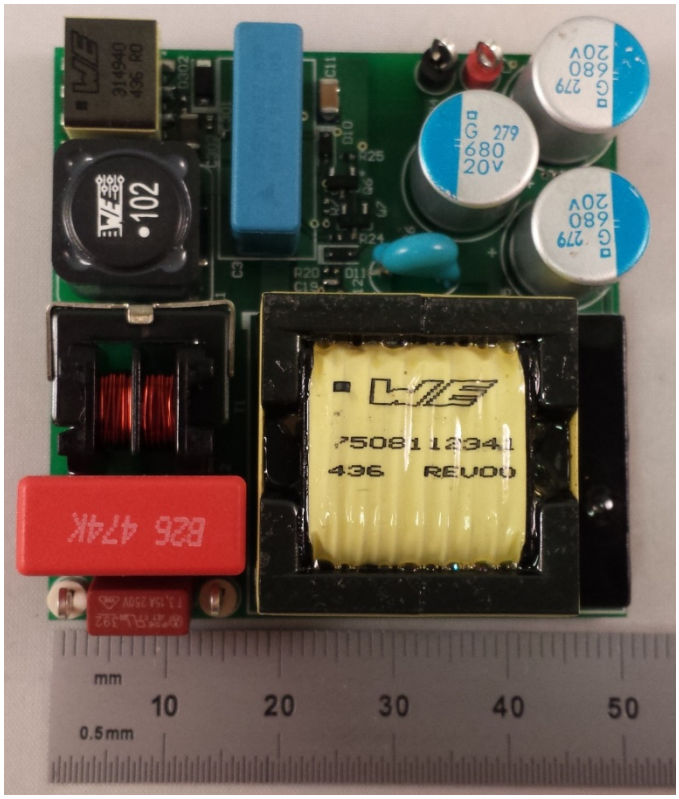
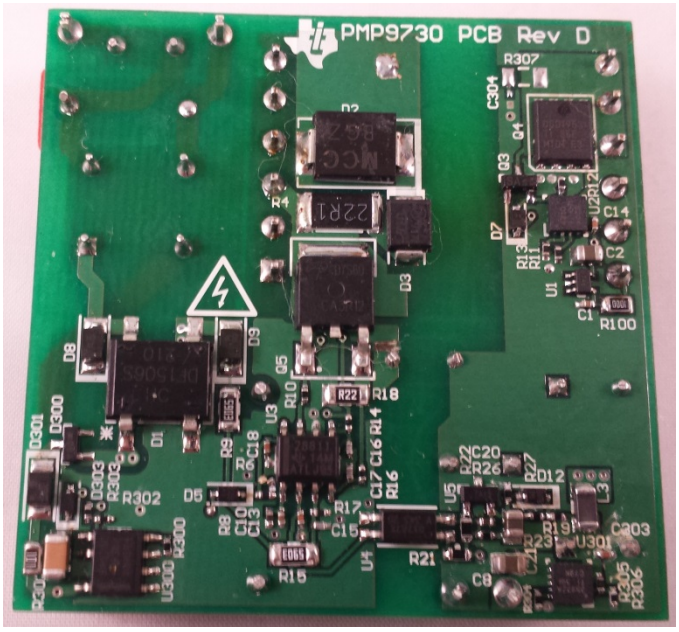
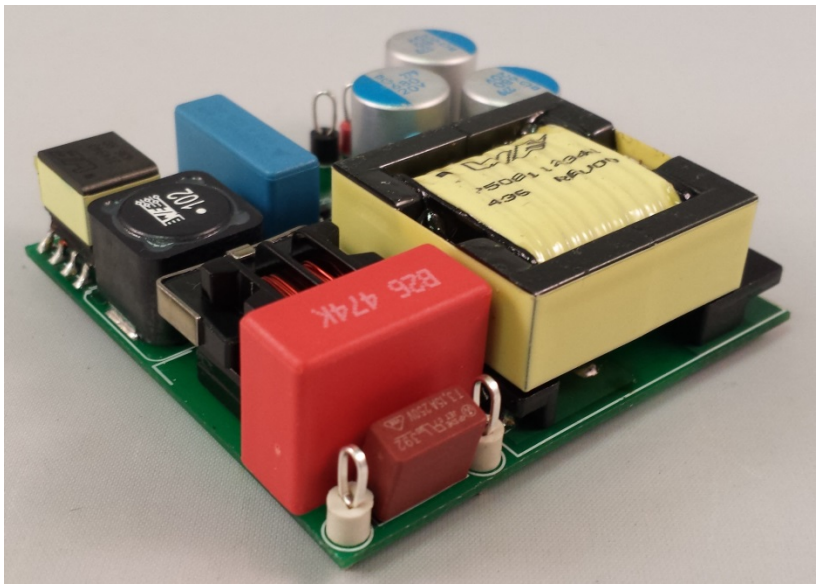
1 Photos

The photograph below shows the PMP9730 Rev E prototype assembly. This circuit was built on a PMP9730 Rev D PCB.





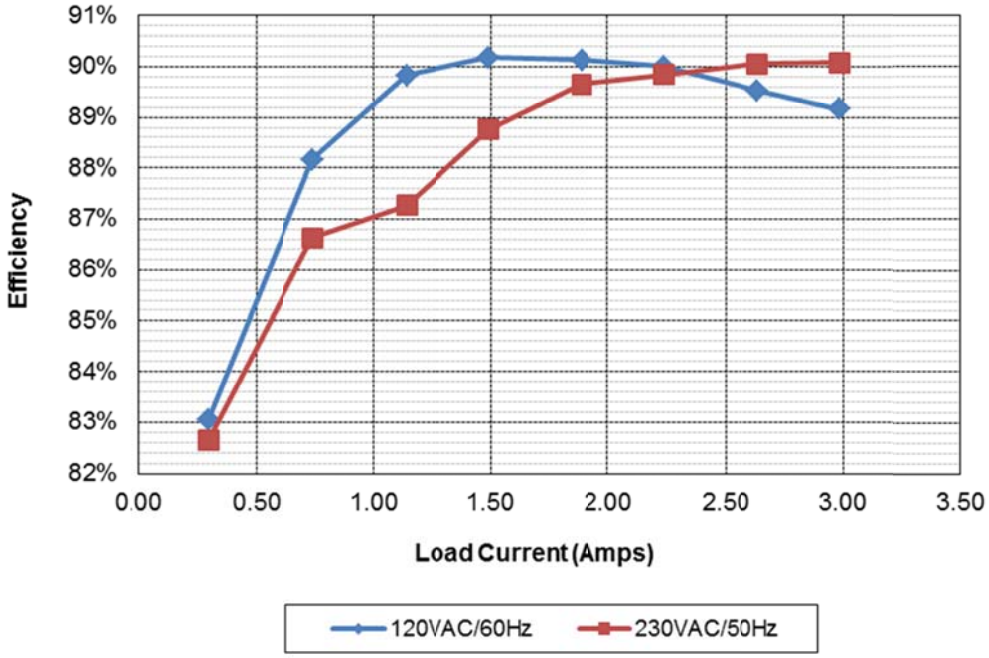


2 Standby Power

No Load	Pin AC (W)
120VAC/60Hz	0.187
230VAC/50Hz	0.238

3 Efficiency

Vin	Pin	Vout	Iout	Load	Efficiency	Avg. Eff.
120VAC/60Hz	4.41	12.42	0.295	10%	83.04%	
	10.44	12.40	0.742	25%	88.16%	**89.38%**
	20.44	12.38	1.489	50%	90.19%	
	30.73	12.36	2.238	75%	90.00%	
	41.28	12.33	2.985	100%	89.16%	
230VAC/50Hz	4.43	12.42	0.295	10%	82.63%	
	10.62	12.40	0.742	25%	86.63%	**88.82%**
	20.78	12.38	1.490	50%	88.75%	
	30.75	12.35	2.237	75%	89.84%	
	40.86	12.33	2.985	100%	90.08%	



