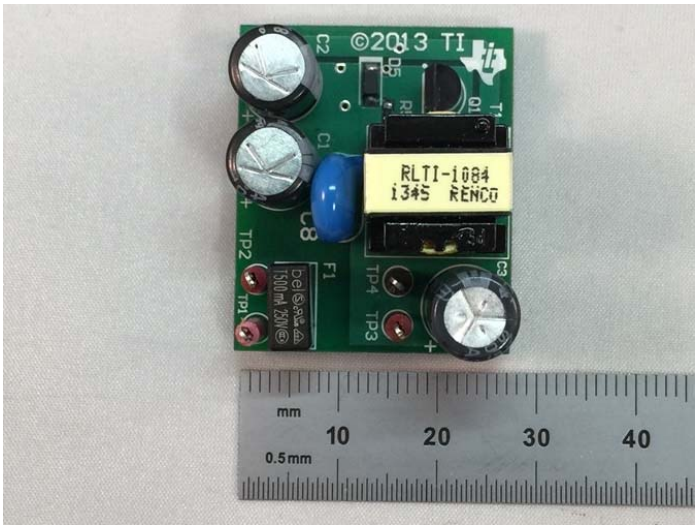
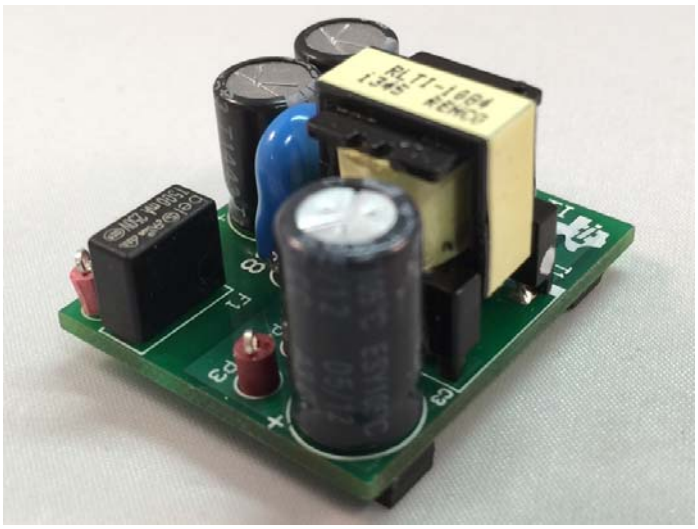
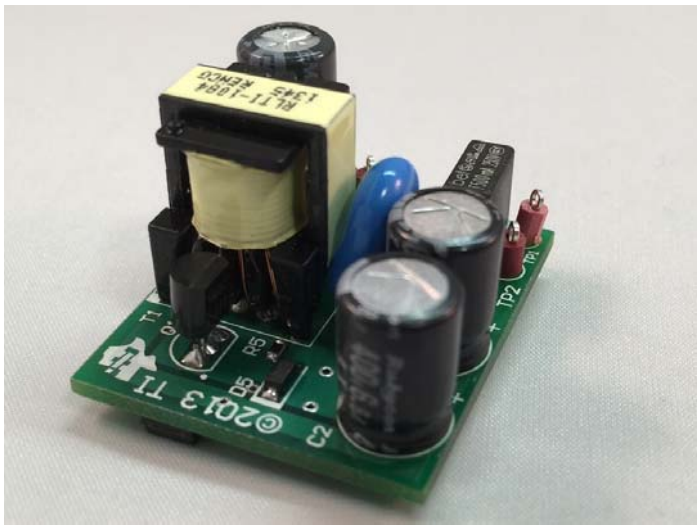
1 Photos

The photographs below show the PMP8787 Rev B prototype assembly. This circuit was built using a PMP8787 Rev A PCB.





