PMP4242

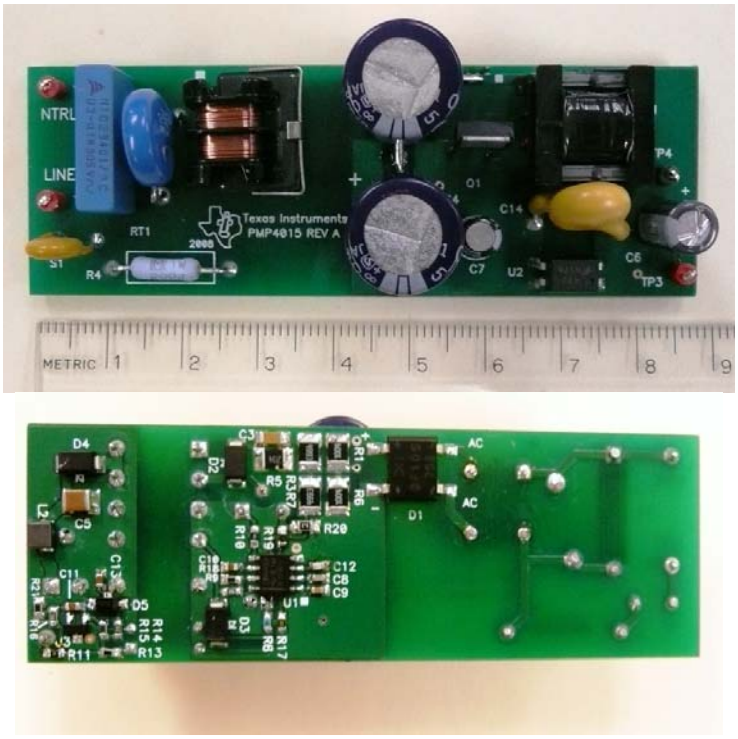
PMP4242 Test Results

SLUU907

PMP4242 Rev B Test Results

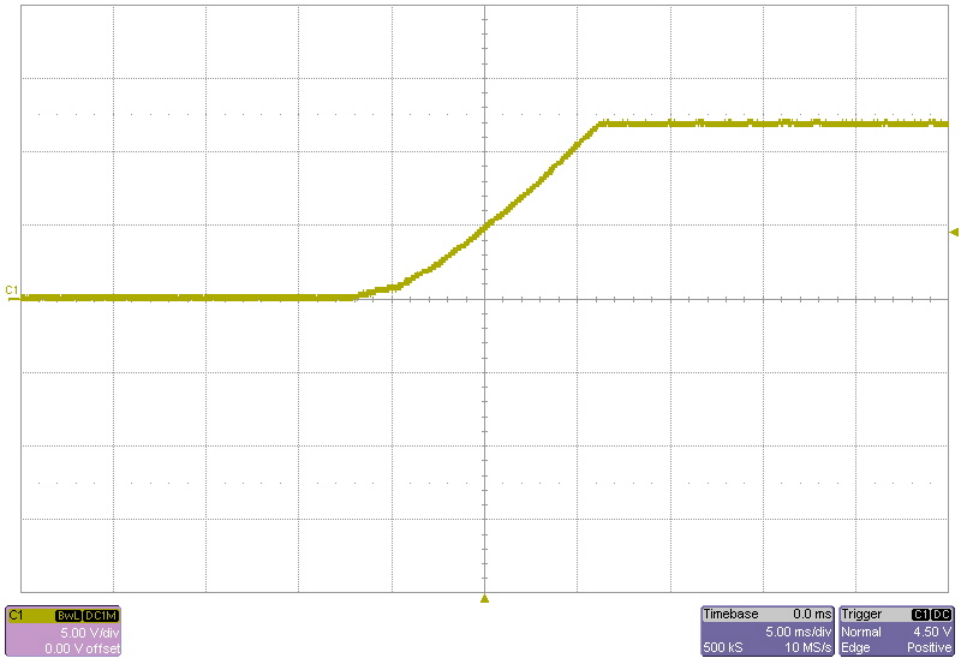
1 Photo

The photographs below show the top and bottom views of the PMP4242 Rev B demo board. The circuit is built on a PMP4015 Rev A PWB.