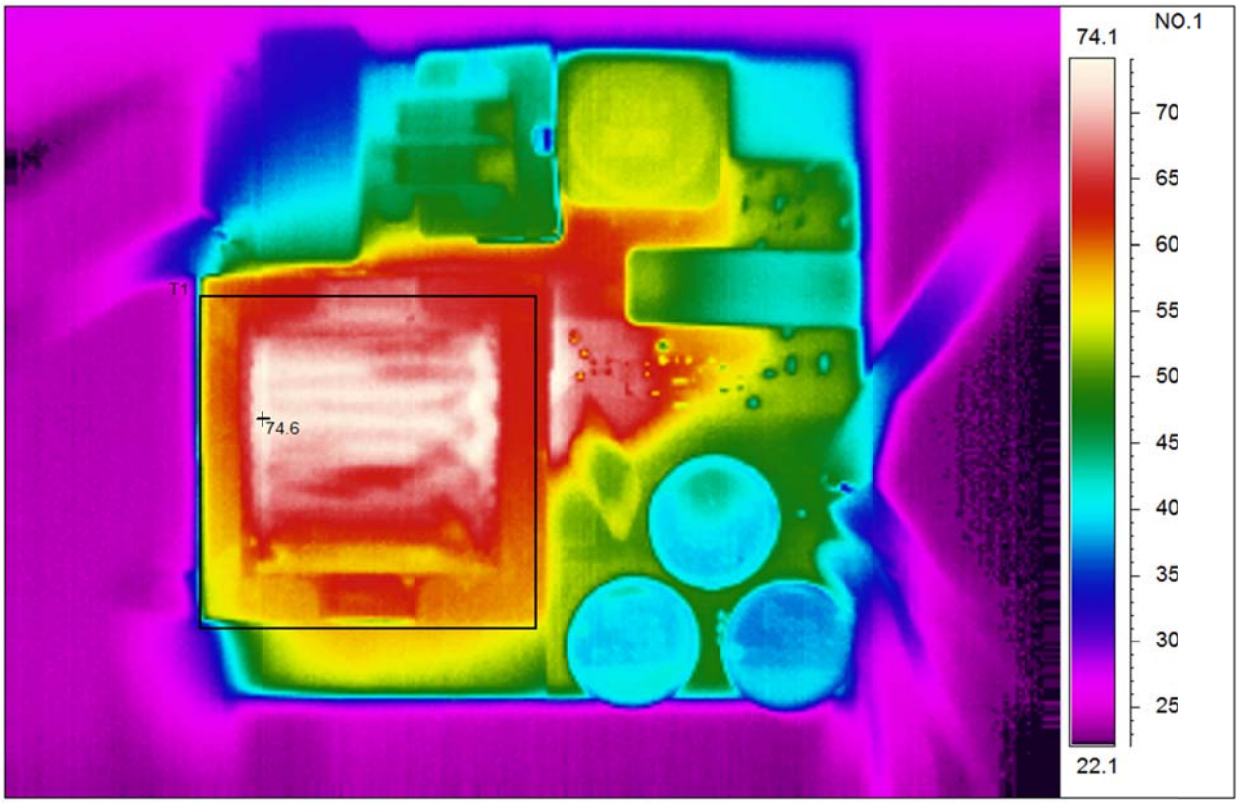
120VAC/60Hz								
Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.000	12.43	120.1	0.03402	0.1870		0.00	0.19	
0.295	12.42	120.1	0.0940	4.412	0.394	3.66	0.75	83.0%
0.742	12.40	120.1	0.1226	10.436	0.708	9.20	1.24	88.2%
1.140	12.39	120.1	0.1575	15.725	0.831	14.12	1.60	89.8%
1.489	12.38	120.1	0.1918	20.440	0.888	18.43	2.01	90.2%
1.887	12.37	120.1	0.2342	25.90	0.920	23.34	2.56	90.1%
2.238	12.36	120.1	0.2732	30.73	0.937	27.66	3.07	90.0%
2.635	12.34	120.1	0.3180	36.32	0.950	32.52	3.80	89.5%
2.985	12.33	120.1	0.3590	41.28	0.958	36.81	4.47	89.2%

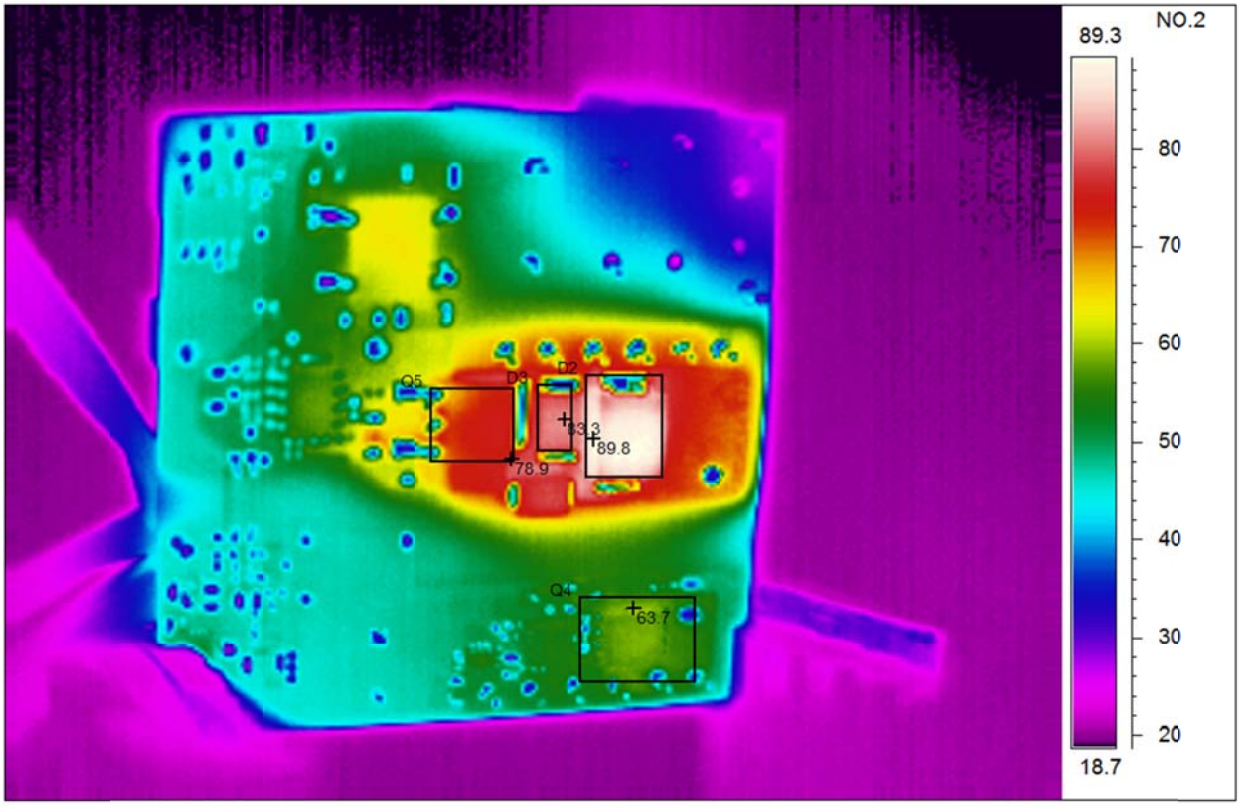
230VAC/50Hz								
Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.000	12.43	230.1	0.05280	0.2380		0.00	0.24	
0.295	12.42	230.1	0.0941	4.434	0.219	3.66	0.77	82.6%
0.742	12.40	230.1	0.1093	10.621	0.421	9.20	1.42	86.6%
1.140	12.39	230.1	0.1102	16.184	0.638	14.12	2.06	87.3%
1.490	12.38	230.1	0.1260	20.780	0.717	18.44	2.34	88.8%
1.888	12.37	230.1	0.1441	26.05	0.786	23.35	2.70	89.7%
2.237	12.35	230.1	0.1612	30.75	0.829	27.63	3.12	89.8%
2.636	12.34	230.1	0.1806	36.12	0.869	32.53	3.59	90.1%
2.985	12.33	230.0	0.1998	40.86	0.889	36.81	4.05	90.1%

4 Thermal Images

The output was loaded with 3A. The ambient temperature was 25C with no forced air flow.

