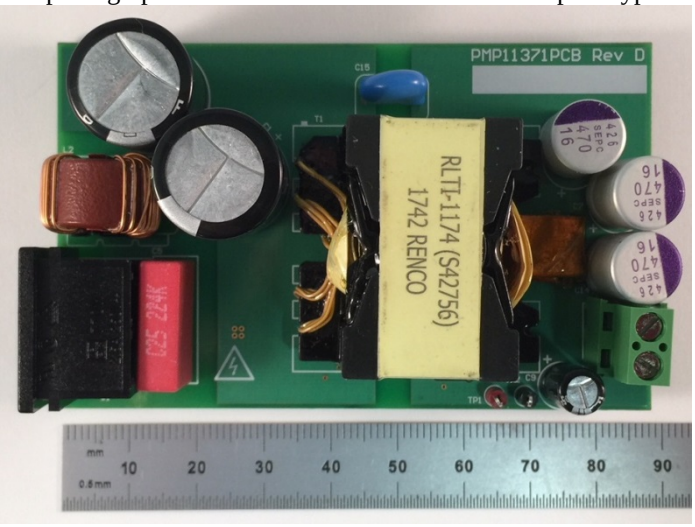
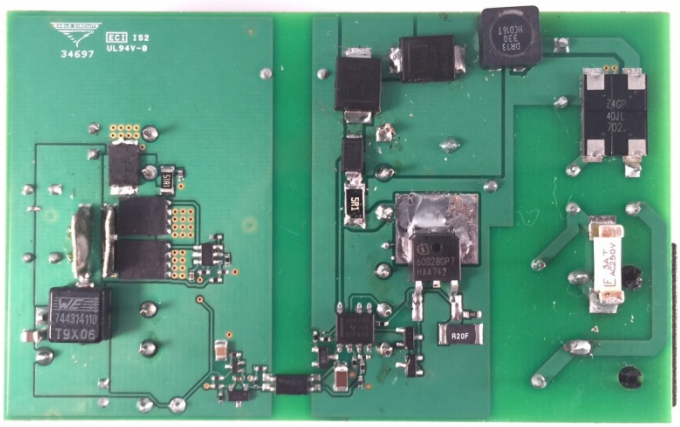
PMP11371 Rev F
Universal AC Input; 5.5V/60W PSR Flyback
Test Results

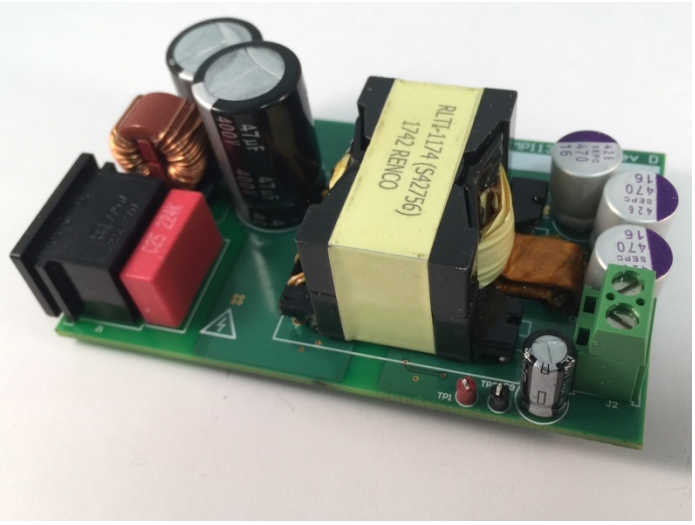
Contents

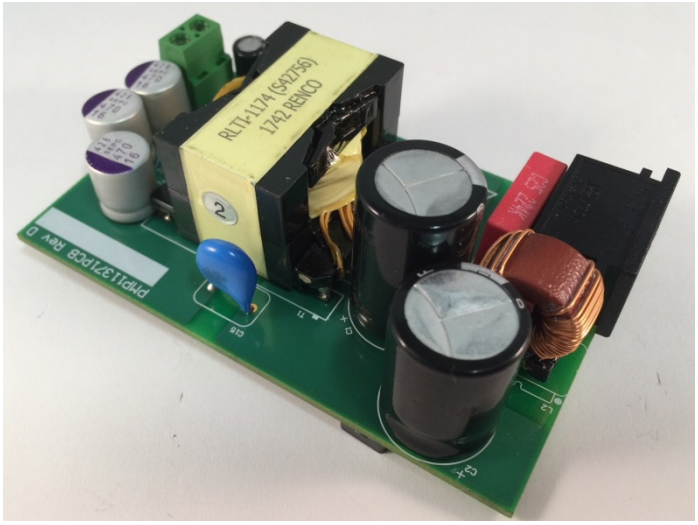
1 Photos

The photographs below show the PMP11371 Rev F prototype assembly. This circuit was built using a PMP11371 Rev D PCB.









2 Light Load Efficiency

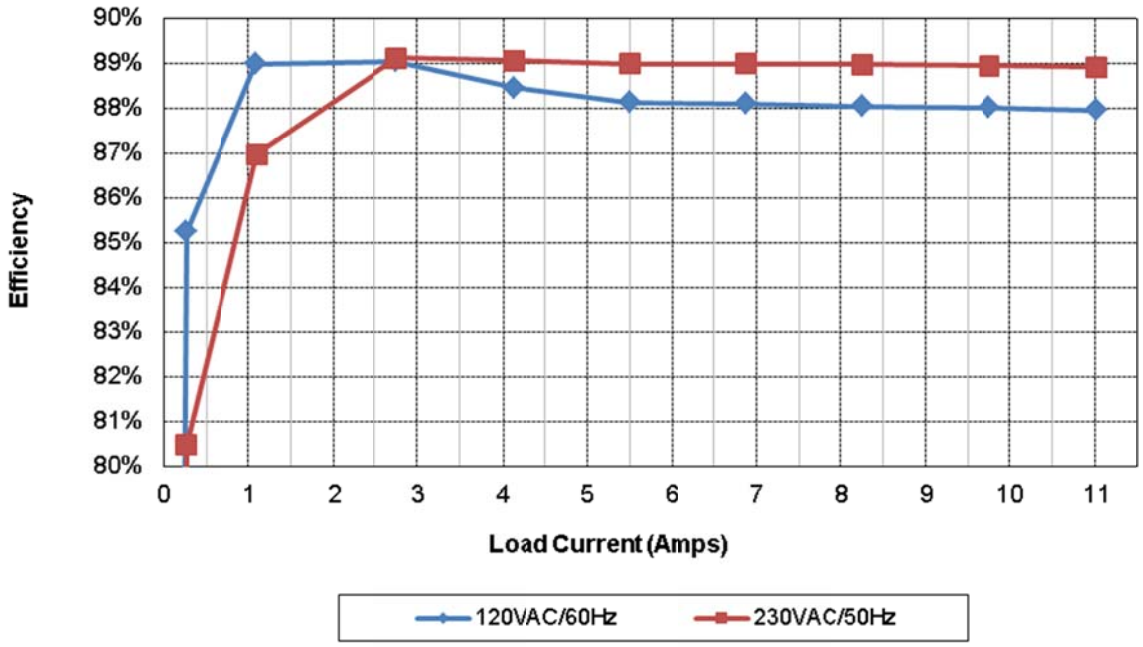
Output Current	Input Power @120VAC/60Hz	Input Power @230VAC/50Hz
0.0mA	29.5mW	36.1mW
1.6mA	40.2mW	47.5mW
259mA	1.68W	1.78W

3 Efficiency

3.1 Average Efficiency

Vin	Pin	Vout	Iout	Load	Efficiency	Avg. Eff.
120VAC/60Hz	6.02	5.53	1.088	10%	89.00%	
	15.20	5.53	2.749	25%	89.06%	**88.31%**
	34.53	5.53	5.504	50%	88.15%	
	51.8	5.53	8.253	75%	88.06%	
	69.2	5.53	11.00	100%	87.96%	
230VAC/50Hz	6.09	5.53	1.101	10%	86.98%	
	15.22	5.53	2.753	25%	89.13%	**89.01%**
	34.19	5.53	5.502	50%	88.99%	
	51.3	5.53	8.253	75%	88.98%	
	68.4	5.53	11.004	100%	88.93%	

