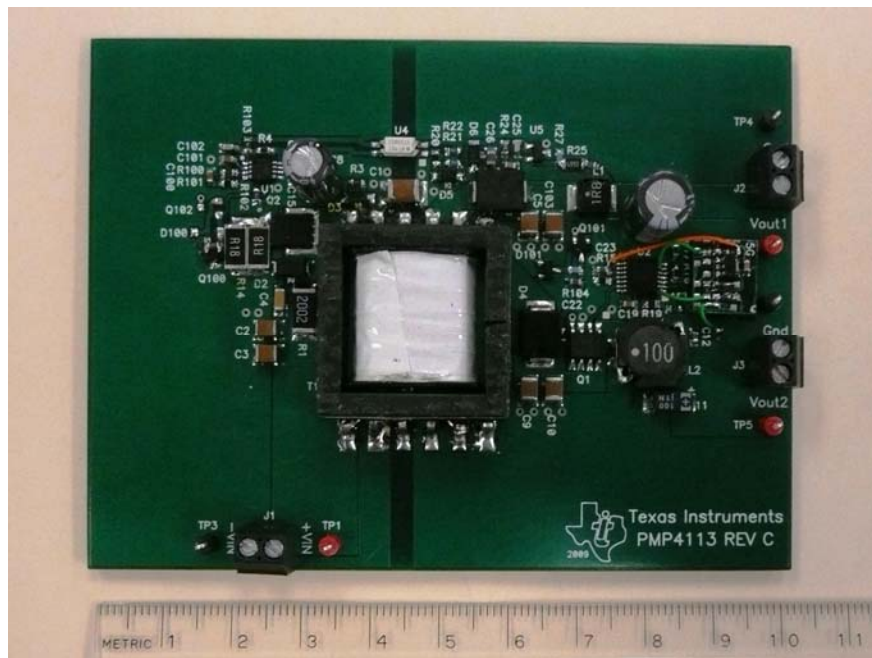


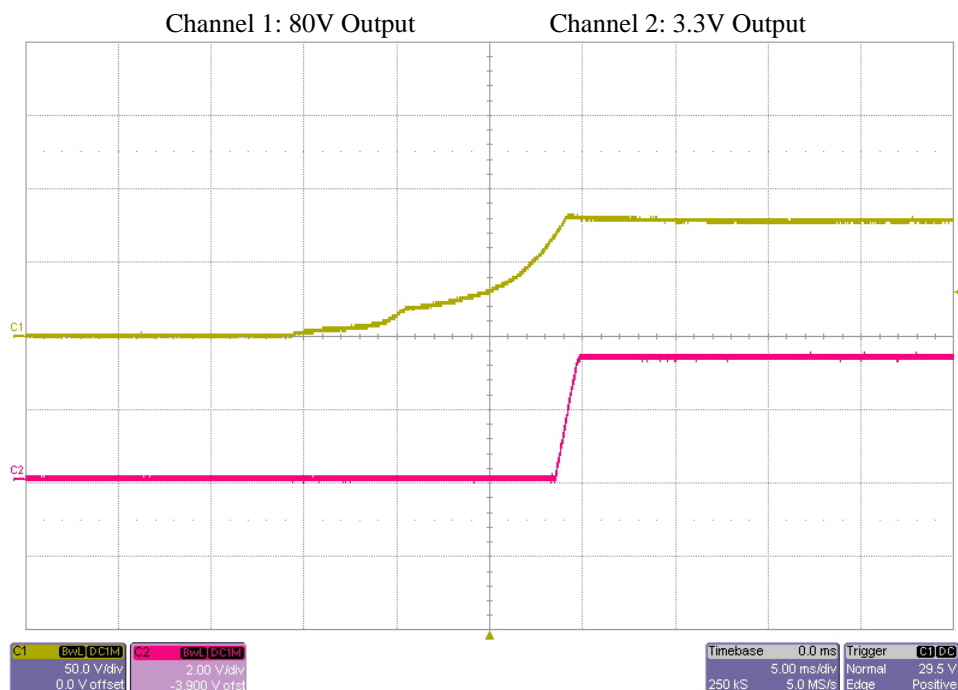
1 Photo

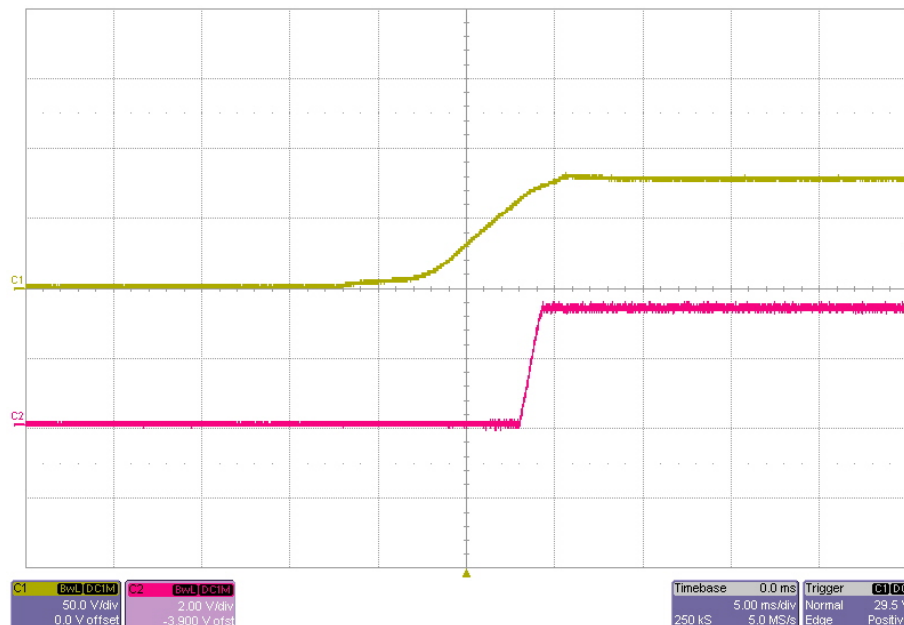
The photograph below shows a top view of the PMP4113 Rev E demo board. The circuit is built on a PMP4113 Rev C PWB.



2 Startup

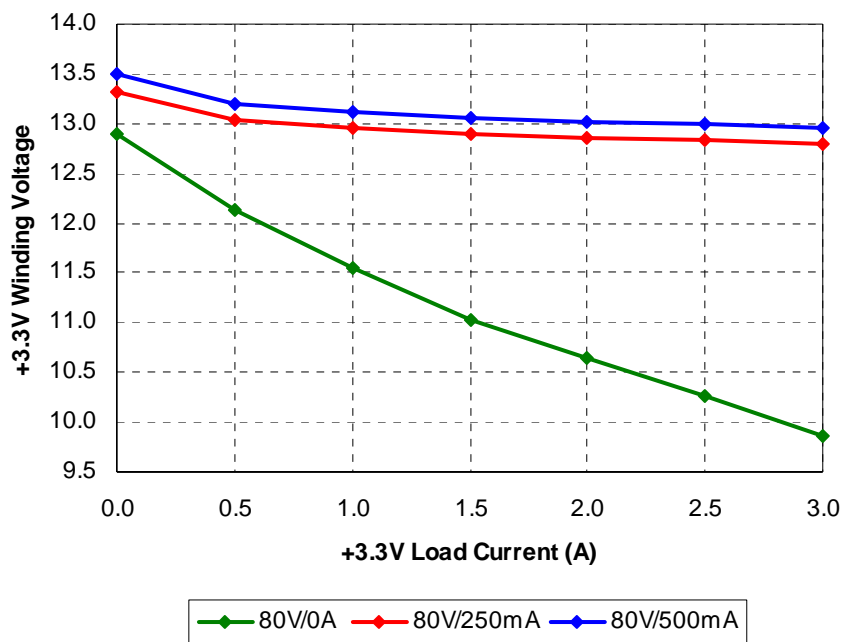
The output voltages at startup are shown in the images below. The input was 48VDC. In the top image, both outputs were unloaded. In the bottom image, both outputs were loaded at full load. These images were captured on a PMP4113 Rev E board.





3 Cross-Regulation

The chart below plots the voltage on the input to the 3.3V switcher versus 3.3V load current for different loading conditions on the 80V output. The 3.3V winding voltage was measured on the cathode of D4. This data was captured on a PMP4113 Rev E board.



4 No Load Power

The table below shows the power consumption with both outputs operating with no load. This data was captured on a PMP4113 Rev E board.