4.1 115VAC/60Hz Input





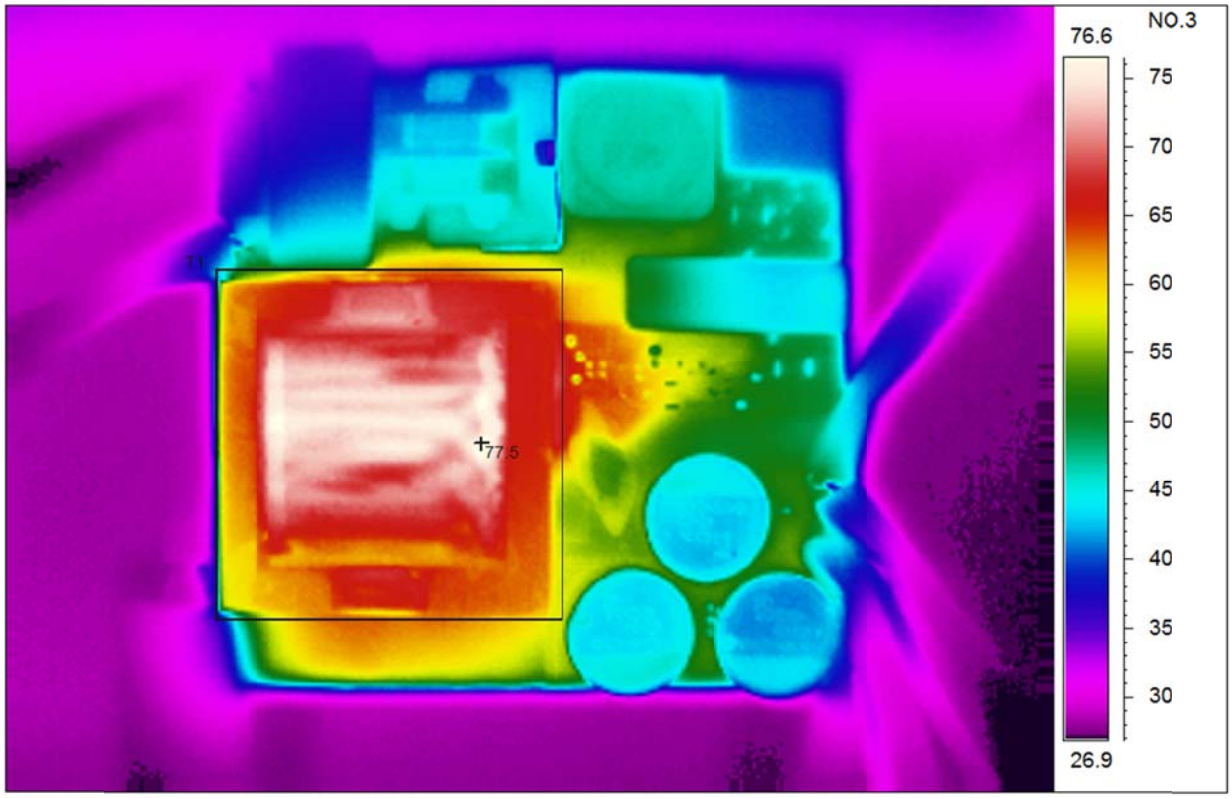
NO.1

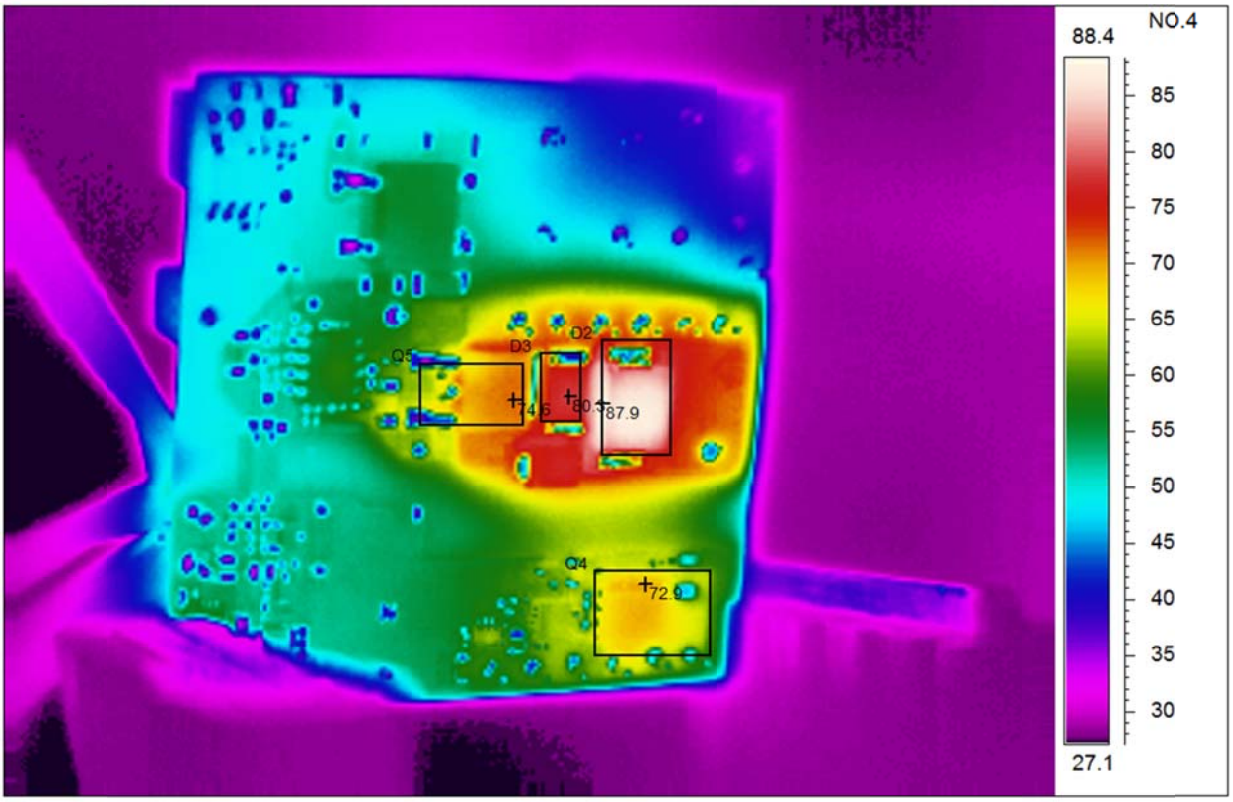
Area analysis	Value
T1 Max	74.6°C

NO.2

Area analysis	Value
D2Max	89.8°C
Q5Max	78.9°C
Q4Max	63.7°C
D3 Max	83.3°C

4.2 230VAC/50Hz Input





Area analysis	Value
T1 Max	77.5°C

NO.3

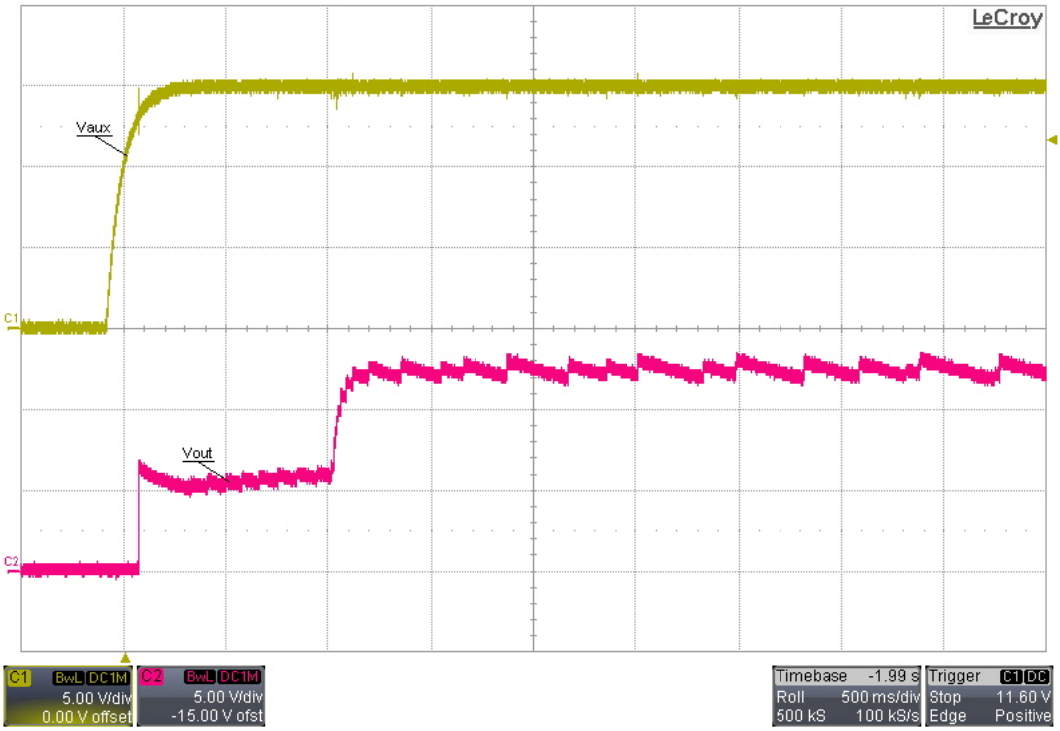
Area analysis	Value
D2Max	87.9°C
Q5Max	74.6°C
Q4Max	72.9°C
D3 Max	80.3°C

NO.4

5 Startup

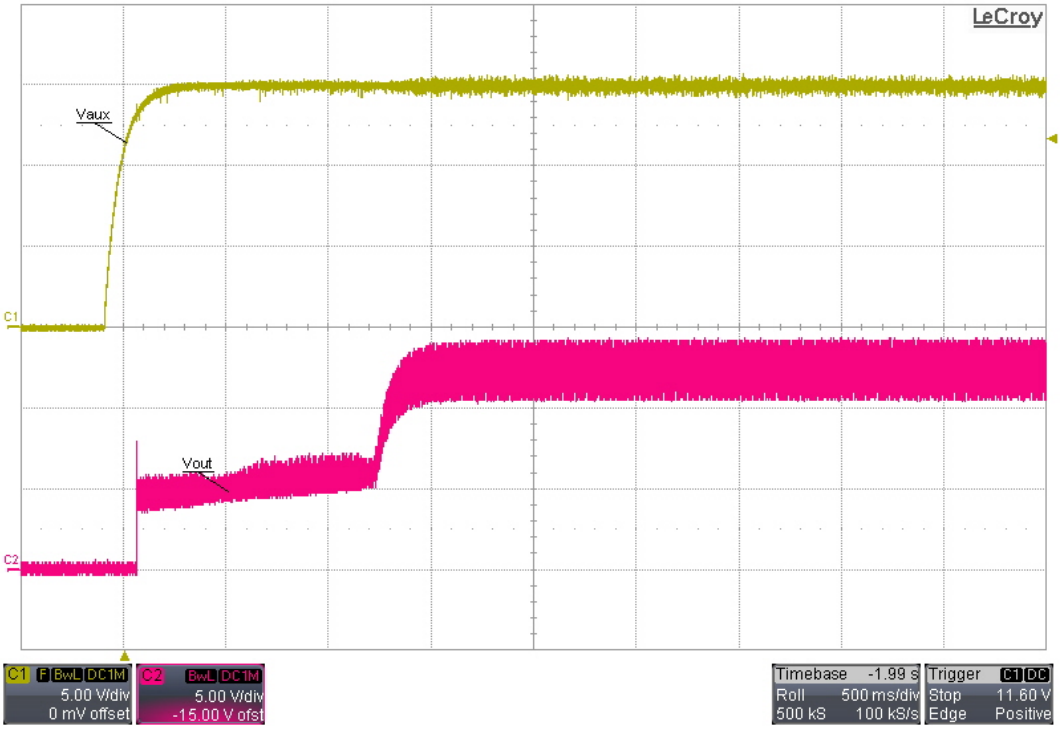
Channel 1 shows the auxiliary bias supply voltage. Channel 2 shows the output voltage.