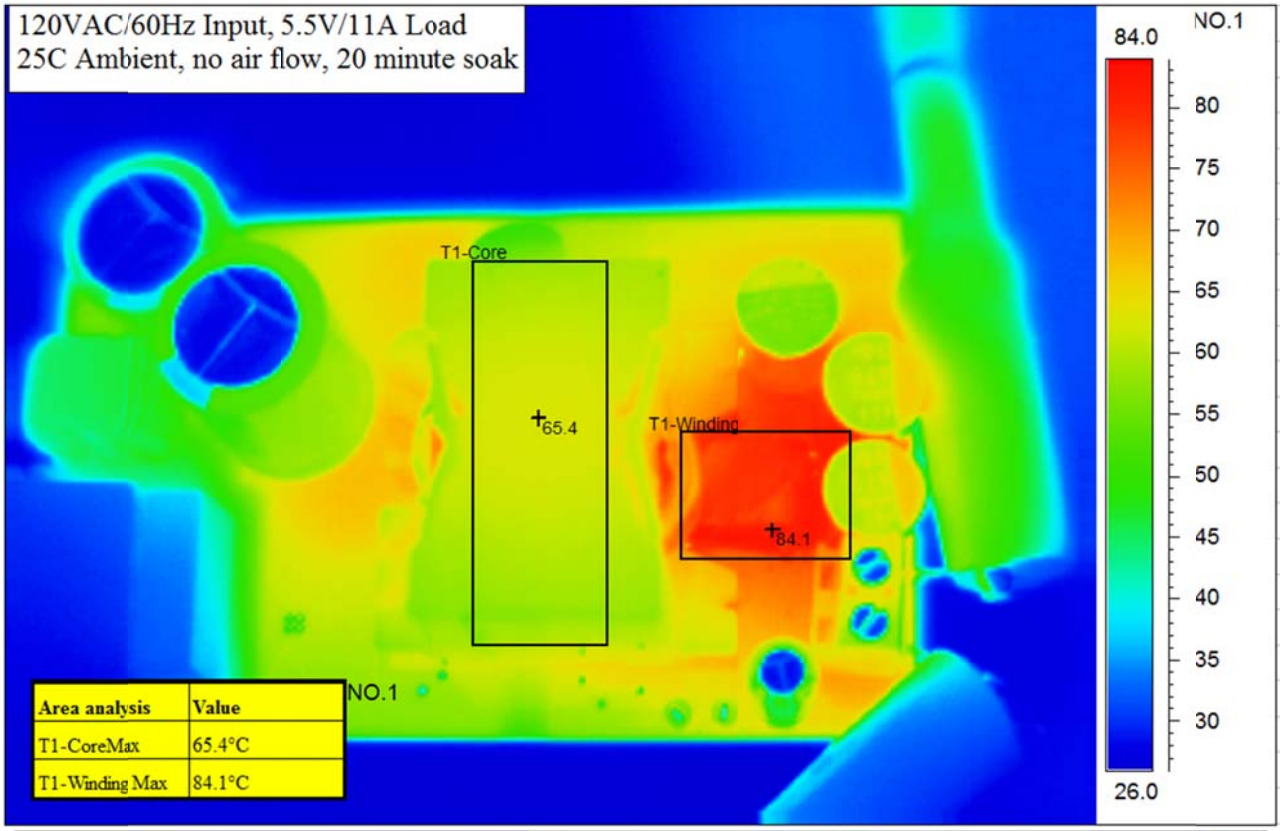
3.2 Charts

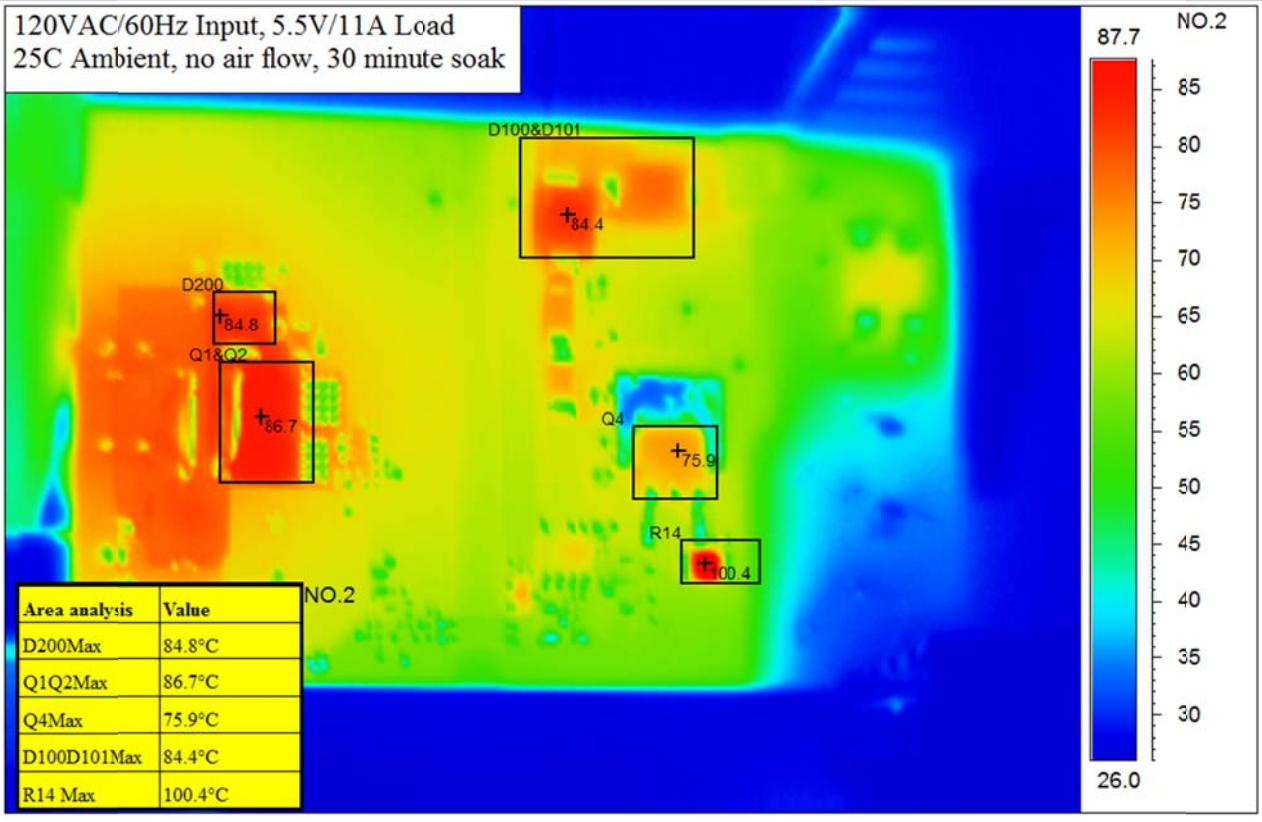


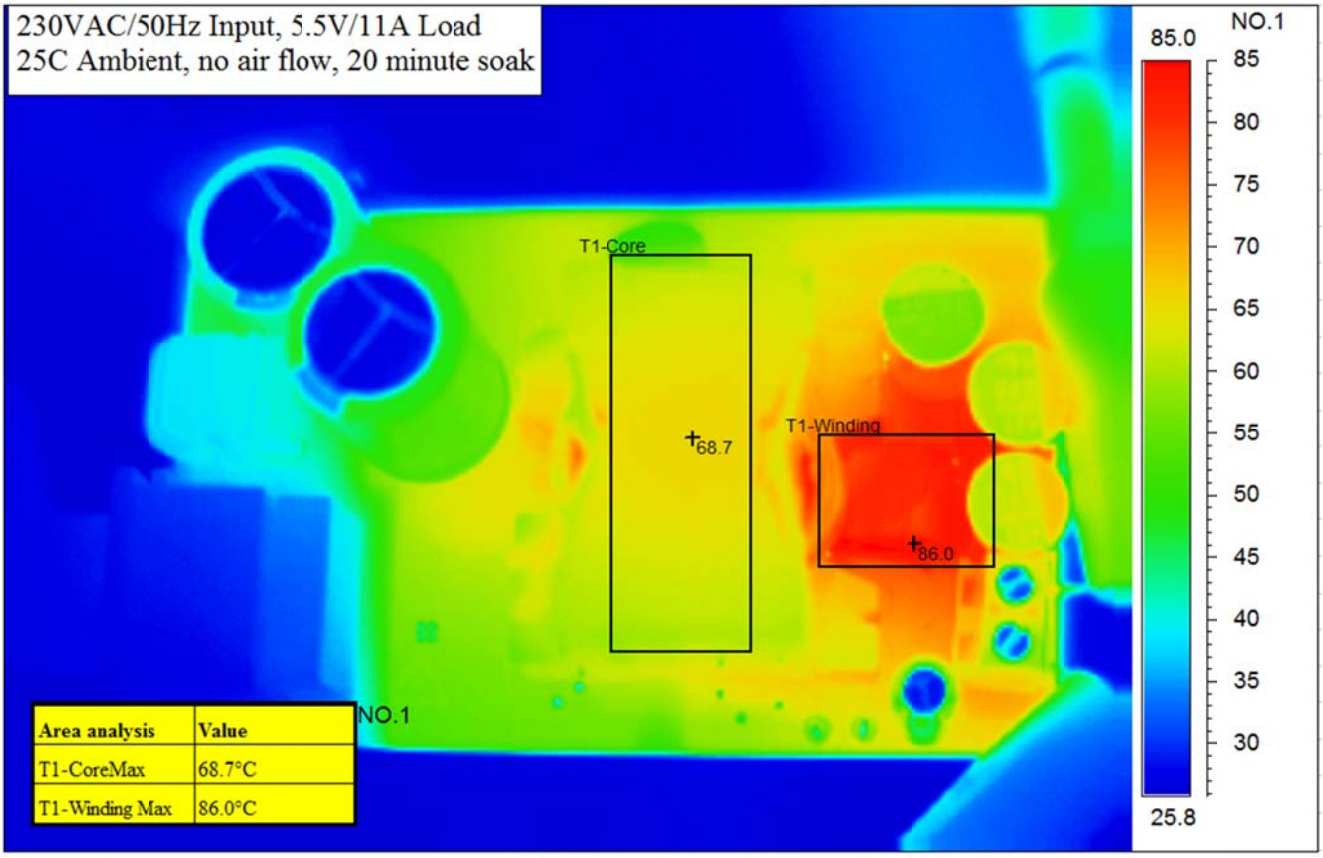
3.3 Raw Data

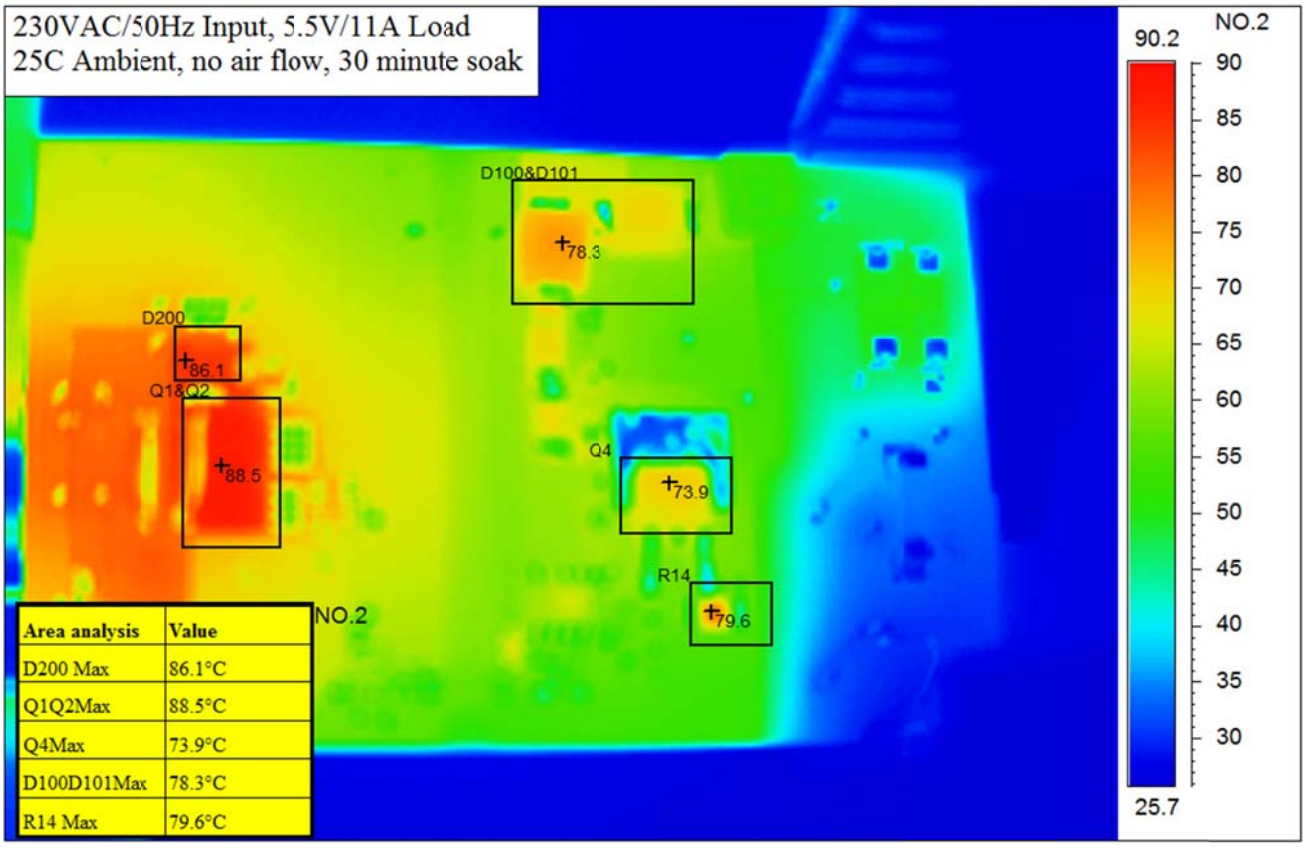
120VAC/60Hz								
Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.0000	5.53	119.9	0.0103	0.0295		0.00	0.030	
0.0016	5.53	119.9	0.0104	0.0402	0.032	0.01	0.03	22.0%
0.259	5.53	119.9	0.0447	1.68	0.312	1.43	0.25	85.3%
1.088	5.53	120.0	0.161	6.76	0.351	6.02	0.74	89.0%
2.749	5.53	120.0	0.362	17.07	0.393	15.20	1.87	89.1%
4.124	5.53	120.0	0.499	25.78	0.431	22.81	2.97	88.5%
5.504	5.53	120.0	0.620	34.53	0.465	30.44	4.09	88.1%
6.874	5.53	119.8	0.737	43.14	0.489	38.01	5.13	88.1%
8.253	5.53	119.8	0.853	51.83	0.508	45.64	6.19	88.1%
9.754	5.53	119.7	0.975	61.28	0.525	53.94	7.34	88.0%
11.001	5.53	119.7	1.080	69.16	0.535	60.84	8.32	88.0%
230VAC/50Hz								
Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.0000	5.53	230.0	0.0164	0.0361		0.00	0.036	
0.0016	5.53	230.0	0.0164	0.0475	0.186	0.01	0.04	18.6%
0.259	5.53	230.0	0.0367	1.78	0.223	1.43	0.35	80.5%
1.101	5.53	229.9	0.106	7.00	0.288	6.09	0.91	87.0%
2.753	5.53	229.9	0.226	17.08	0.328	15.22	1.86	89.1%
4.125	5.53	229.9	0.323	25.61	0.345	22.81	2.80	89.1%
5.502	5.53	229.9	0.414	34.19	0.359	30.43	3.76	89.0%
6.878	5.53	229.9	0.498	42.74	0.374	38.04	4.70	89.0%
8.253	5.53	229.9	0.573	51.29	0.389	45.64	5.65	89.0%
9.750	5.53	229.9	0.649	60.61	0.407	53.92	6.69	89.0%
11.004	5.53	229.9	0.710	68.43	0.419	60.85	7.58	88.9%