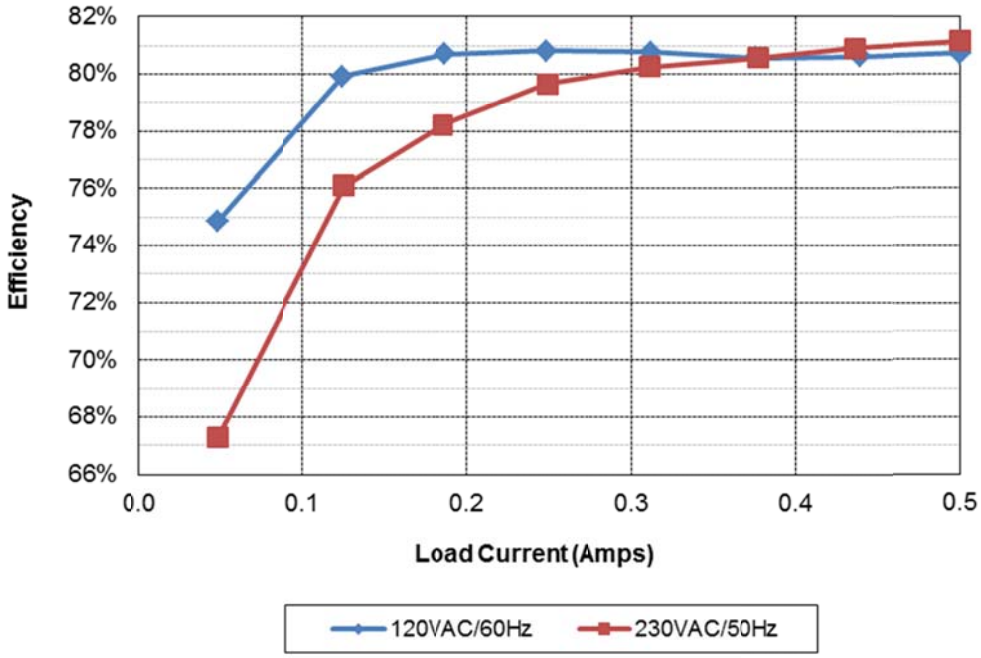


2 Standby Power (No Load)

Input Voltage	Input Power
120VAC/60Hz	23mW
230VAC/50Hz	37mW

3 Efficiency

3.1 Chart



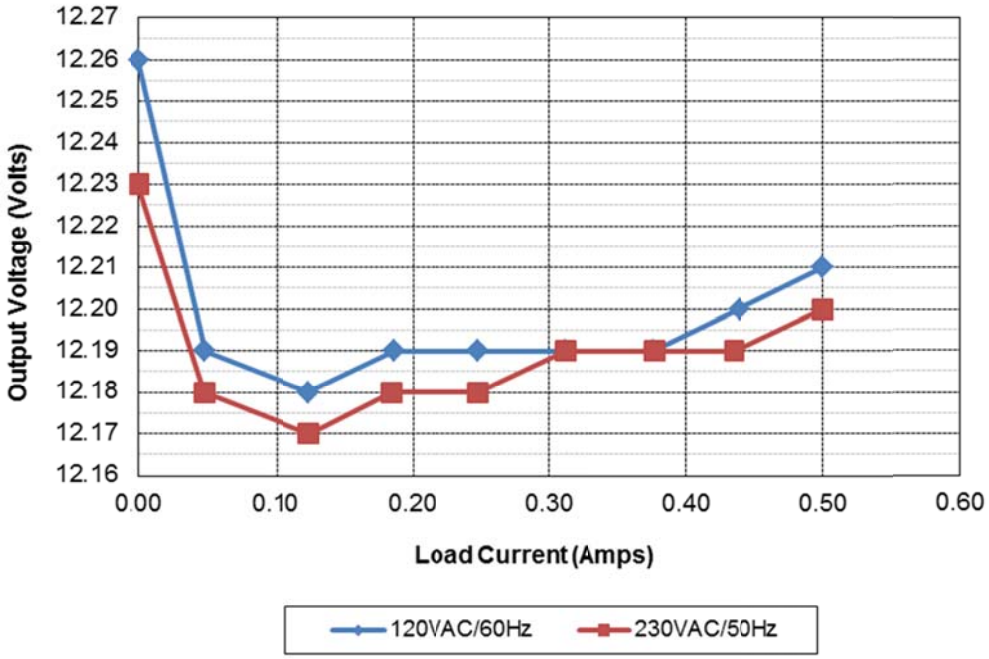
3.2 Average Efficiency

Vin	Pin	Vout	Iout	Load	Efficiency	Avg. Eff.
120VAC/60Hz	0.79	12.19	0.048	10%	74.85%	
	1.90	12.18	0.124	25%	79.92%	**80.50%**
	3.74	12.19	0.248	50%	80.81%	
	5.69	12.19	0.376	75%	80.57%	
	7.56	12.21	0.499	100%	80.71%	
230VAC/50Hz	0.87	12.18	0.048	10%	67.29%	
	2.00	12.17	0.125	25%	76.09%	**79.35%**
	3.80	12.18	0.249	50%	79.64%	
	5.71	12.19	0.377	75%	80.56%	
	7.52	12.20	0.500	100%	81.14%	

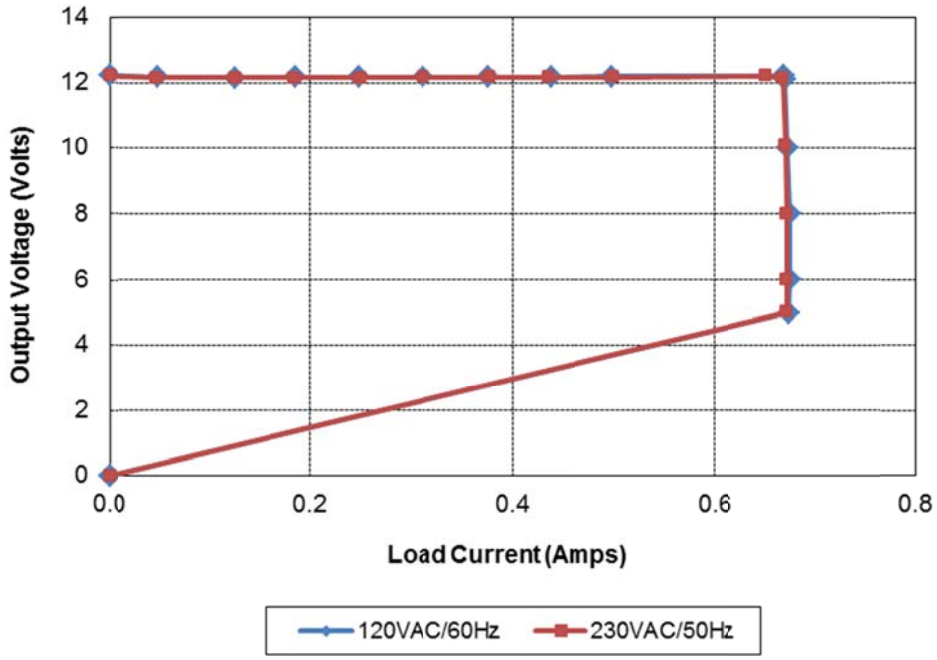
3.3 Efficiency Data

120VAC/60Hz								
Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.000	48.23	119.9	0.00612	0.0898		0.00	0.090	
0.0655	48.22	120.0	0.0926	3.63	0.324	3.16	0.47	87.0%
0.162	48.22	120.0	0.1963	8.74	0.371	7.81	0.93	89.4%
0.234	48.22	120.0	0.260	12.64	0.401	11.28	1.36	89.3%
0.312	48.21	120.0	0.327	16.85	0.429	15.04	1.81	89.3%
0.385	48.21	120.0	0.386	20.78	0.449	18.56	2.22	89.3%
0.462	48.22	120.0	0.448	24.90	0.463	22.28	2.62	89.5%
0.543	48.22	120.0	0.509	29.24	0.479	26.18	3.06	89.5%
0.624	48.23	120.0	0.568	33.60	0.493	30.10	3.50	89.6%
230VAC/50Hz								
Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.000	48.25	230.0	0.00792	0.0989		0.00	0.099	
0.0645	48.24	230.0	0.0616	3.66	0.258	3.11	0.55	85.0%
0.161	48.23	230.0	0.1255	8.71	0.302	7.77	0.94	89.2%
0.232	48.23	230.0	0.172	12.47	0.315	11.19	1.28	89.7%
0.313	48.23	230.0	0.224	16.74	0.326	15.10	1.64	90.2%
0.386	48.23	230.0	0.268	20.60	0.344	18.62	1.98	90.4%
0.460	48.23	230.0	0.310	24.52	0.463	22.19	2.33	90.5%
0.543	48.23	230.0	0.354	28.93	0.356	26.19	2.74	90.5%
0.625	48.23	229.9	0.392	33.27	0.369	30.14	3.13	90.6%