5.1 115VAC/60Hz Startup – 0A Load

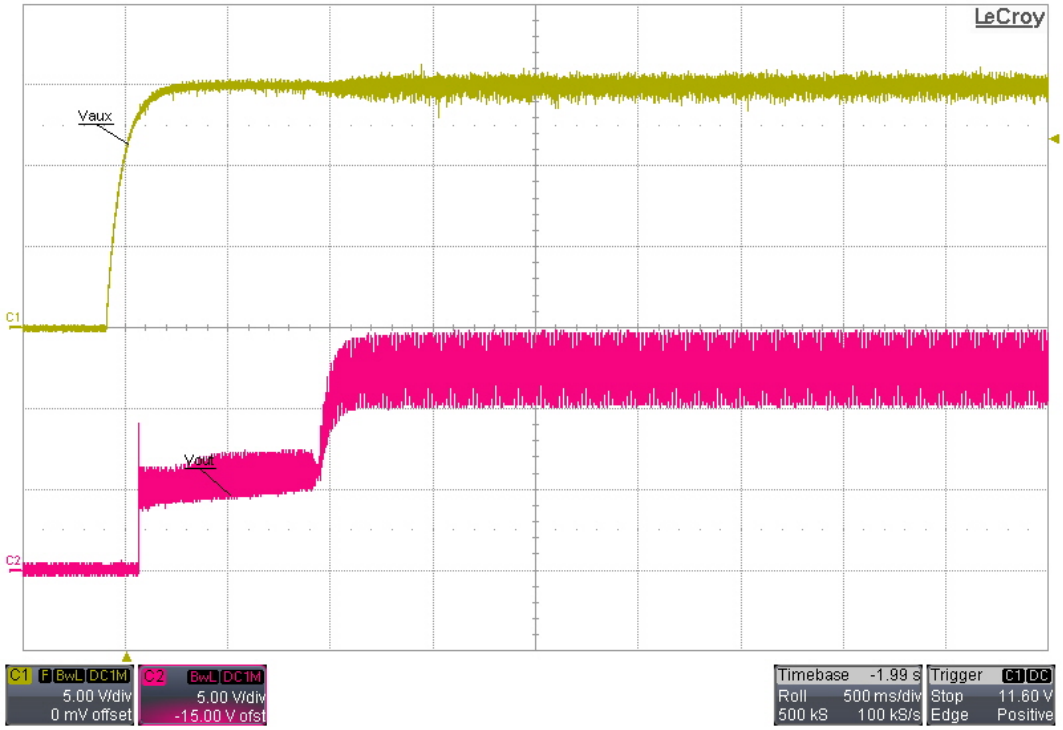


5.2 230VAC/50Hz Startup – 0A Load

5.3 115VAC/60Hz Startup – 4Ω Load

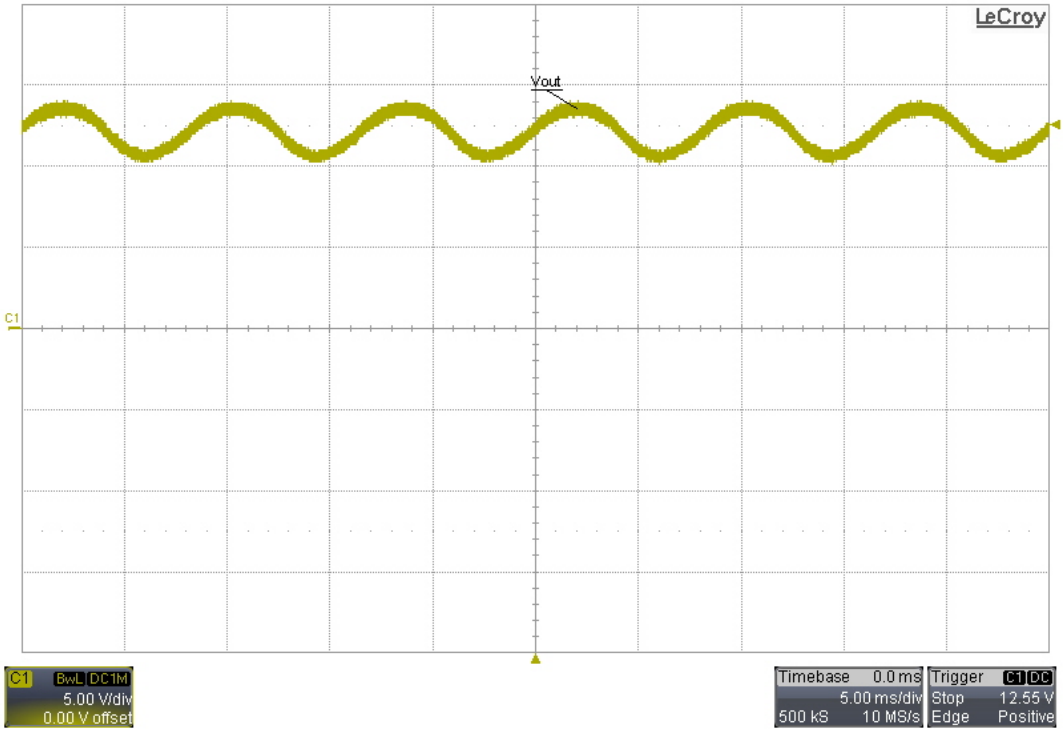


5.4 230VAC/50Hz Startup – 4Ω Load

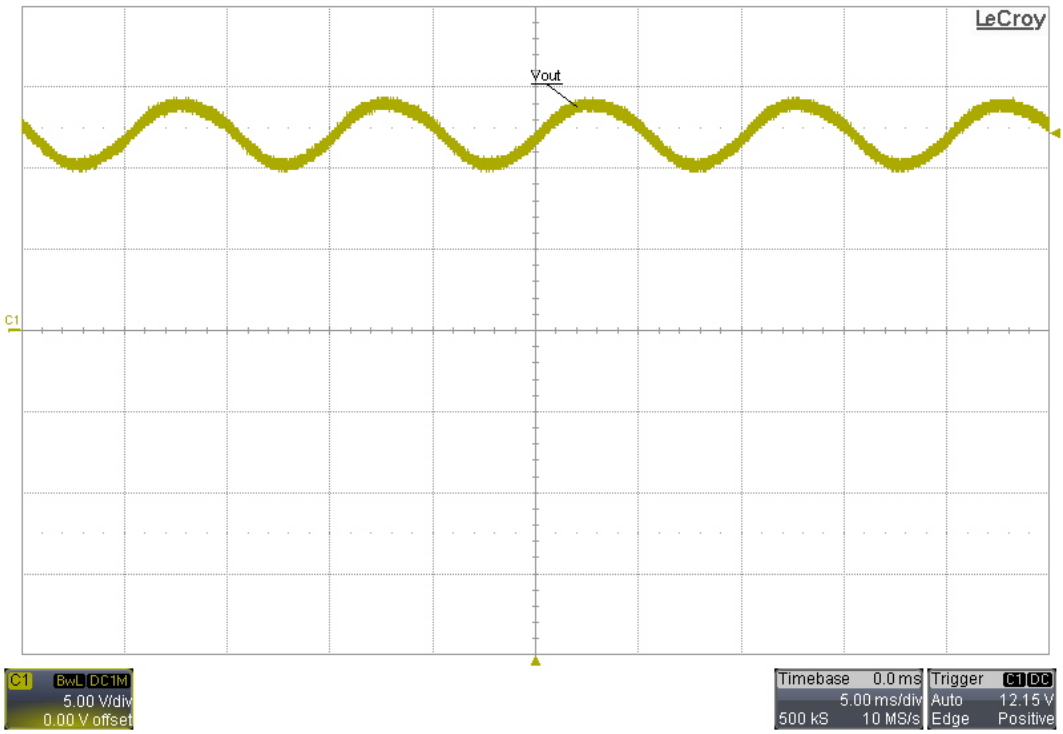


6 Output Ripple Voltage

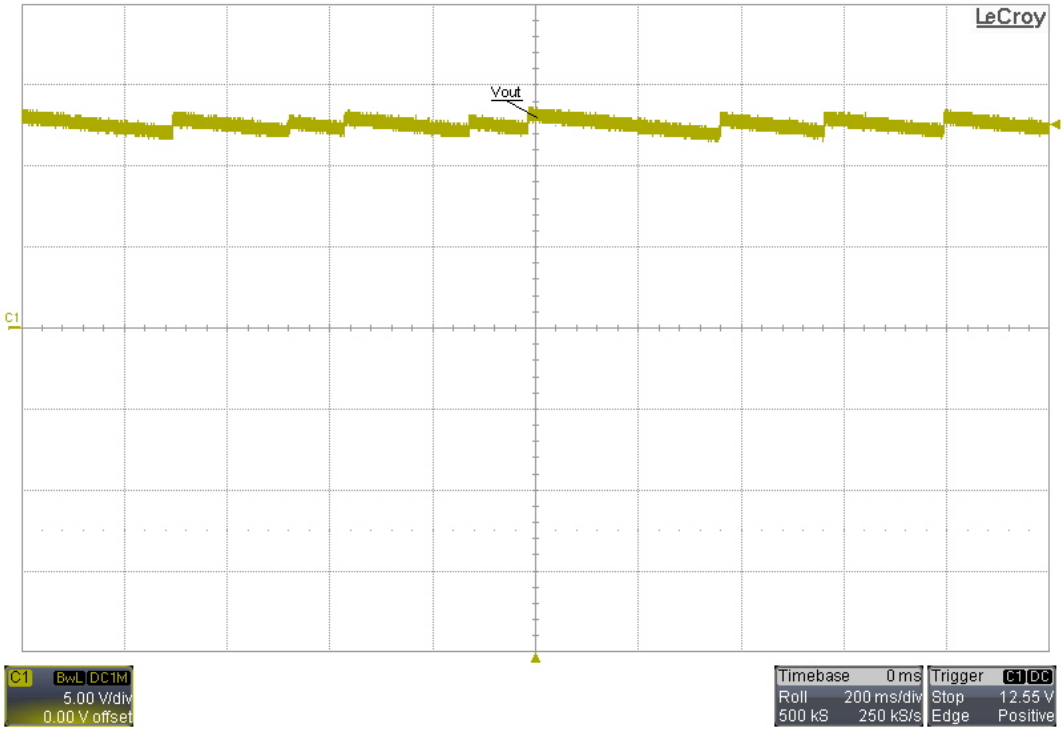
6.1 115VAC/60Hz Output Ripple Voltage – 3A Load



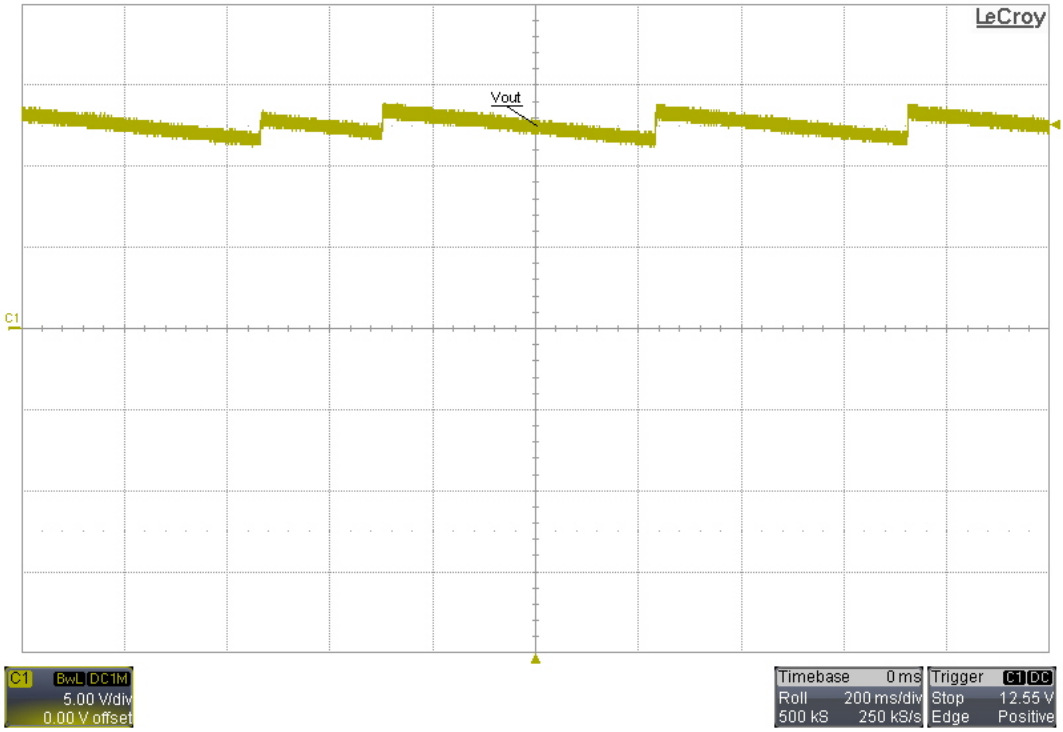
6.2 230VAC/50Hz Output Ripple Voltage – 3A Load