4 Thermal Images

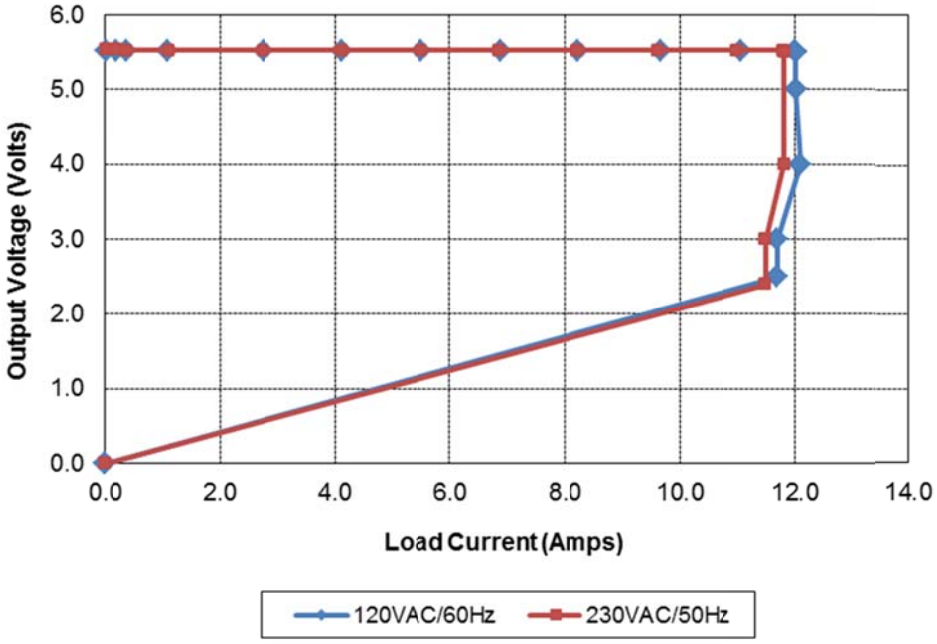





230VAC/50Hz Input, 5.5V/11A Load
25C Ambient, no air flow, 20 minute soak
T1-Core
68.7
T1-Winding
86.0
NO.1
85.0
25.8
Area analysis | Value
T1-CoreMax | 68.7°C
T1-Winding Max | 86.0°C

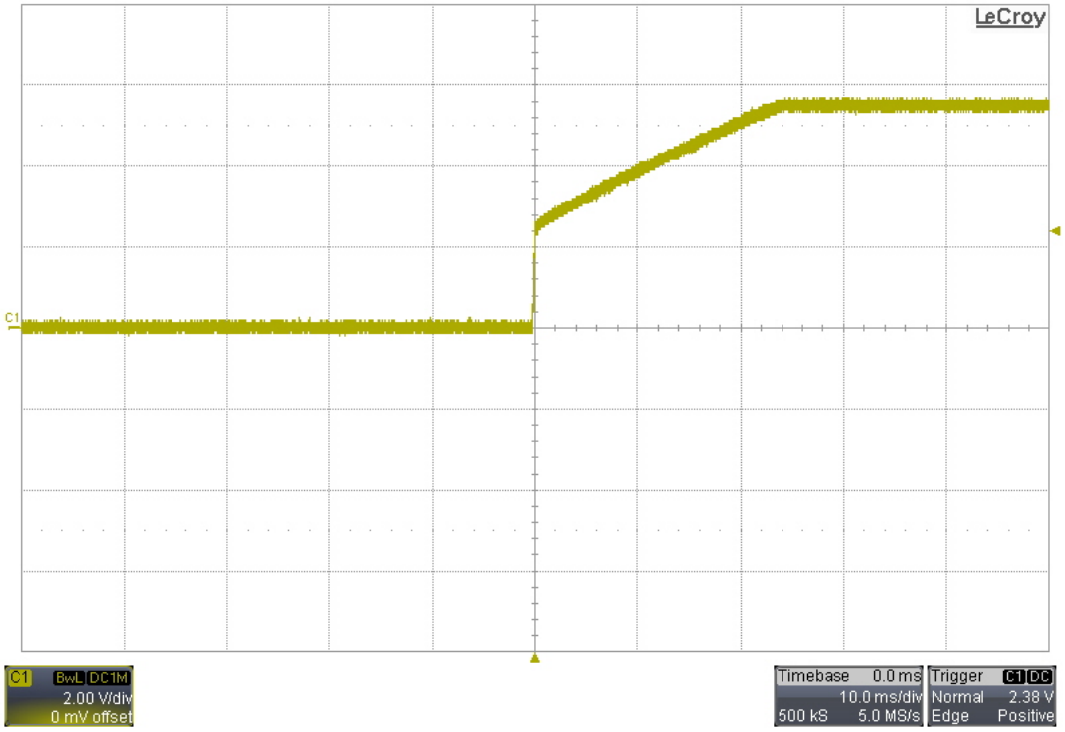

230VAC/50Hz Input, 5.5V/11A Load
25C Ambient, no air flow, 30 minute soak
D100&D101
78.3
D200
86.1
Q1&Q2
88.5
Q4
73.9
R14
79.6
NO.2
90.2
25.7
Area analysis | Value
D200 Max | 86.1°C
Q1Q2Max | 88.5°C
Q4Max | 73.9°C
D100D101Max | 78.3°C
R14 Max | 79.6°C