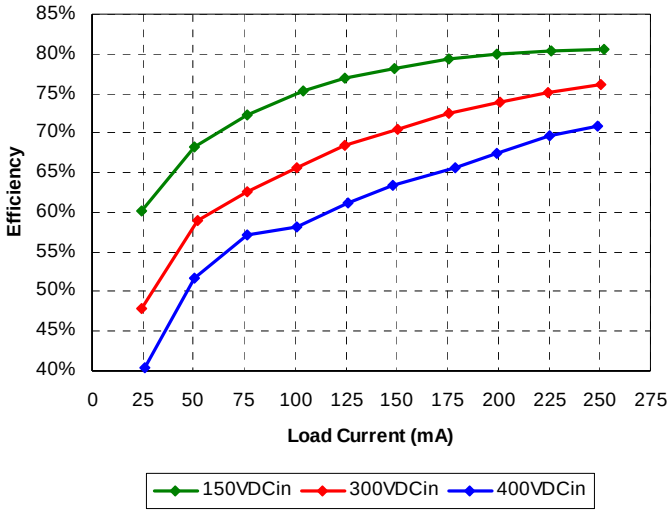
2 Startup

The output voltage at startup is shown in the image below. The input was 277VAC and the output was unloaded.



3 Efficiency

The efficiency across the entire load range is shown in the tables and graph below. A DC input was used for accuracy.



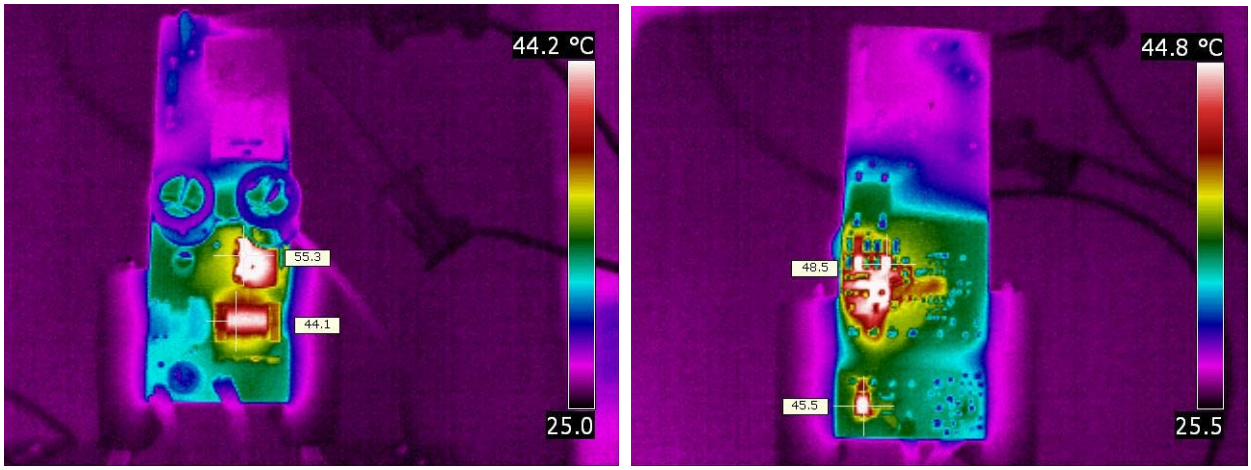
Iout(mA)	Vout	Pout	Vin	Iin (mA)	Pin	Losses	Efficiency
0.00	12.04	0.00	151.7	0.68	0.10	0.10	0.0%
24.70	12.04	0.30	151.7	3.26	0.49	0.20	60.1%
50.1	12.04	0.60	151.7	5.83	0.88	0.28	68.2%
76.2	12.04	0.92	151.7	8.37	1.27	0.35	72.3%
103.9	12.04	1.25	151.7	10.96	1.66	0.41	75.2%
124.5	12.04	1.50	151.7	12.83	1.95	0.45	77.0%
148.6	12.04	1.79	151.7	15.08	2.29	0.50	78.2%
175.7	12.04	2.12	151.7	17.58	2.67	0.55	79.3%
199.0	12.04	2.40	151.7	19.74	2.99	0.60	80.0%
225.8	12.04	2.72	151.7	22.28	3.38	0.66	80.4%
252.4	12.04	3.04	151.7	24.84	3.77	0.73	80.6%

Iout(mA)	Vout	Pout	Vin	Iin (mA)	Pin	Losses	Efficiency
0.00	12.04	0.00	300.0	0.72	0.22	0.22	0.0%
24.77	12.04	0.30	300.0	2.08	0.62	0.33	47.8%
52.1	12.04	0.63	300.0	3.55	1.07	0.44	58.9%
76.5	12.04	0.92	300.0	4.90	1.47	0.55	62.7%
100.8	12.04	1.21	300.0	6.16	1.85	0.63	65.7%
124.8	12.04	1.50	300.0	7.31	2.19	0.69	68.5%
150.5	12.04	1.81	300.0	8.56	2.57	0.76	70.6%
175.9	12.04	2.12	300.0	9.75	2.93	0.81	72.4%
201.0	12.04	2.42	300.0	10.91	3.27	0.85	73.9%
224.4	12.04	2.70	300.0	11.99	3.60	0.90	75.1%
250.8	12.04	3.02	300.0	13.23	3.97	0.95	76.1%