6.3 115VAC/60Hz Output Ripple Voltage – 0A Load

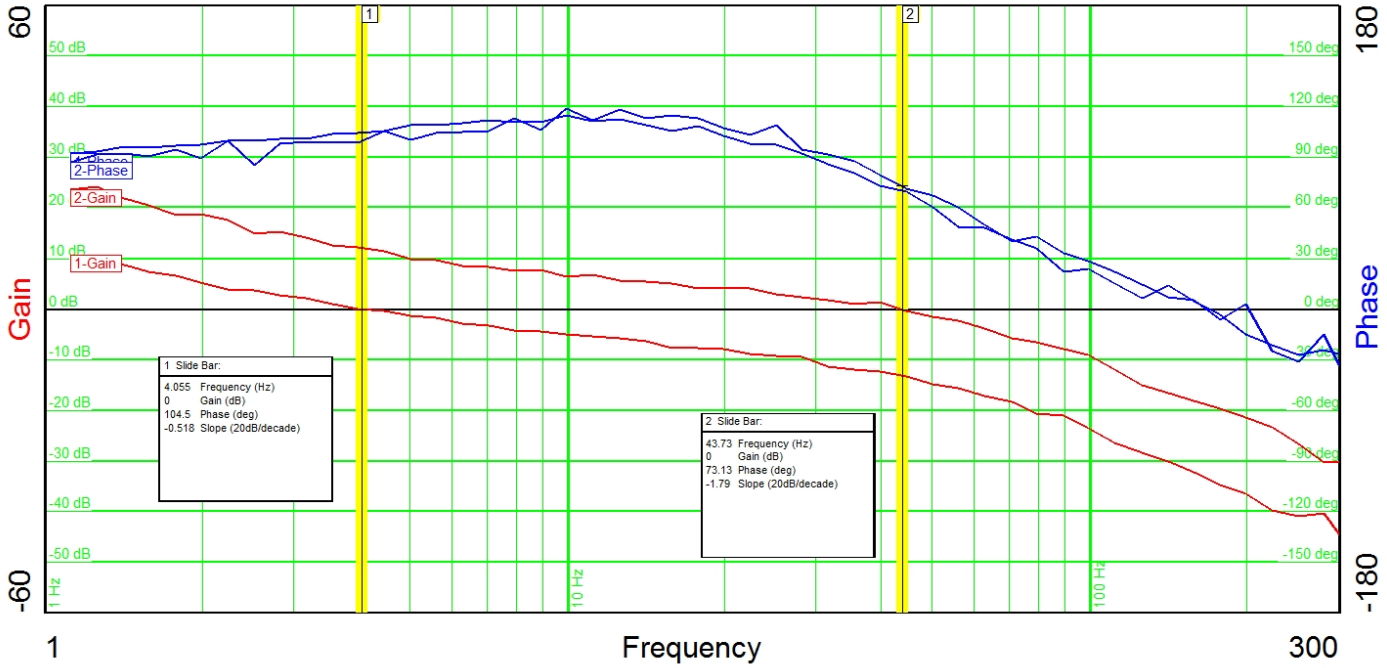


6.4 230VAC/50Hz Output Ripple Voltage – 0A Load



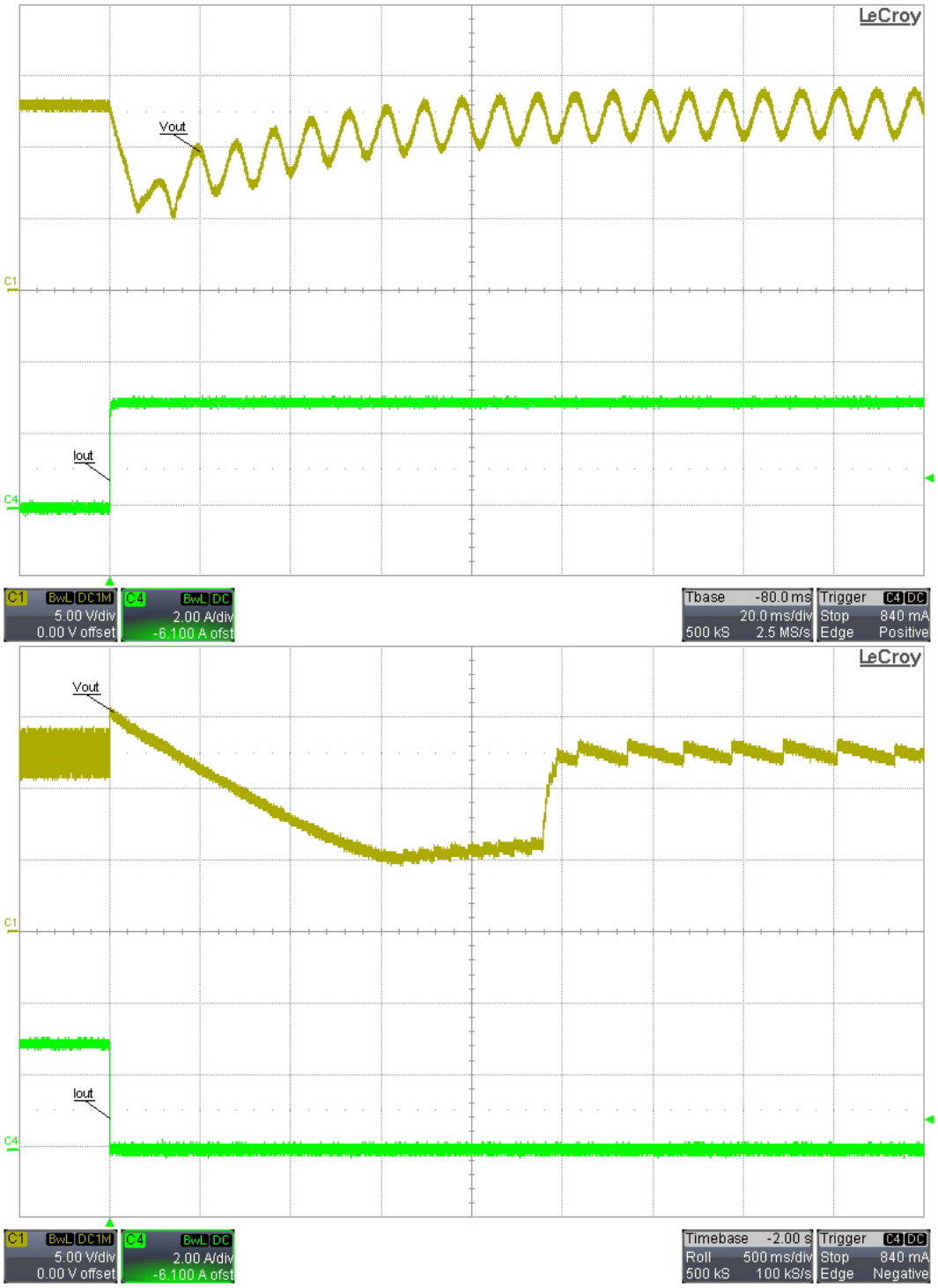
7 Frequency Response

The frequency response of the feedback loop measured at R19 is shown below. For the gain/phase plot #1, the input was set to 100VDC. For the gain/phase plot #2, the input was set to 375VDC. The output was loaded with 3A.