5 V-I Curve

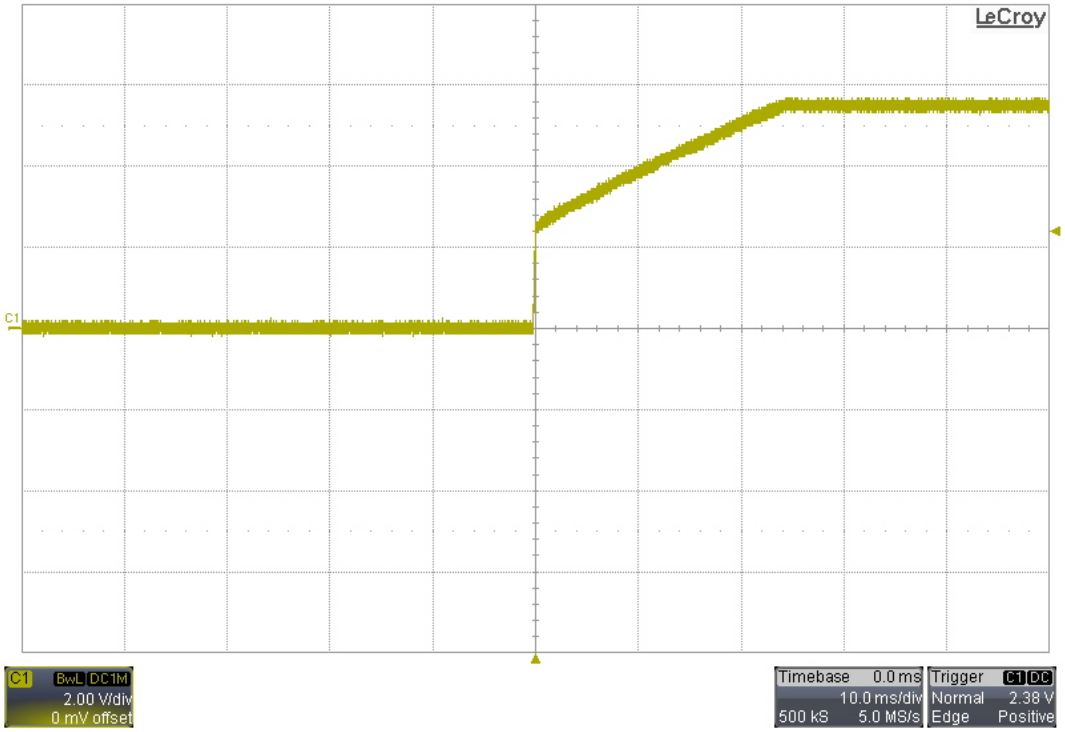


6 Startup

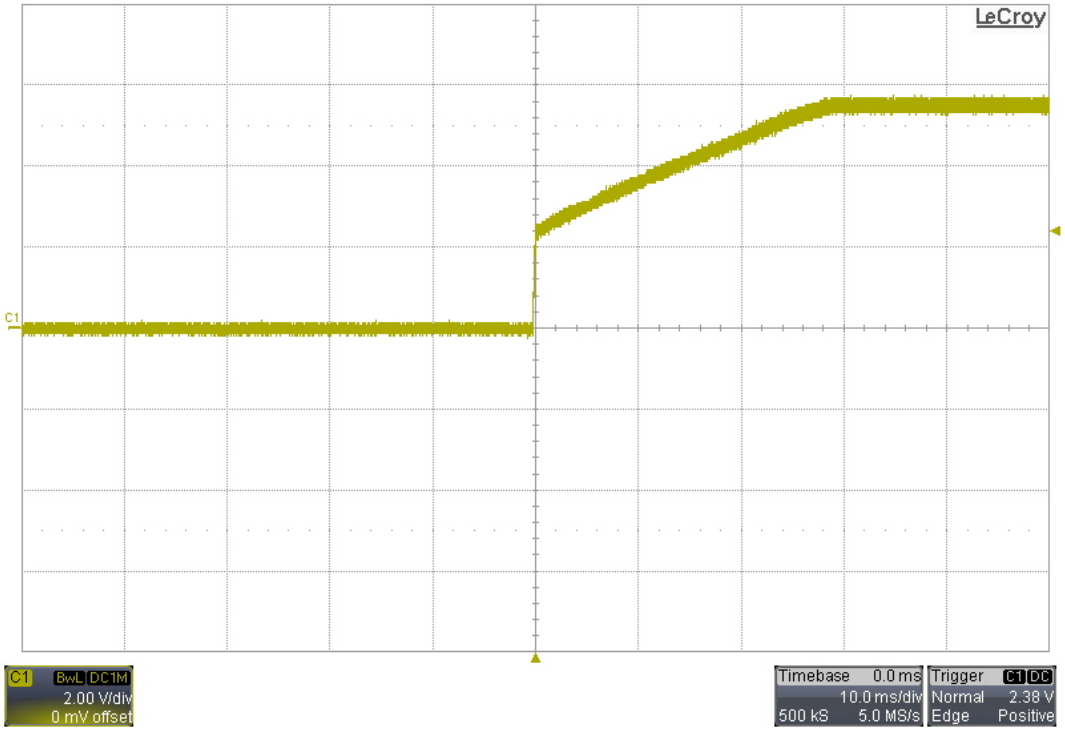
6.1 120VAC/60Hz –200Ω Load



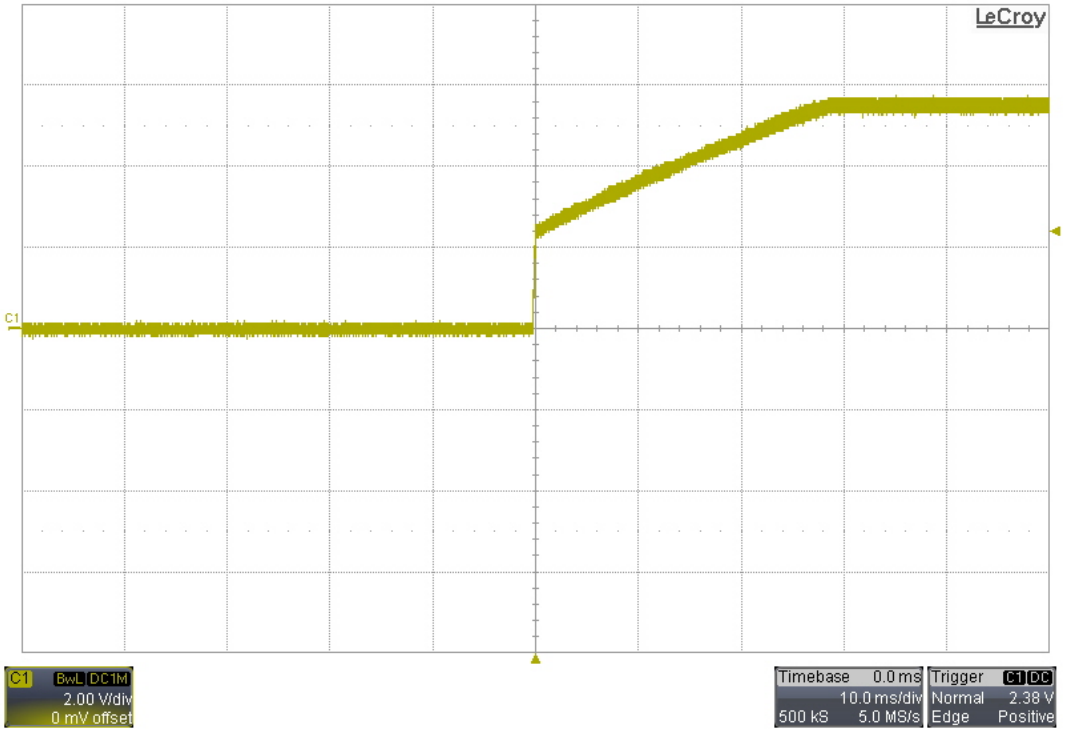
6.2 230VAC/50Hz –200Ω Load



6.3 120VAC/60Hz –1Ω Load

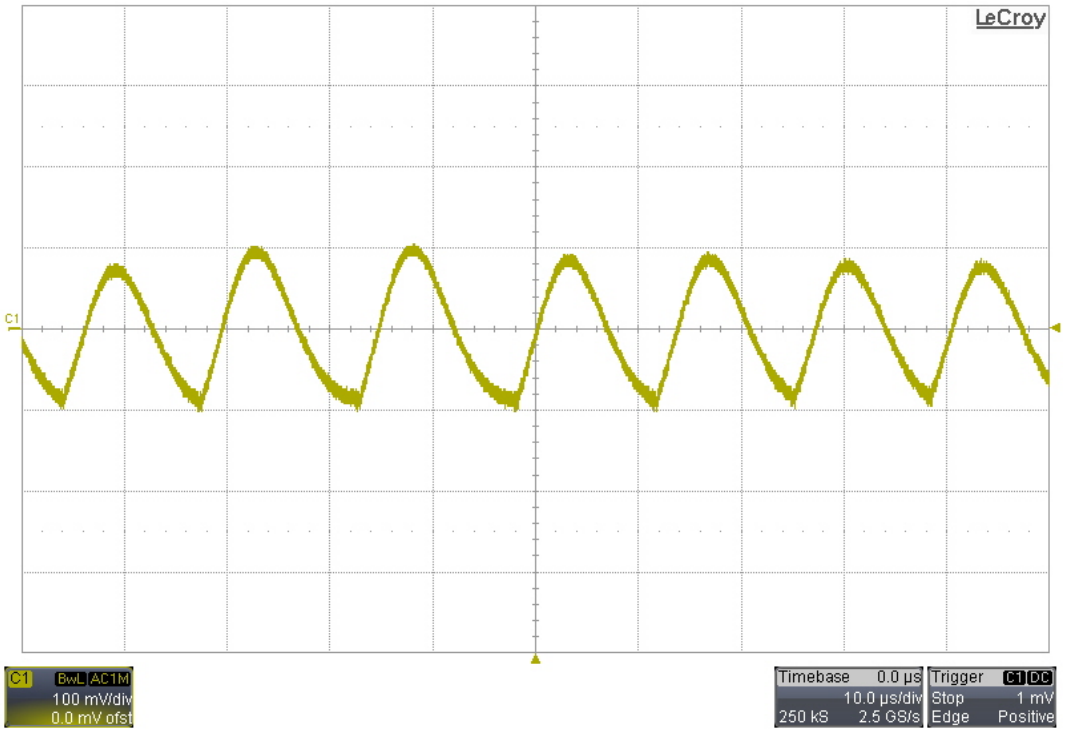


6.4 230VAC/50Hz –1Ω Load