4 Voltage Regulation



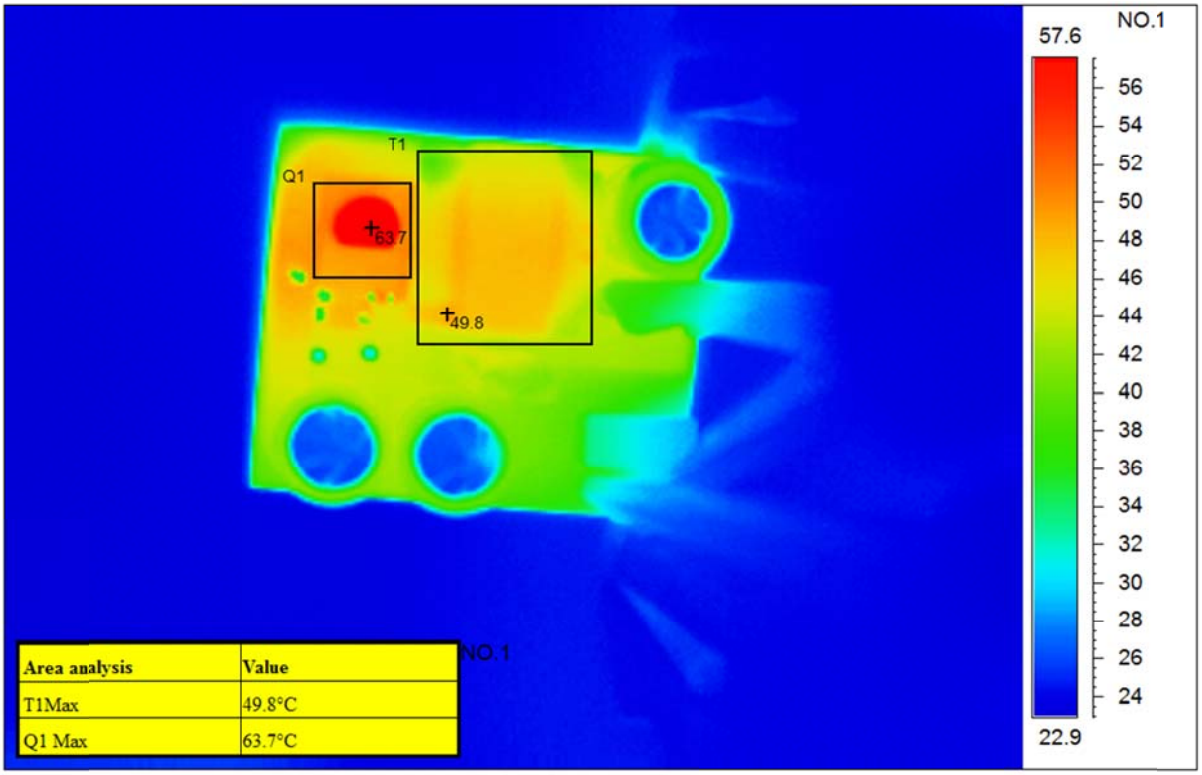
5 V-I Curve


14
12
10
8
6
4
2
0
Output Voltage (Volts)
0.0
0.2
0.4
0.6
0.8
Load Current (Amps)
120VAC/60Hz
230VAC/50Hz

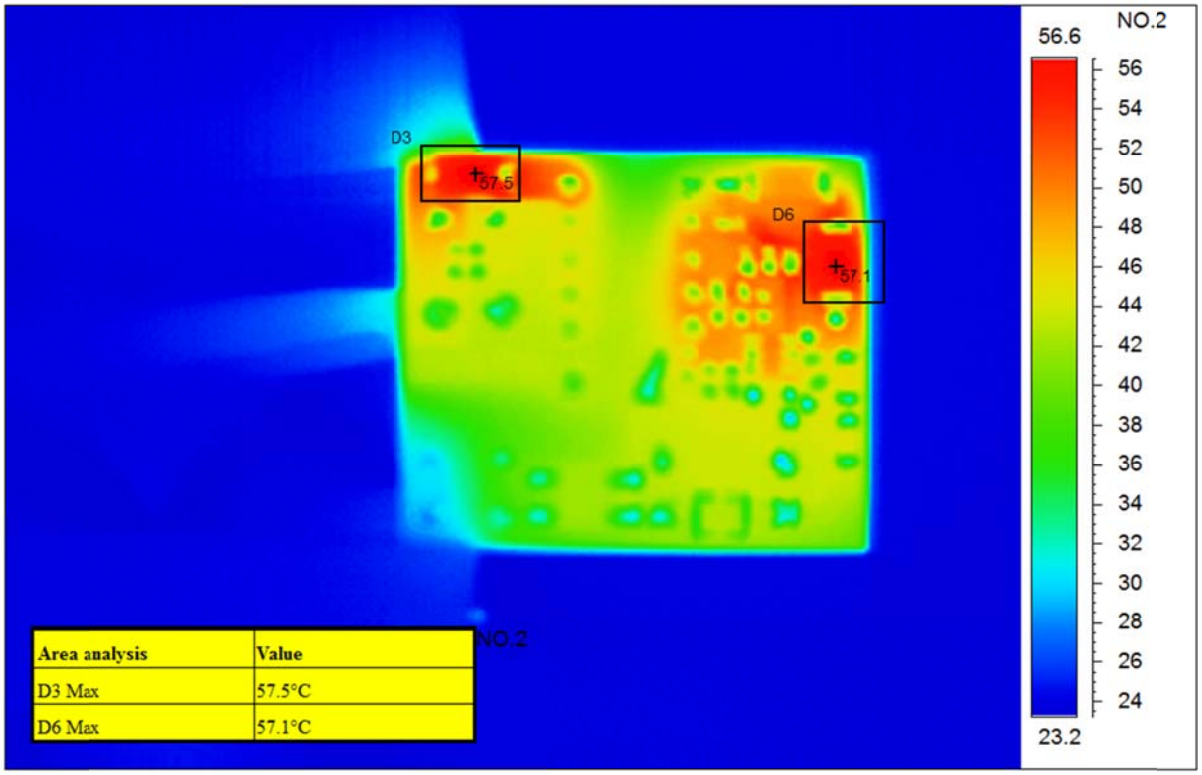
6 Thermal Images

The thermal images below show the assembly with loaded with 500mA. The ambient temperature was 25ºC, with no forced air.