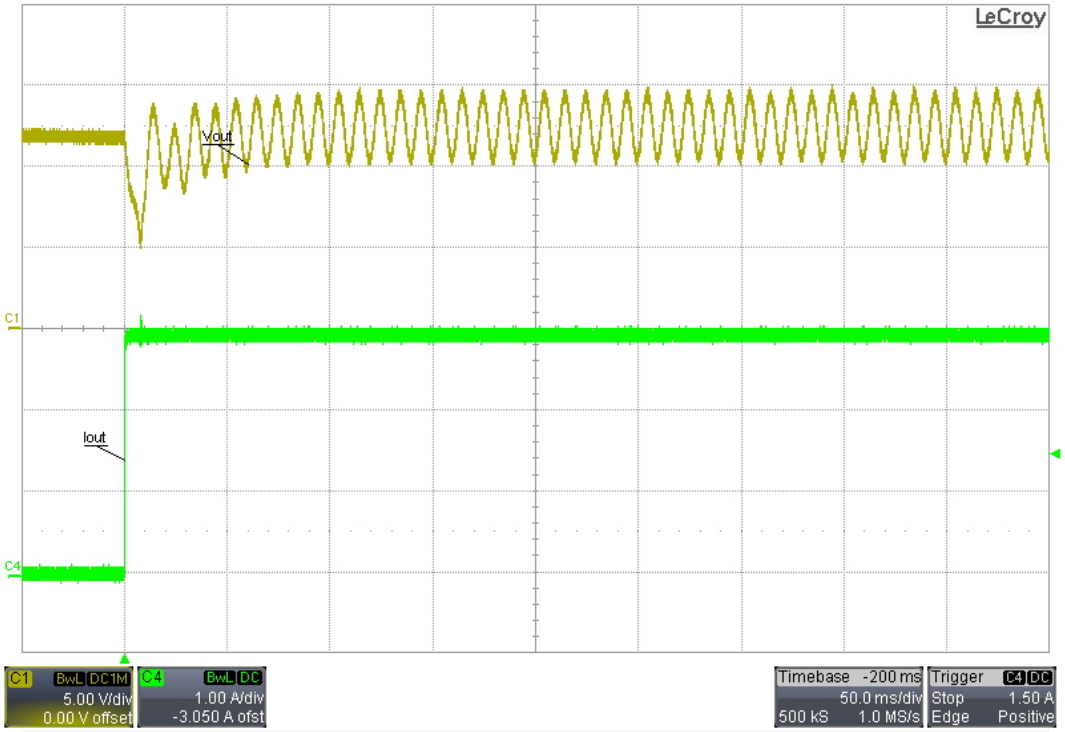


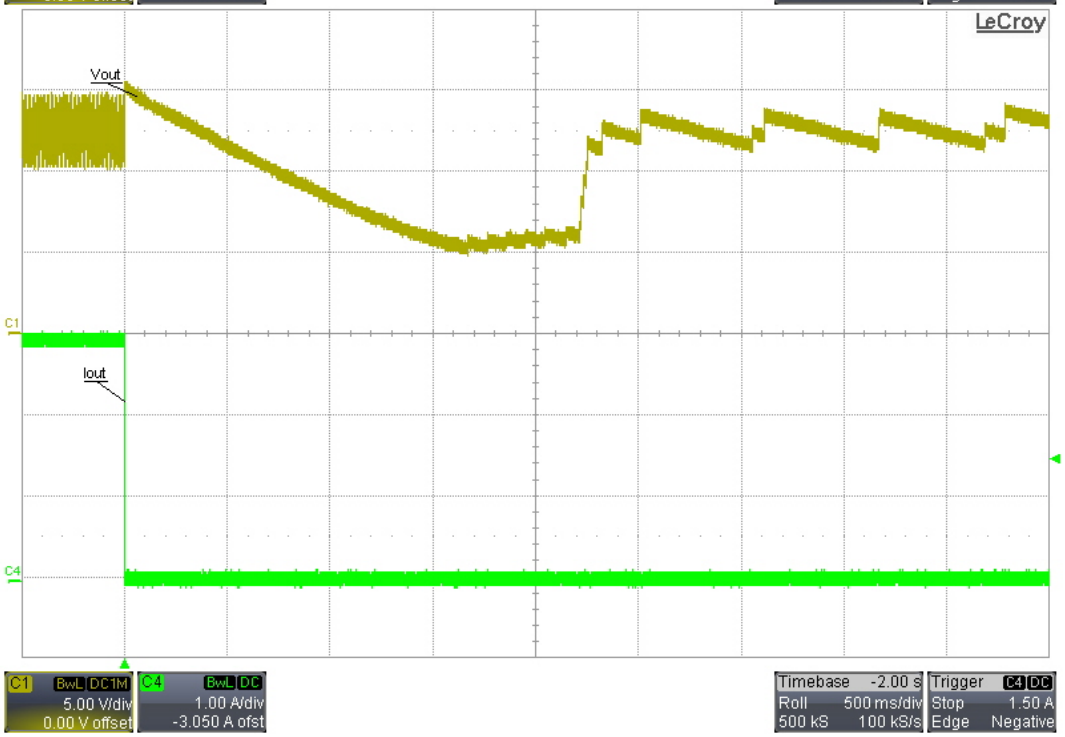
8 Load Transients

8.1 0A to 3A Transient – 115VAC/60Hz Input

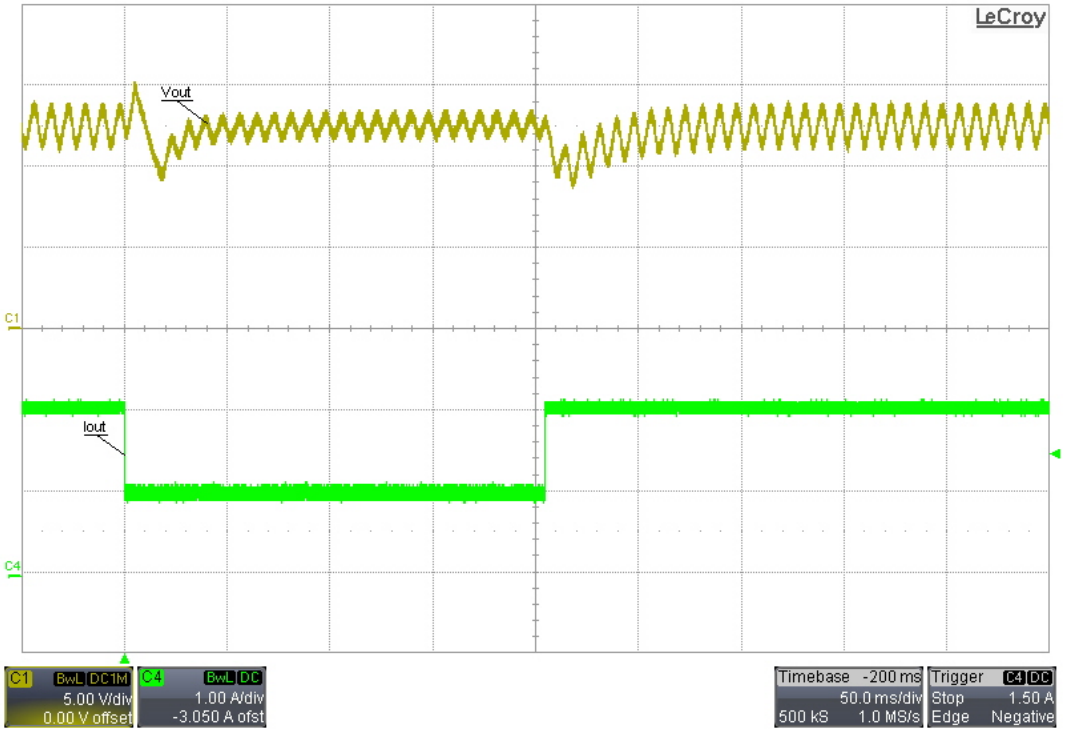


8.2 0A to 3A Transient – 230VAC/50Hz Input

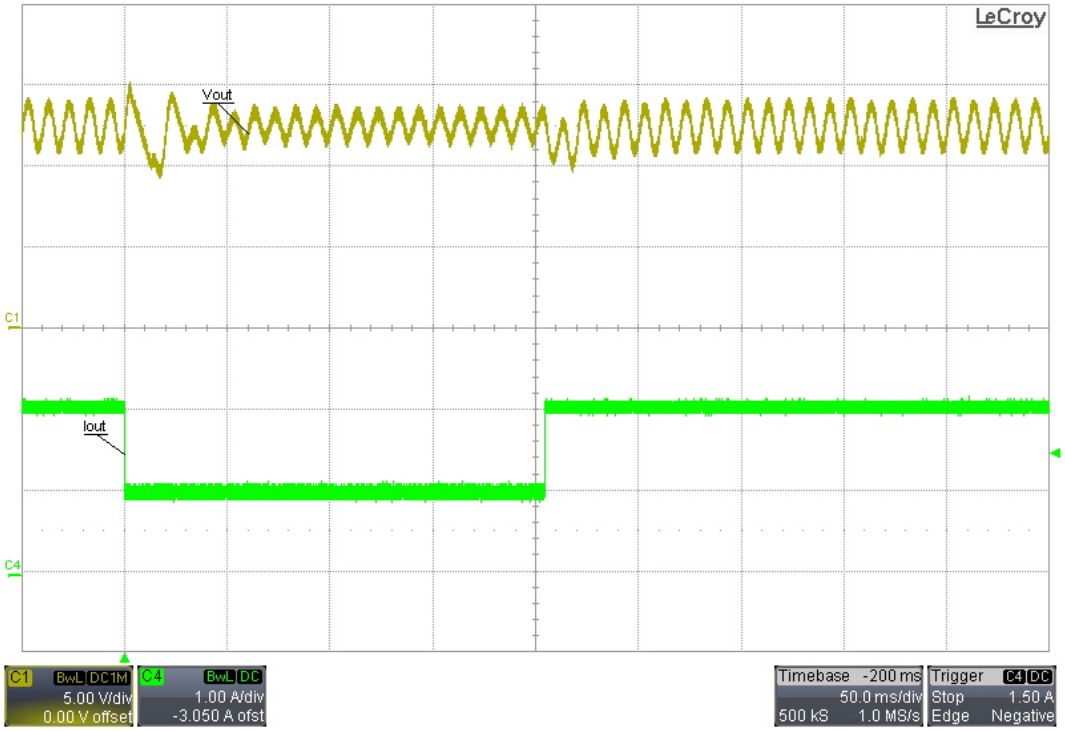




8.3 1A to 2A Transient – 115VAC/60Hz Input