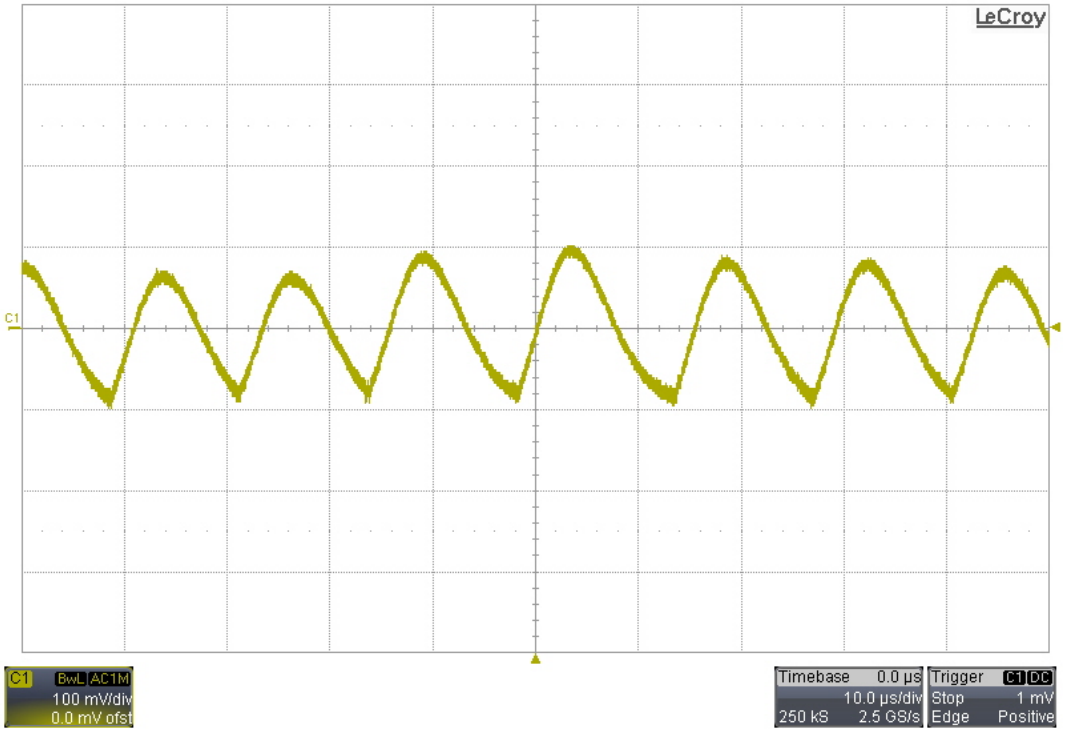


7 Output Ripple Voltage

7.1 120VAC/60Hz – 11A Load

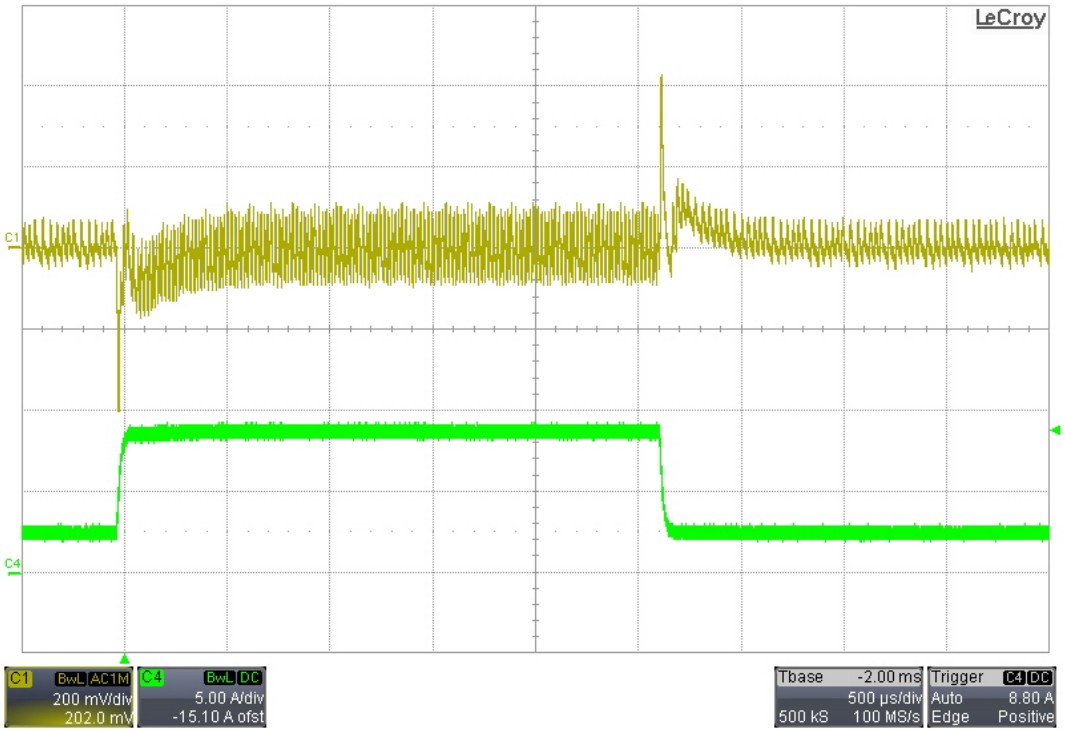


7.2 230VAC/50Hz –11A Load

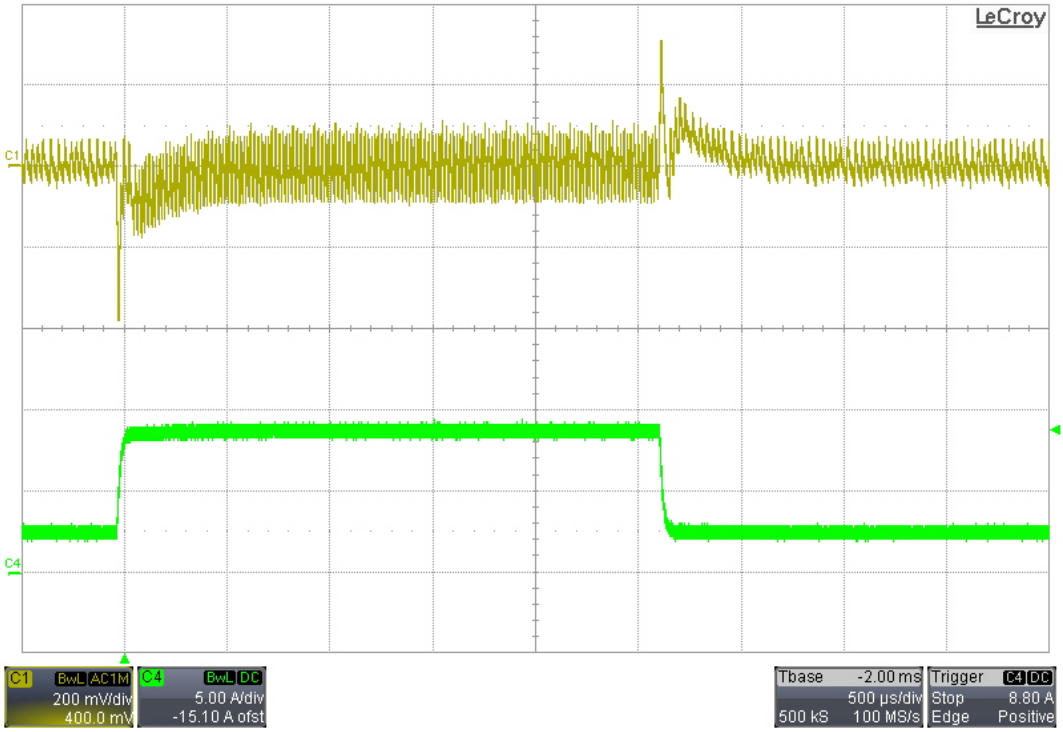


8 Load Transients

8.1 120VAC/60Hz Input – 2.5A to 8.75A

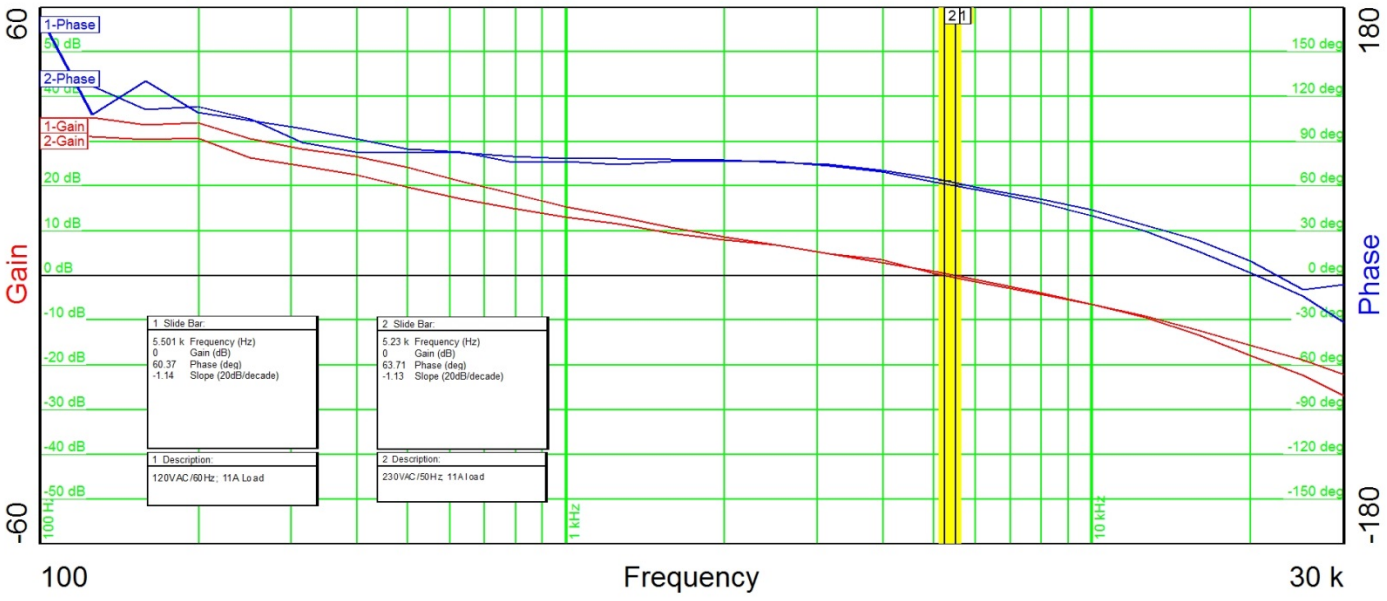