6.1 120VAC/60Hz

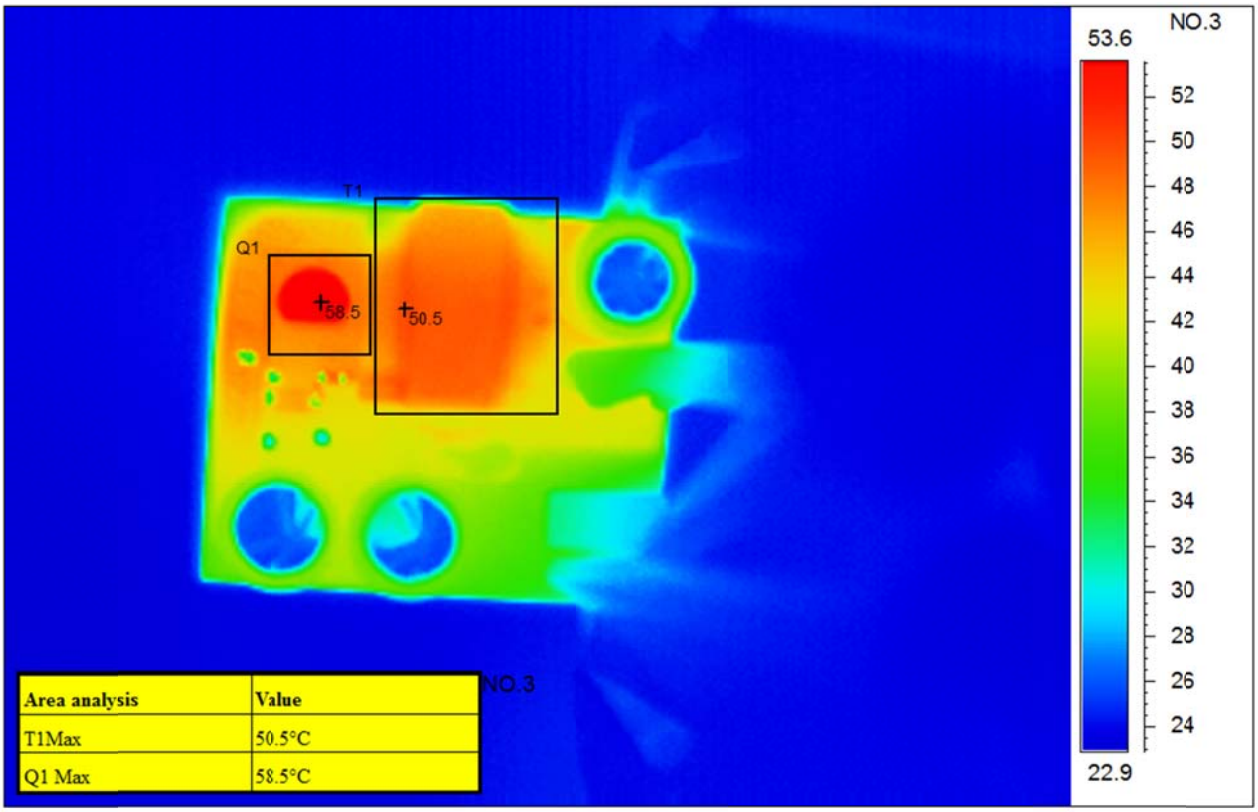


Area analysis	Value
T1Max	49.8°C
Q1 Max	63.7°C

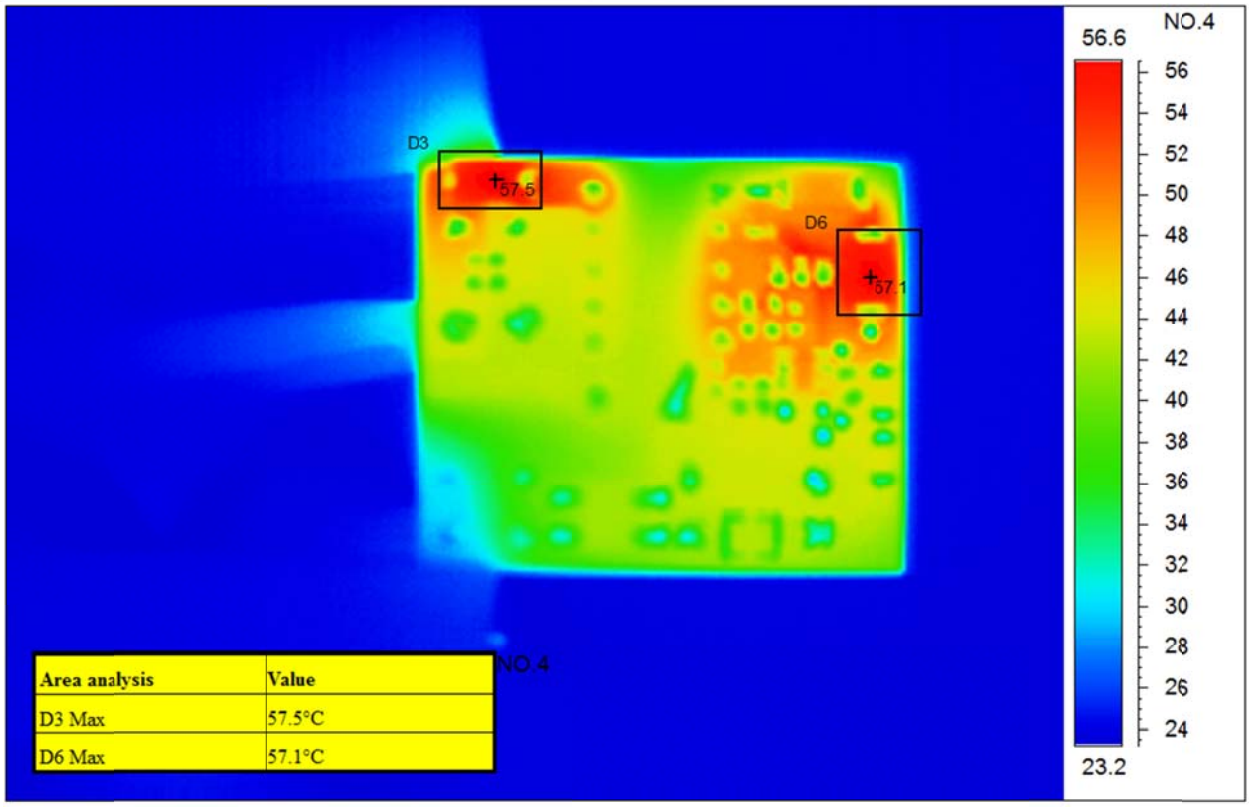


Area analysis	Value
D3 Max	57.5°C
D6 Max	57.1°C

6.2 230VAC/50Hz



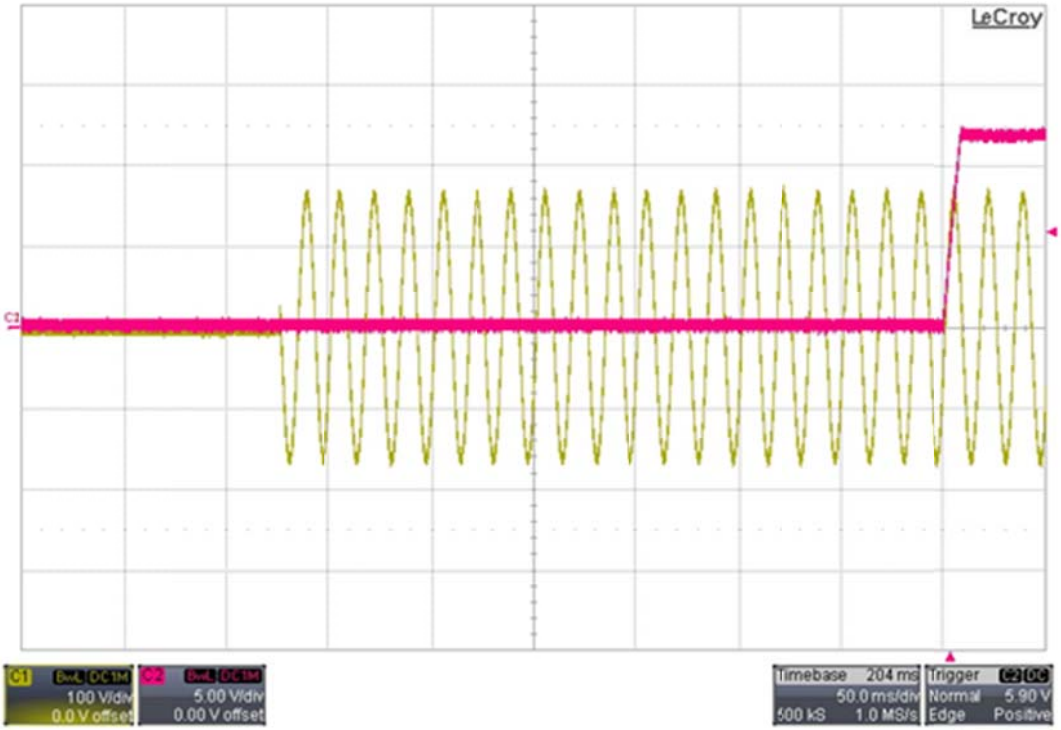
Area analysis	Value
T1Max	50.5°C
Q1 Max	58.5°C