Iout(mA)	Vout	Pout	Vin	Iin (mA)	Pin	Losses	Efficiency
0.00	12.04	0.00	400.2	0.83	0.33	0.33	0.0%
25.83	12.04	0.31	400.2	1.92	0.77	0.46	40.5%
50.3	12.04	0.61	400.2	2.93	1.17	0.57	51.6%
76.2	12.04	0.92	400.2	4.01	1.60	0.69	57.2%
100.5	12.04	1.21	400.2	5.20	2.08	0.87	58.1%
126.3	12.04	1.52	400.2	6.20	2.48	0.96	61.3%
148.5	12.04	1.79	400.2	7.05	2.82	1.03	63.4%
178.9	12.04	2.15	400.2	8.19	3.28	1.12	65.7%
199.1	12.04	2.40	400.2	8.87	3.55	1.15	67.5%
225.7	12.04	2.72	400.2	9.76	3.91	1.19	69.6%
249.2	12.04	3.00	400.2	10.57	4.23	1.23	70.9%

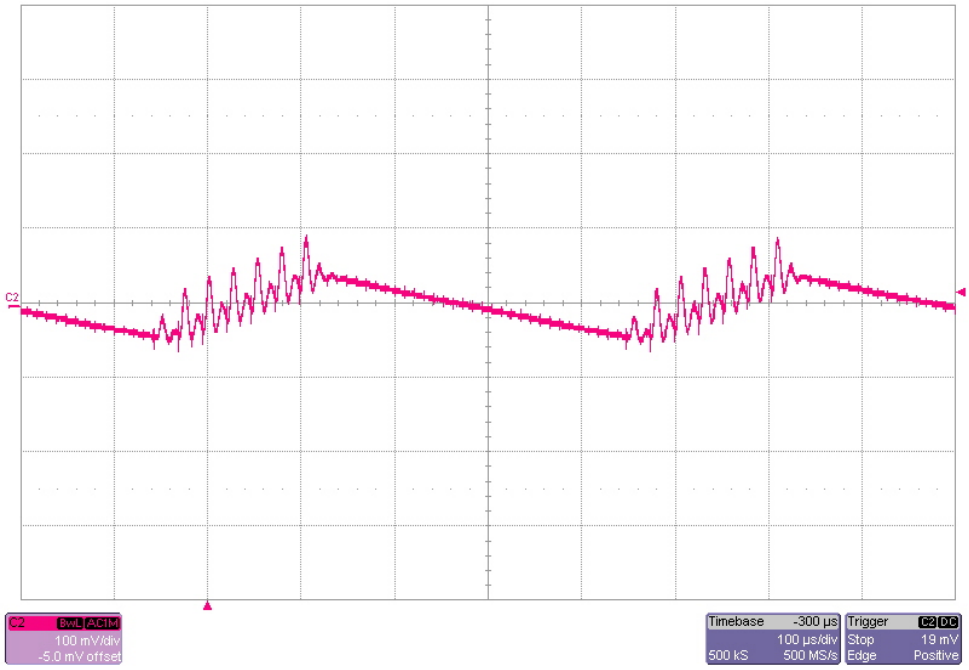
4 Thermal Image

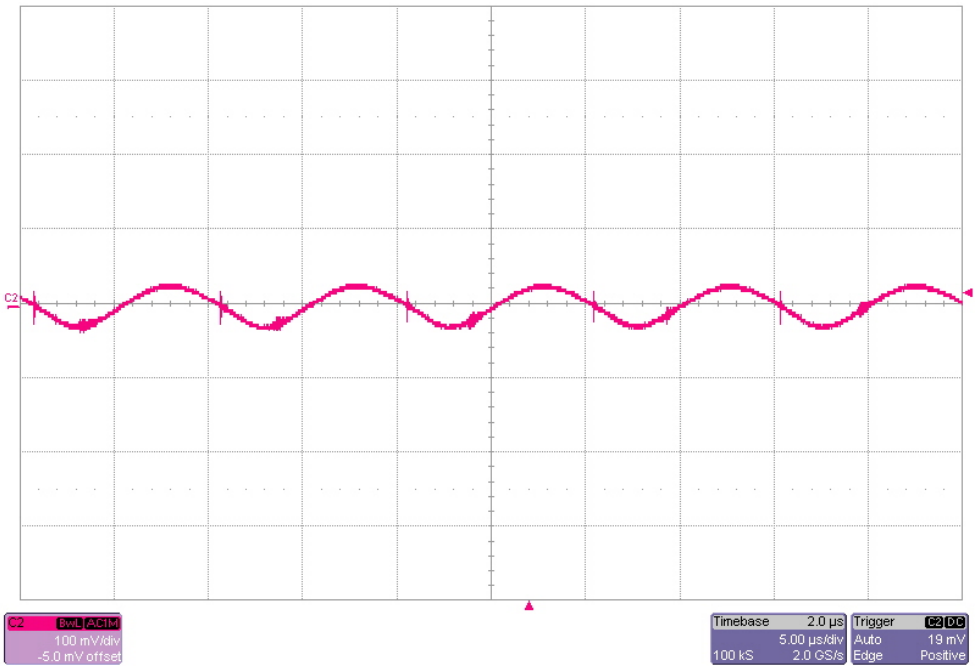