8.2 230VAC/50Hz Input – 2.5A to 8.75A



9 Loop Response

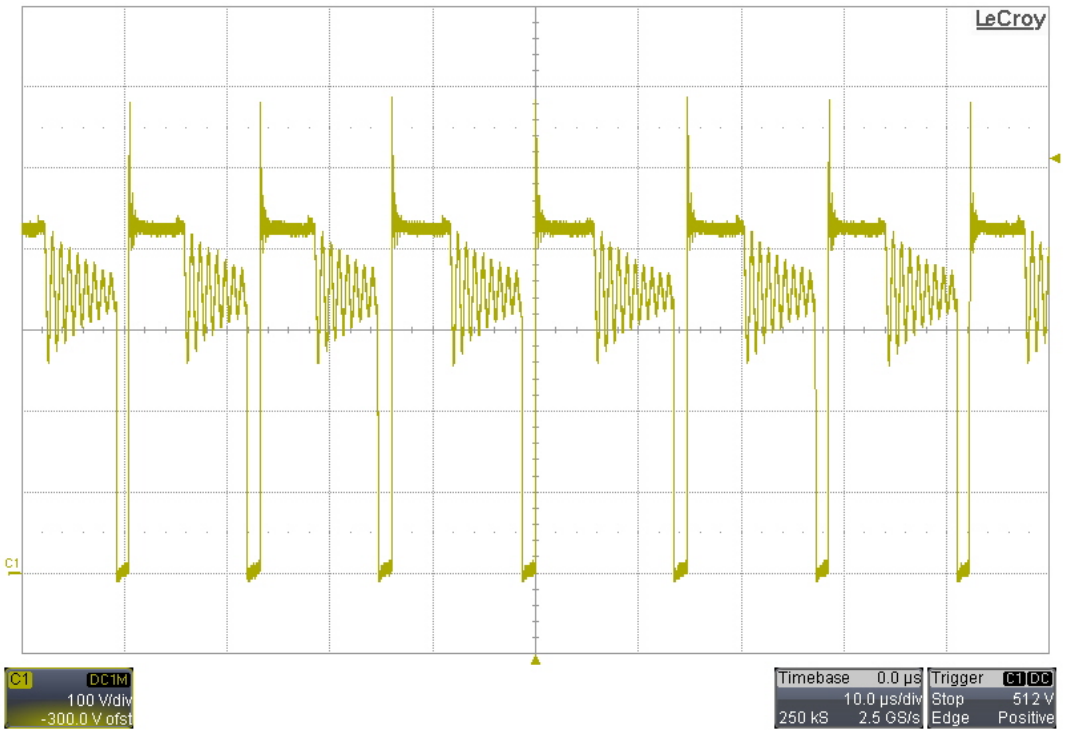
The following plots show the loop response at full load (11A).



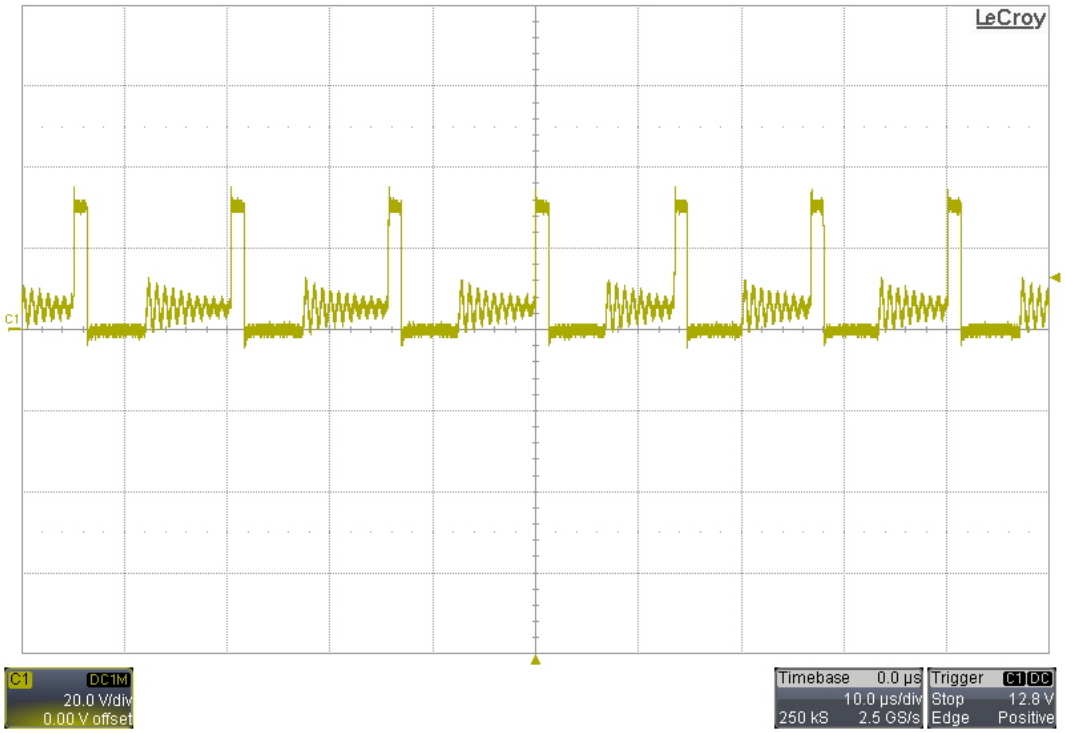
10 Switching Waveforms

The input was 265VAC/50Hz, and the output was loaded with 11A.