8.4 1A to 2A Transient – 230VAC/50Hz Input

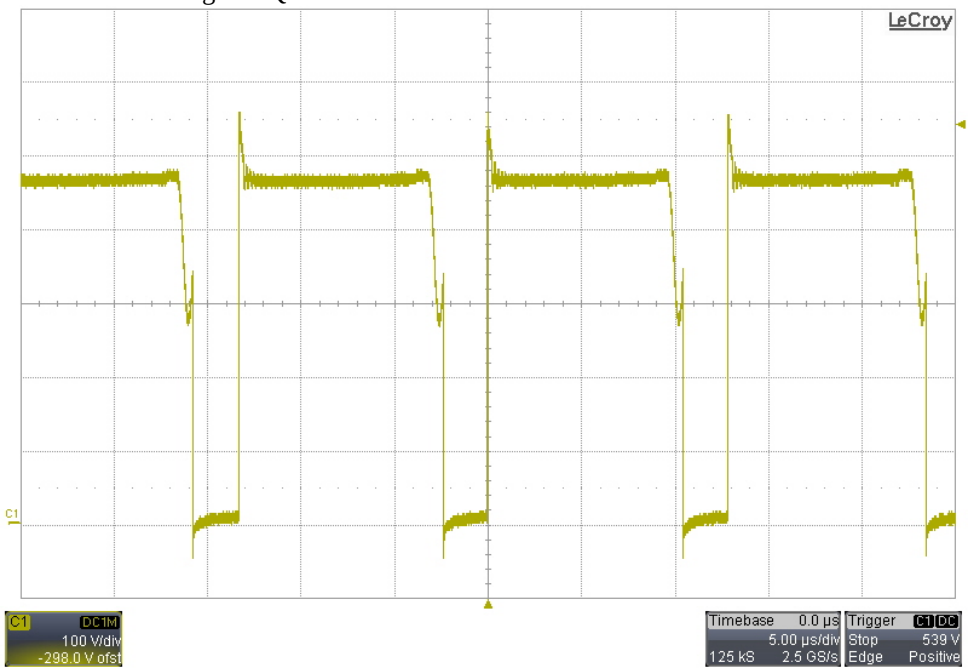


9 Switching Waveforms

The images below show the voltage waveforms on the switching devices within the supply. The input was 265VAC/50Hz. The output was loaded 3A.

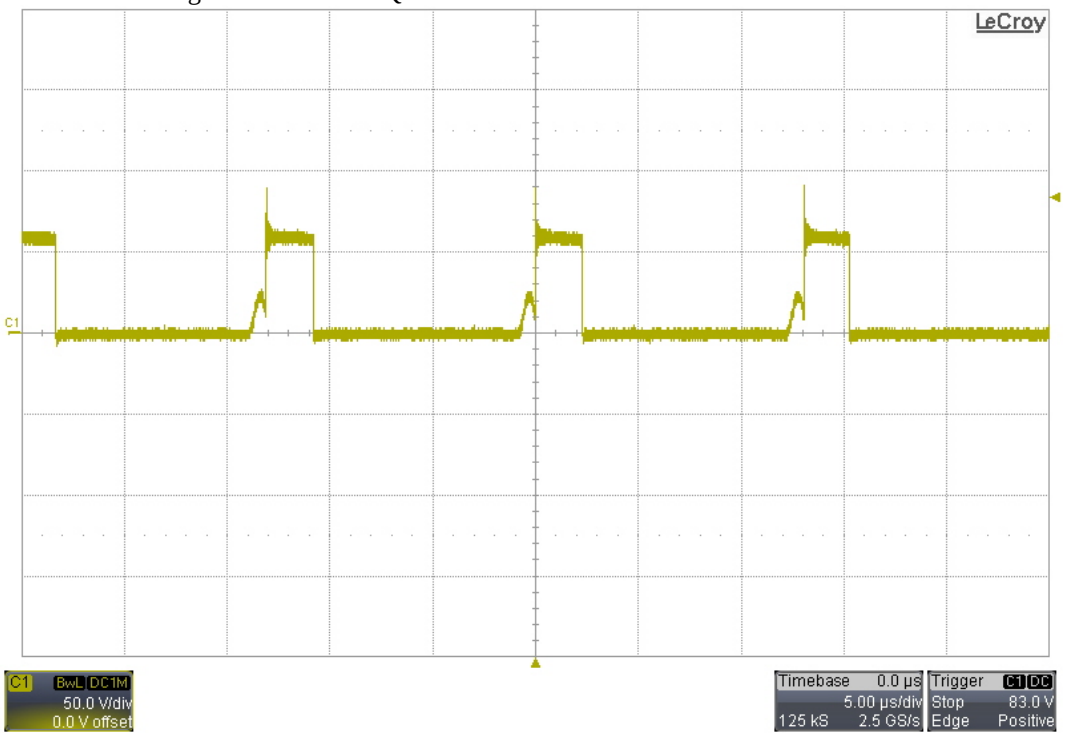
9.1 Primary Waveforms

The image below shows the drain voltage on Q5.