The thermal images below show a top view (left) and bottom view (right) of the board. The ambient temperature was 26ºC with no forced air flow. The input was 277VAC, and the output was loaded with 250mA. The primary MOSFET (Q1) was the hottest component on the board and measured 55.3ºC.



5 Output Ripple Voltage

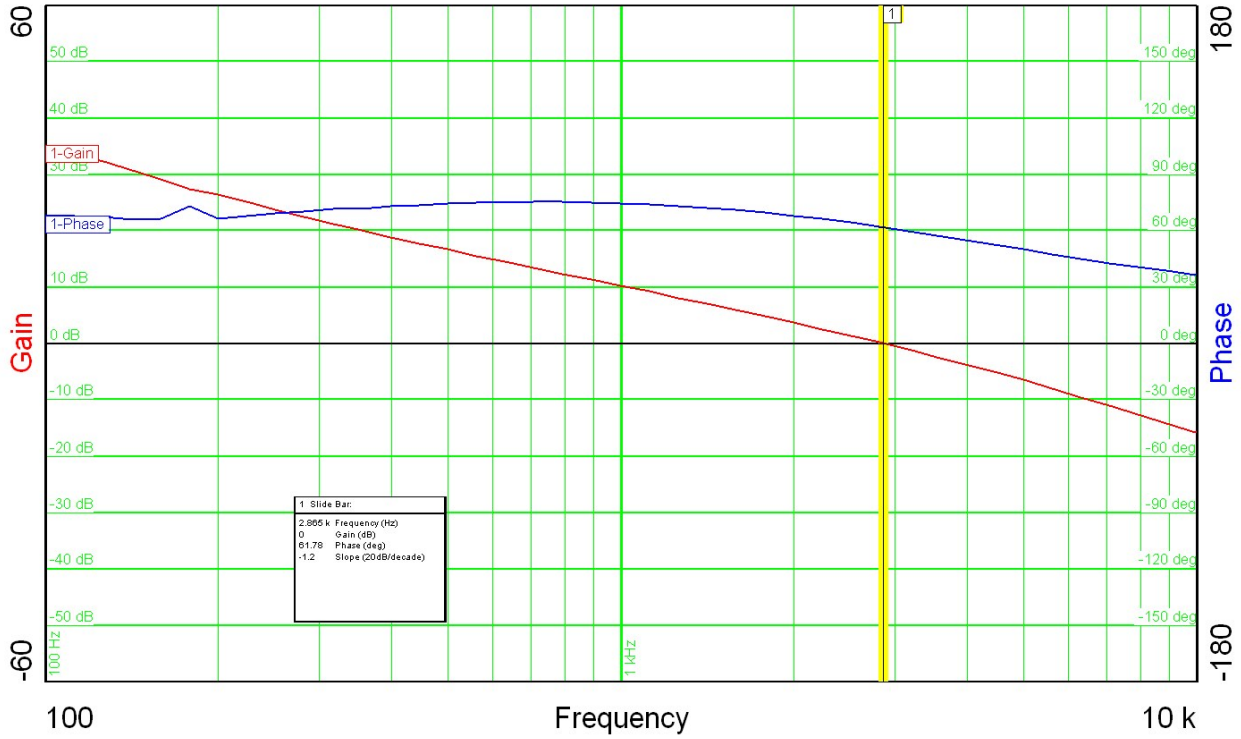
The output ripple voltage is shown in the plots below. The top image shows the ripple during burst mode operation, where the input was 400VDC, and the load was 25mA. The bottom image shows the ripple with a 400VDC input and a 250mA load.