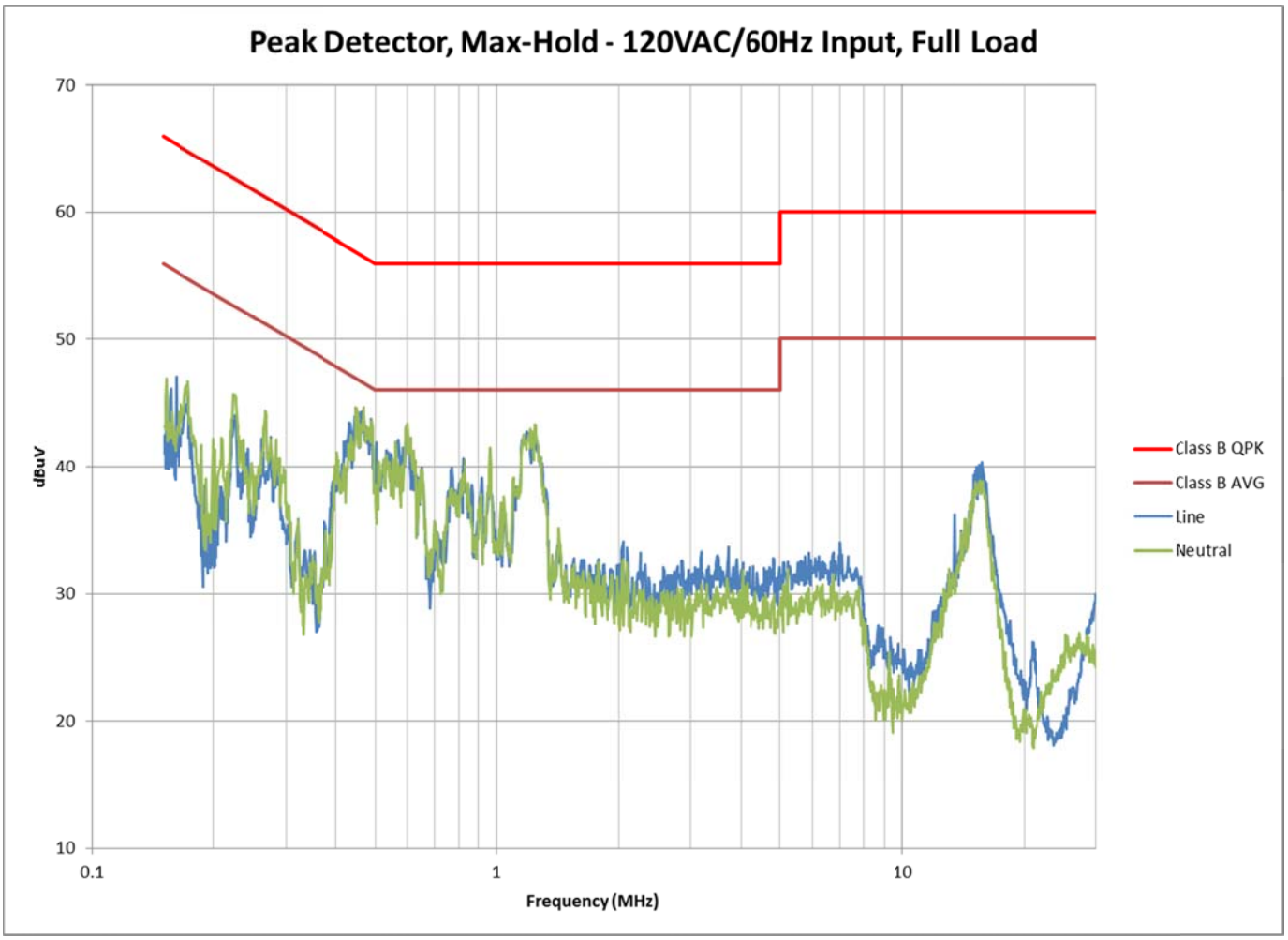
10.1 Drain of Primary FET – Q4

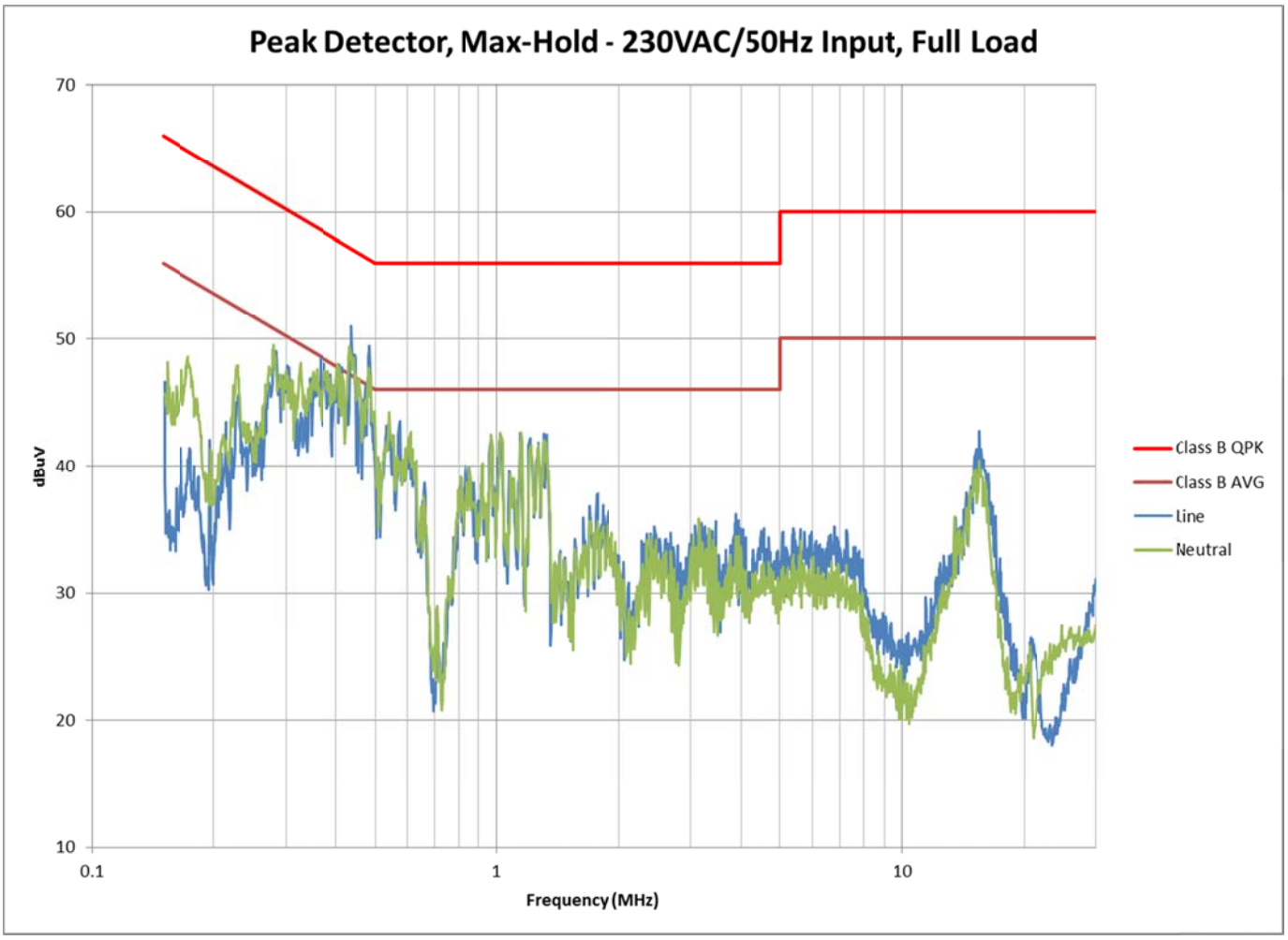


10.2 Drain of Sync FET – Q1/Q2



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

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI’s products are provided subject to TI’s Terms of Sale (https:www.ti.com/legal/termsofsale.html) or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI’s provision of these resources does not expand or otherwise alter TI’s applicable warranties or warranty disclaimers for TI products.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265