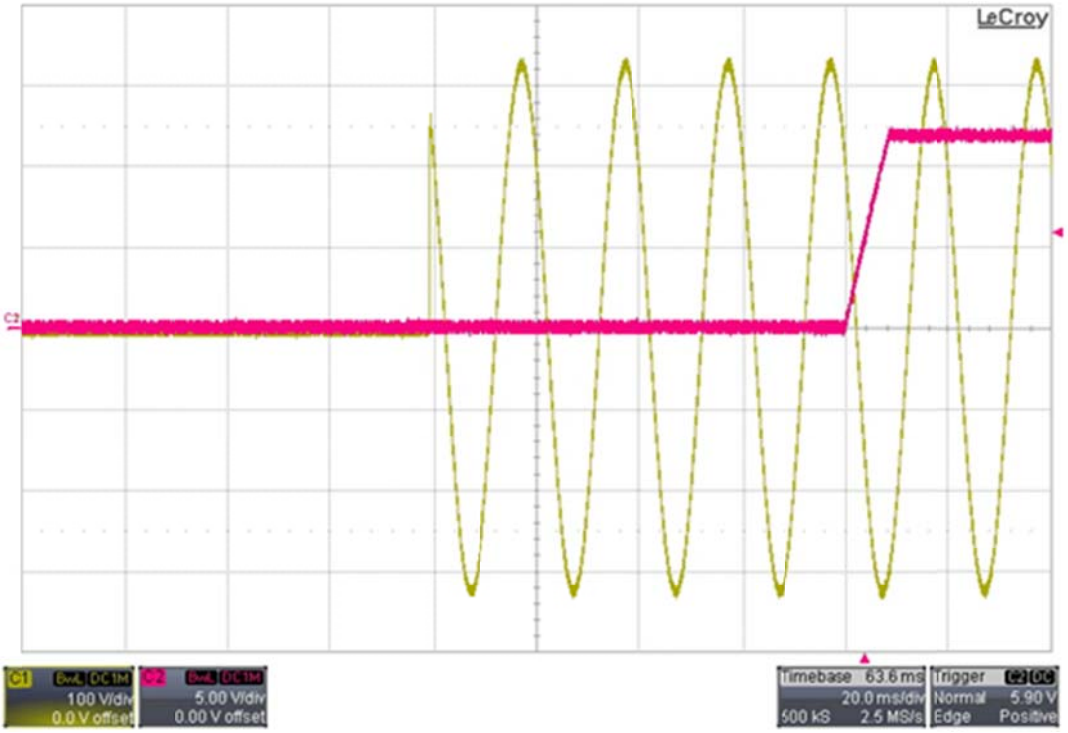
Area analysis	Value
D3 Max	57.5°C
D6 Max	57.1°C