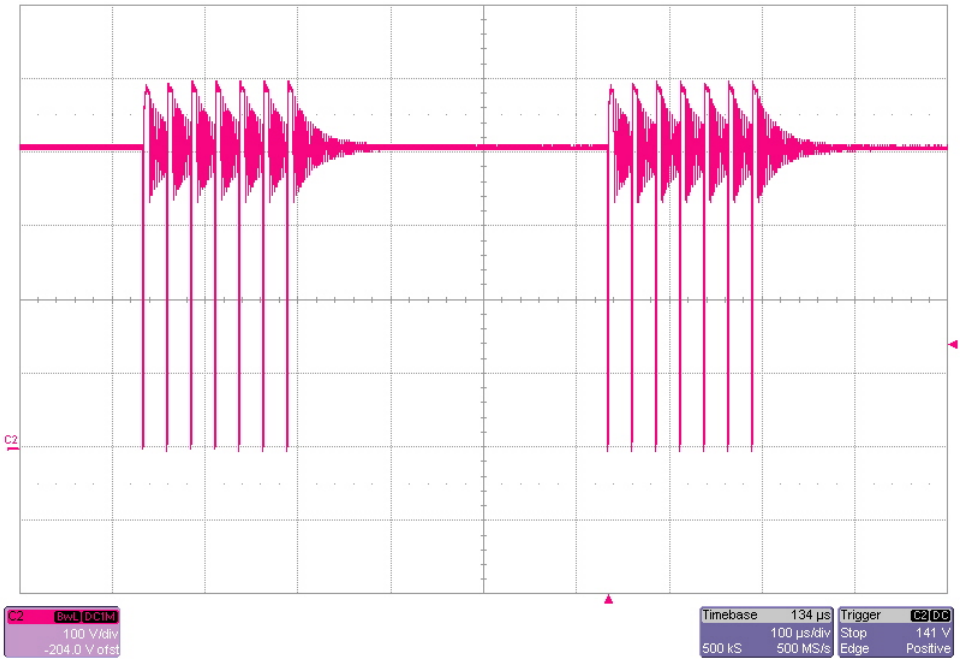
6 Frequency Response

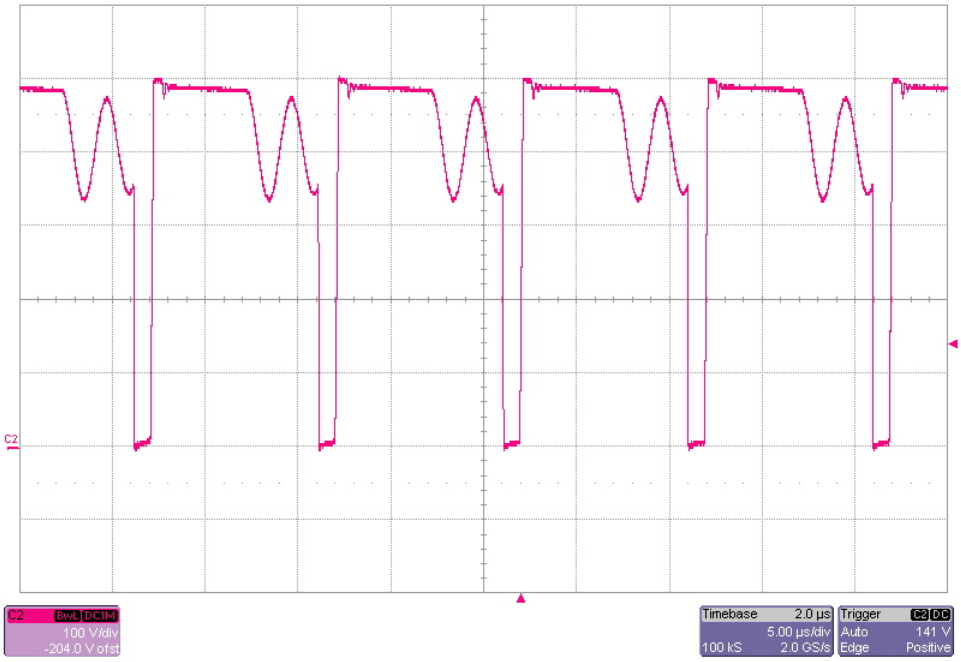
The frequency response of the feedback loop is shown in the plot below. The output was loaded with 250mA. The input was 150VDC.



7 Switching Waveforms

The images below show the drain-to-source voltage waveform on the primary MOSFET (Q1). The top image demonstrates burst mode operation, where the load as 25mA and the input was set to 400VDC. In the bottom image, the load was 250mA and the input was 400VDC.





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