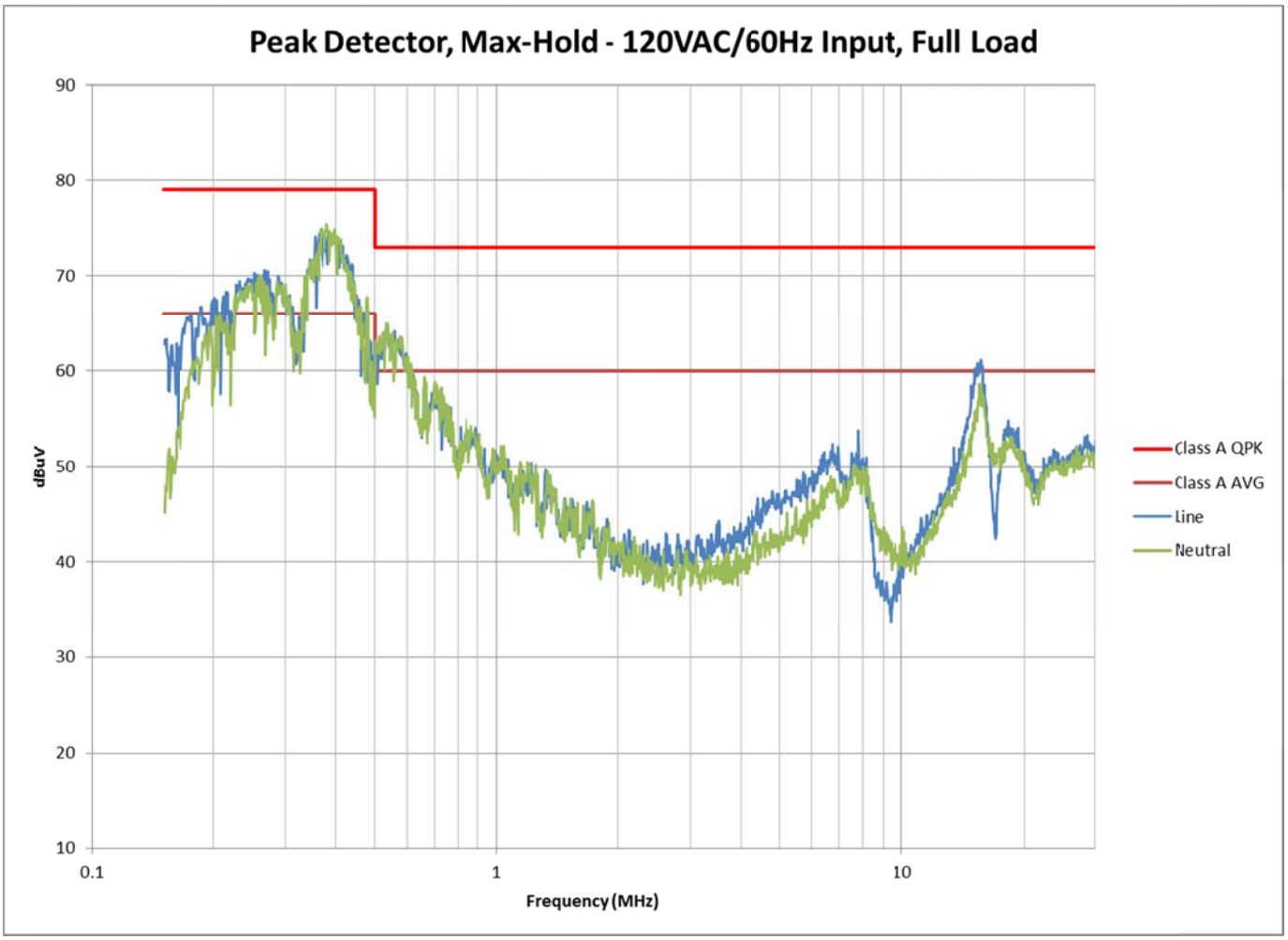


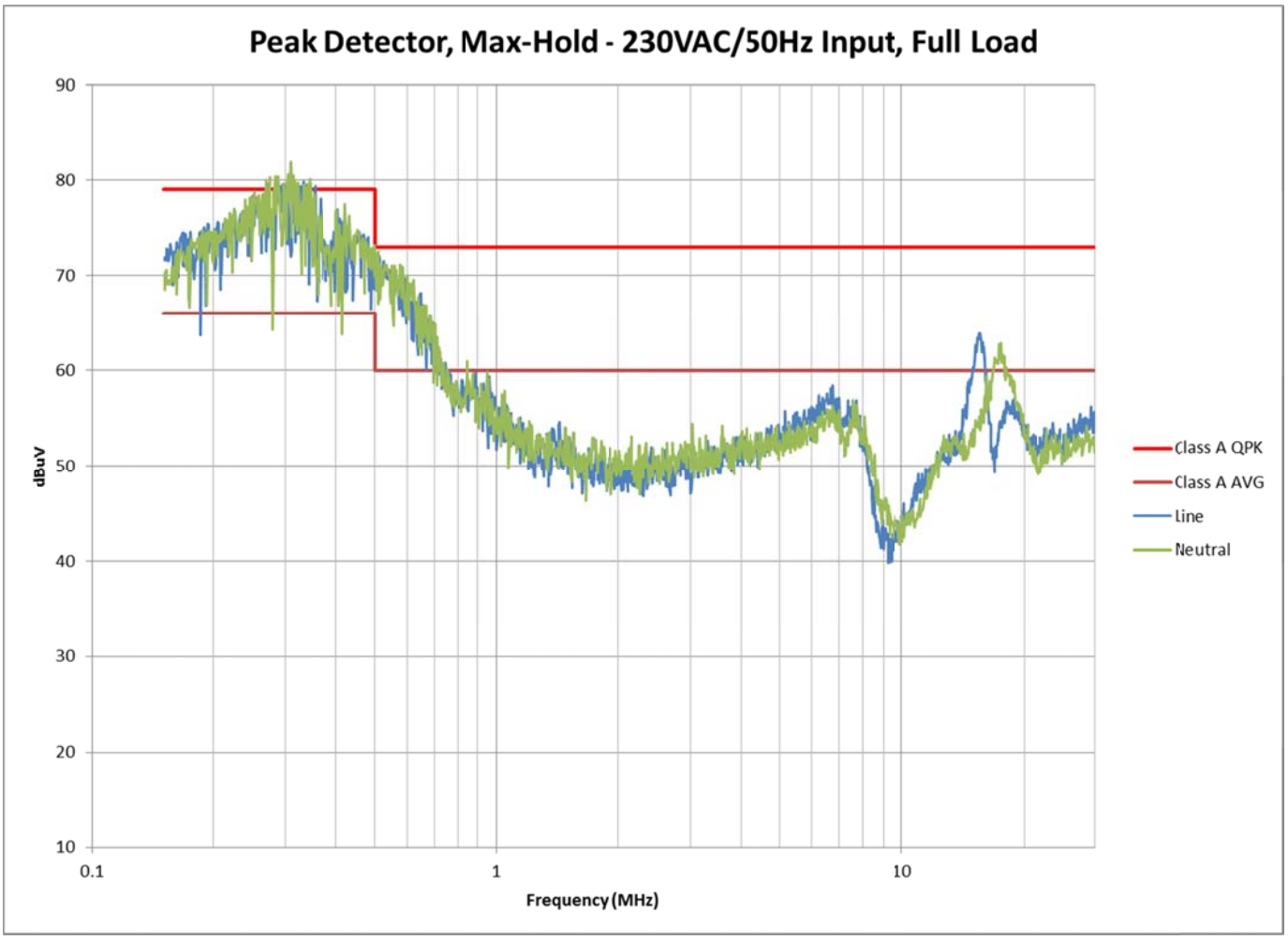
9.2 Secondary Waveforms

The image below shows the voltage on the drain of Q3.



10 Conducted Emissions




Peak Detector, Max-Hold - 230VAC/50Hz Input, Full Load
90
80
70
60
50
40
30
20
10
dBuV
0.1
1
10
Frequency (MHz)
Class A QPK
Class A AVG
Line
Neutral

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