7 Startup

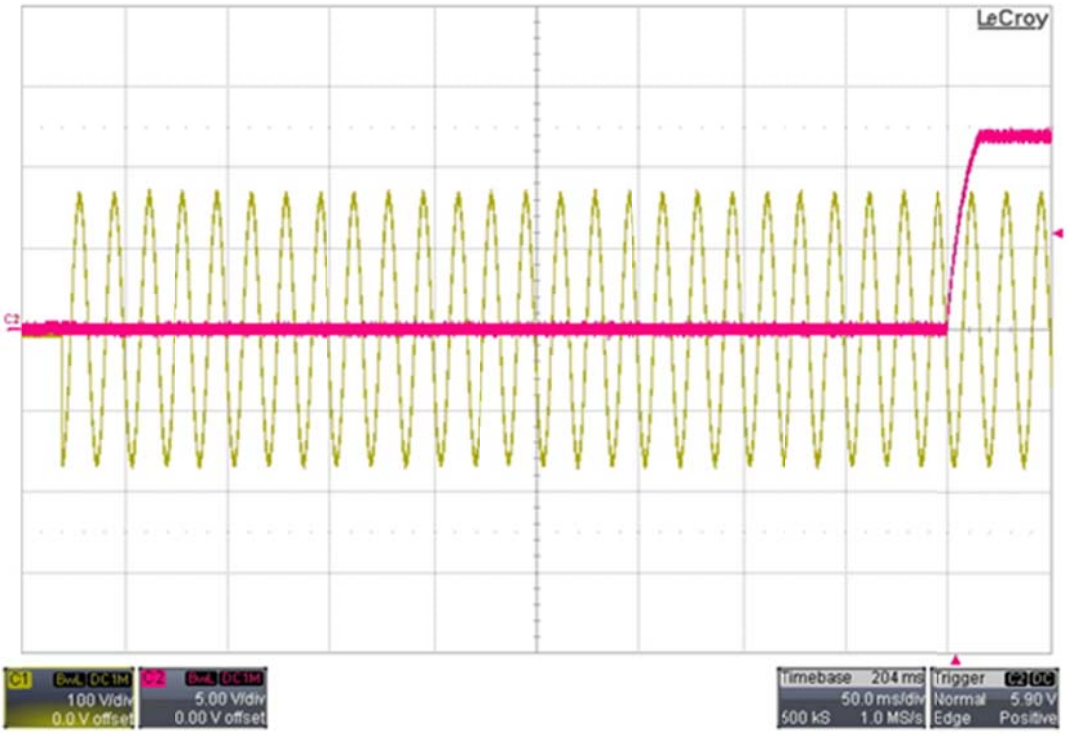
7.1 120VAC/60Hz – No Load



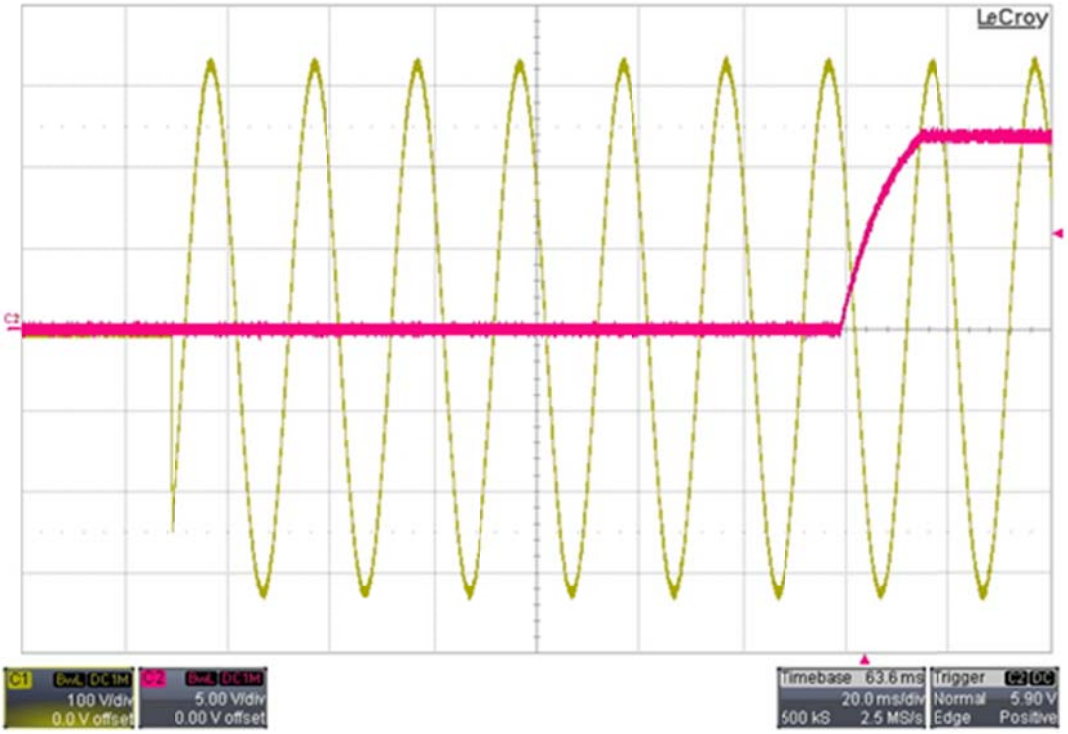
7.2 230VAC/50Hz – No Load



7.3 120VAC/60Hz – 24Ω Load

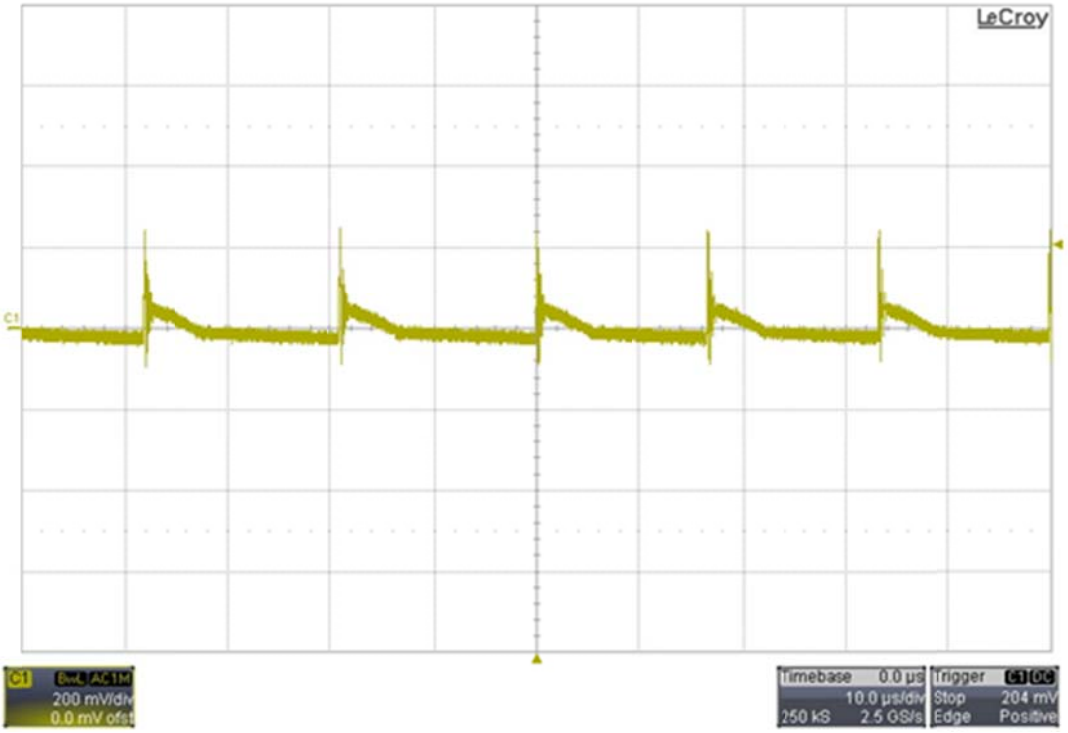


7.4 230VAC/50Hz –24Ω Load

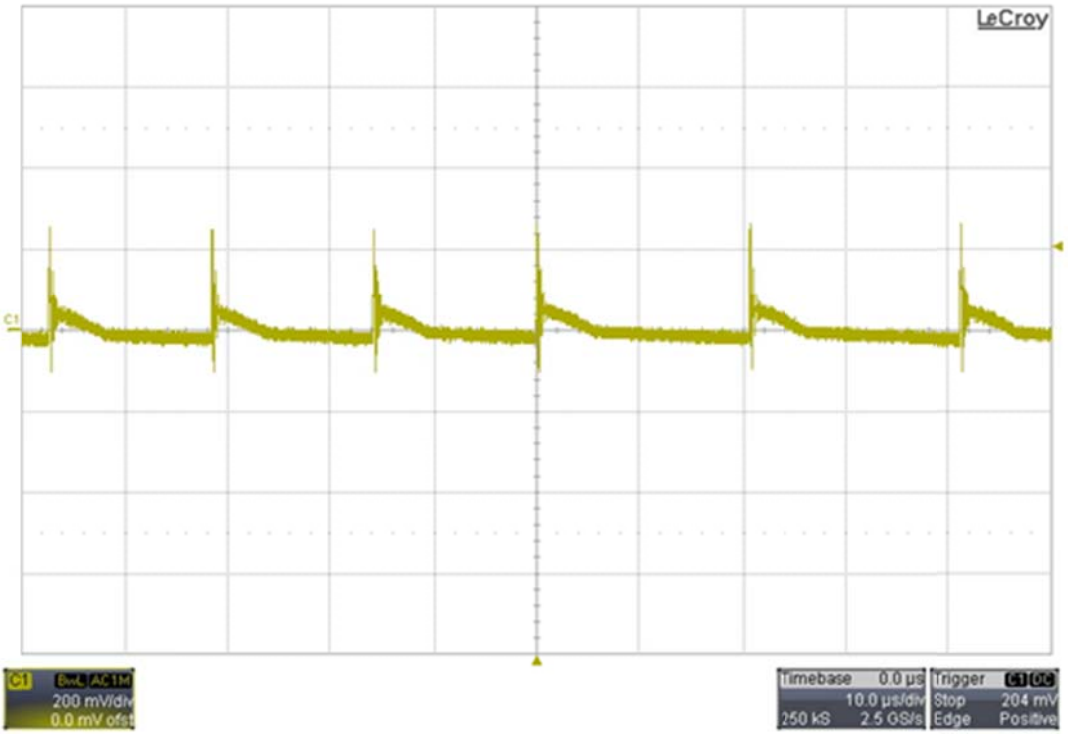


8 Output Ripple Voltage

8.1 120VAC/60Hz –0.5A Load

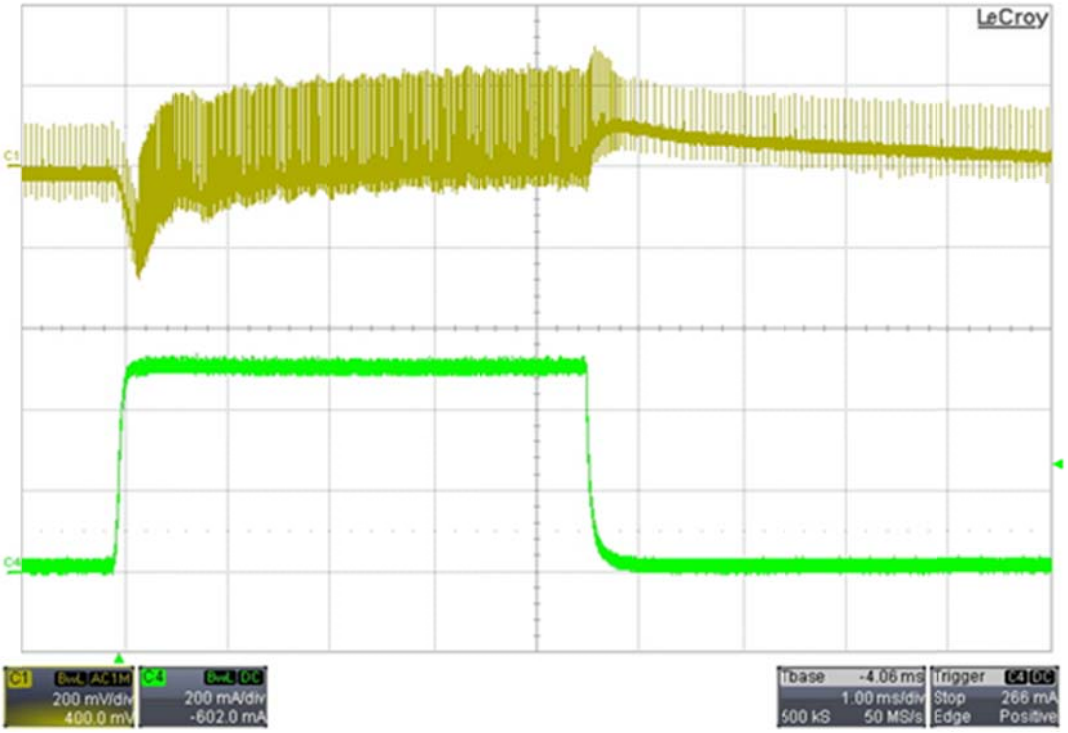


8.2 230VAC/50Hz –0.5A Load

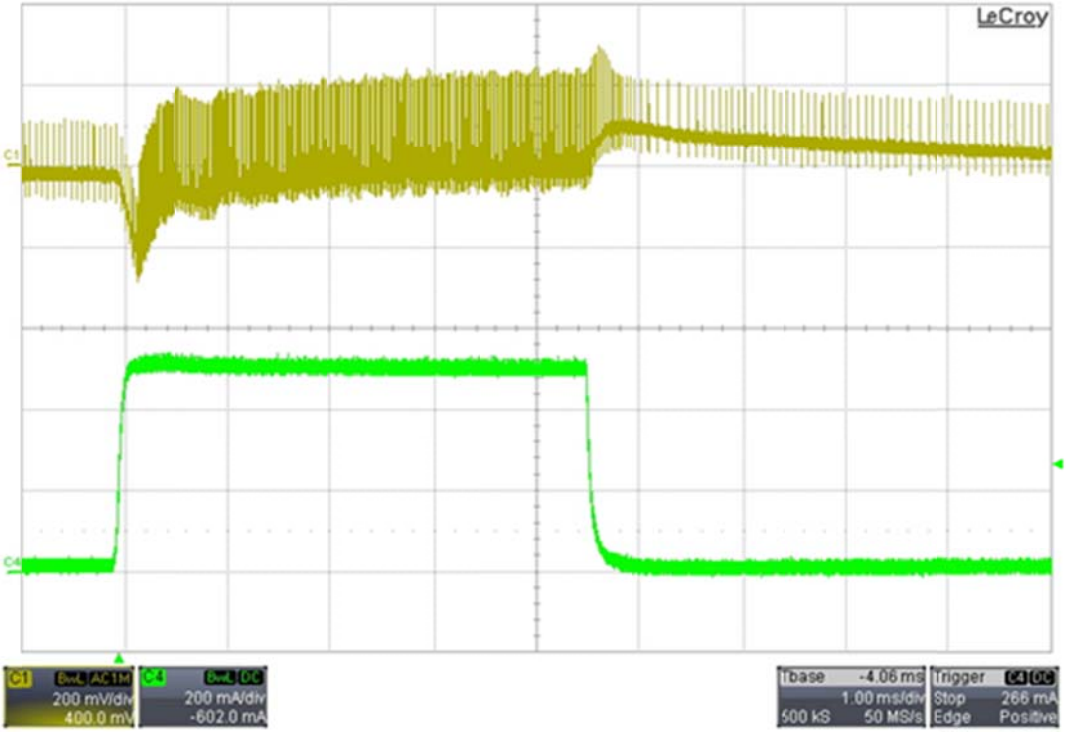


9 Load Transients

9.1 10mA to 0.5A Transient; 120VAC/60Hz Input



9.2 10mA to 0.5A Transient; 230VAC/50Hz Input

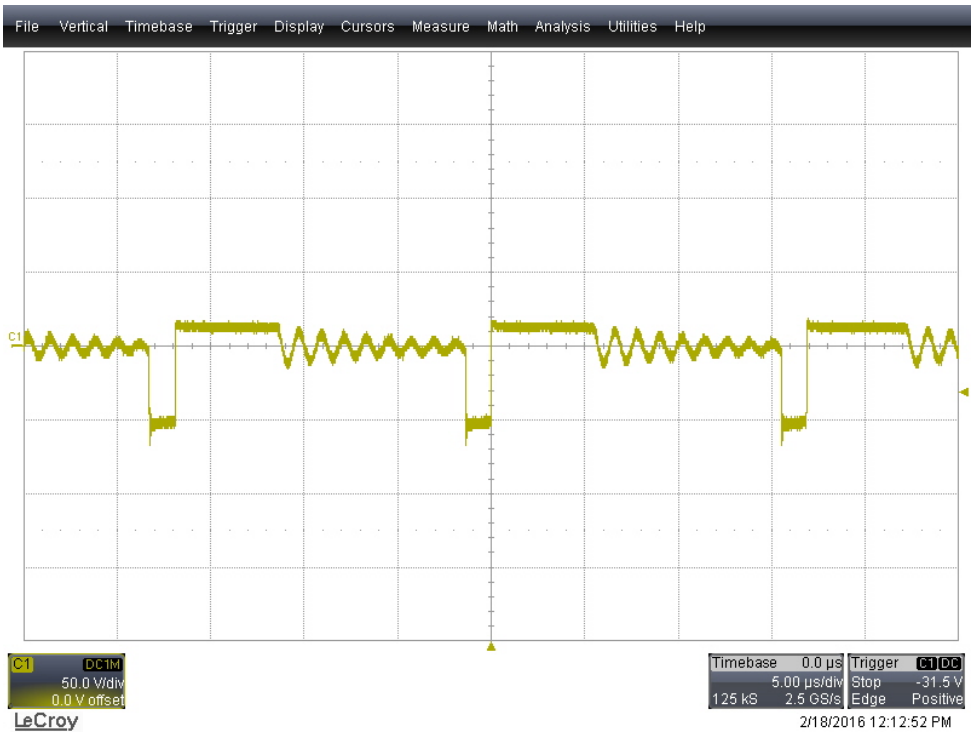


10 Switching Waveforms

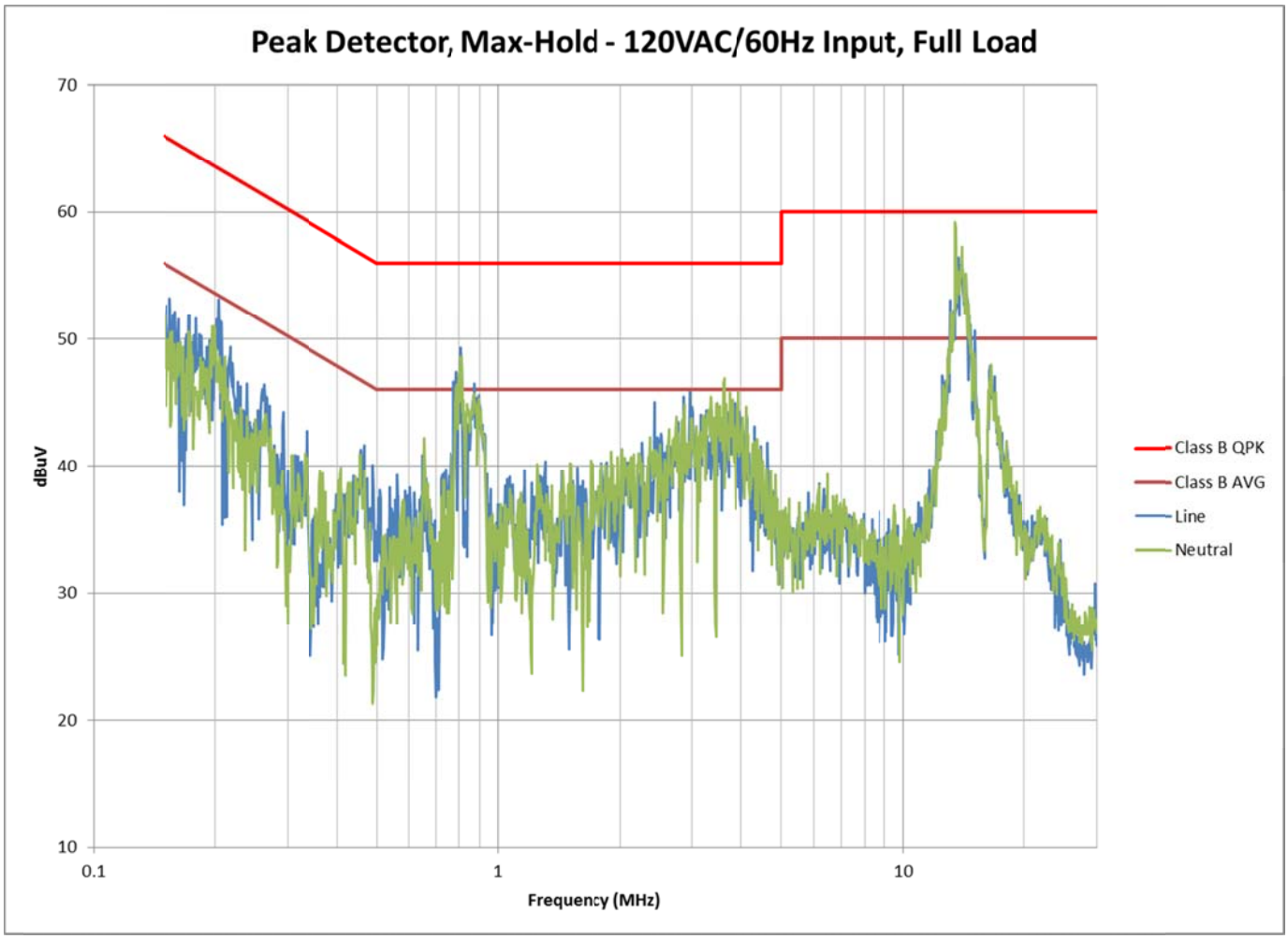
The input was 265VAC/50Hz, and the output was loaded with 0.625A.

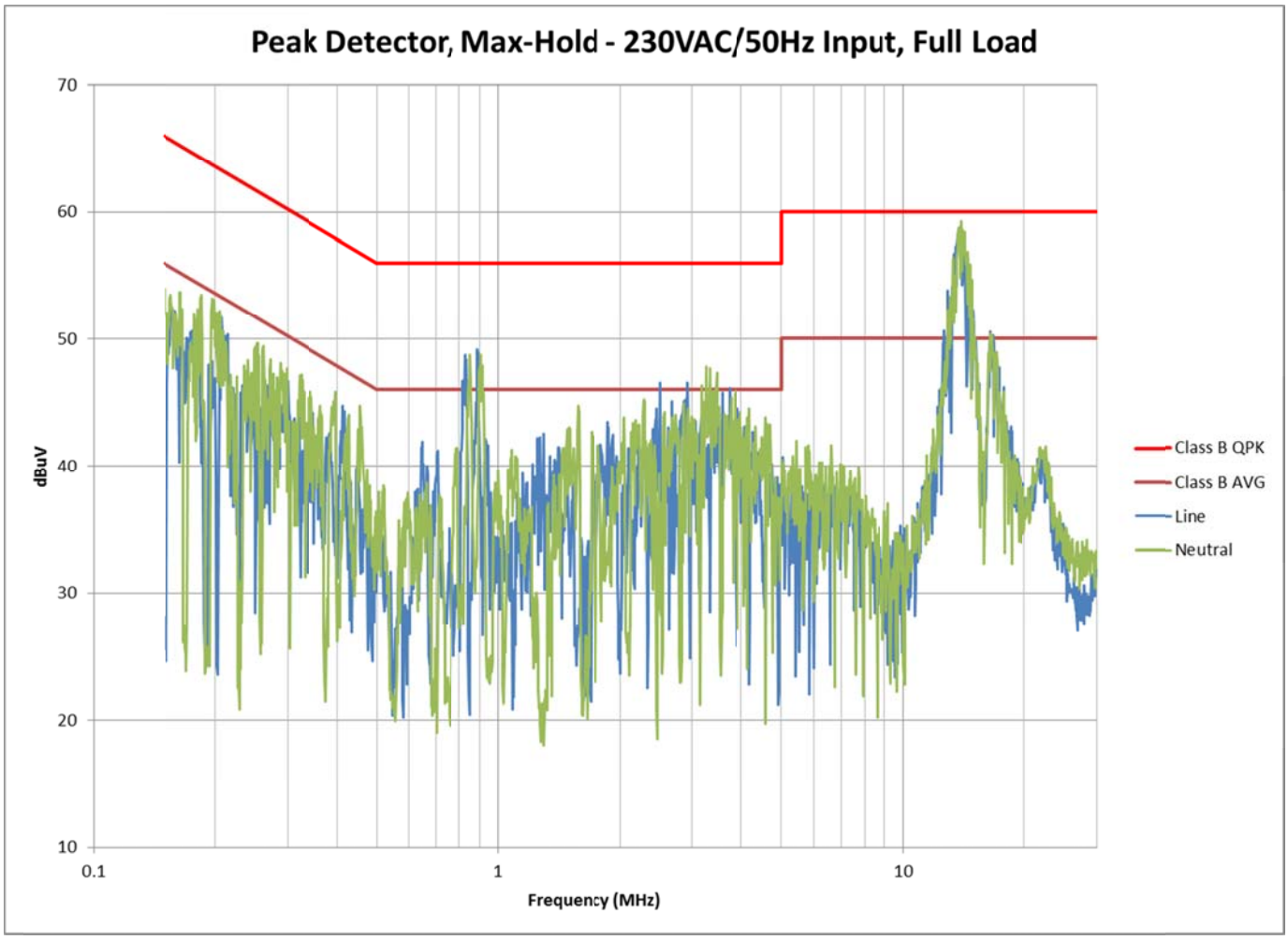
10.1 Drain of Primary FET – Q1

10.2 Anode of Output Diode – D3



11 Conducted Emissions




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

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