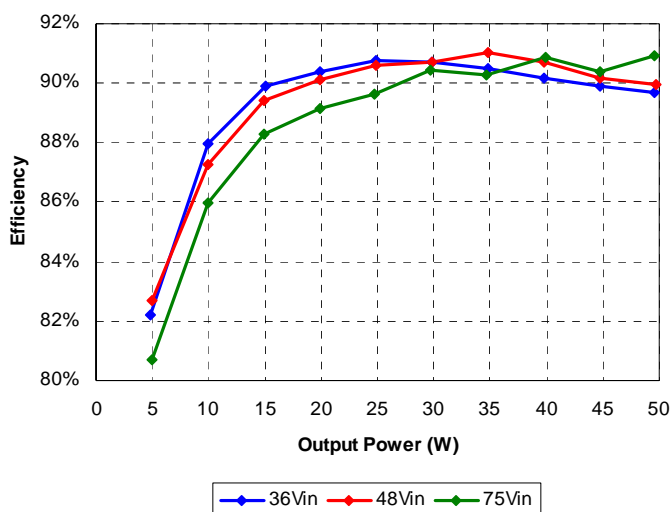
Vin	Pin (W)
36.0	0.50
48.0	0.53
75.0	0.75

PMP4113 Rev F Test Results

Test Data Taken From PMP4113 Rev E and PMP4771 Rev A Test Results

5 Efficiency

The efficiency data is shown in the tables and graph below. This data was captured on a PMP4113 Rev E board.



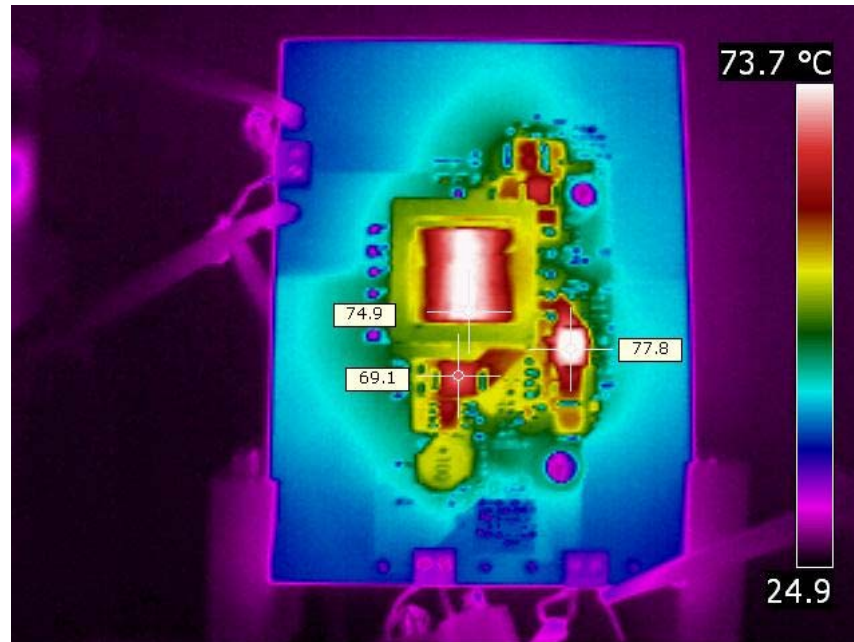
3.3V Output		80V Output		Pout	Vin	Iin	Pin	Losses	Efficiency
Vout	Iout	Vout	Iout						
3.337	0.000	79.1	0.000	0.00	36.00	0.014	0.50	0.50	0.0%
3.346	0.300	79.2	0.049	4.88	36.00	0.165	5.94	1.06	82.2%
3.347	0.600	79.2	0.101	10.01	36.00	0.316	11.38	1.37	88.0%
3.346	0.900	79.2	0.152	15.05	36.01	0.465	16.74	1.69	89.9%
3.347	1.201	79.2	0.200	19.86	36.01	0.610	21.97	2.11	90.4%
3.347	1.500	79.2	0.250	24.82	35.99	0.760	27.35	2.53	90.7%
3.348	1.800	79.2	0.301	29.87	35.99	0.915	32.93	3.07	90.7%
3.348	2.100	79.2	0.350	34.75	35.99	1.067	38.40	3.65	90.5%
3.348	2.399	79.2	0.400	39.71	36.00	1.223	44.03	4.32	90.2%
3.348	2.699	79.2	0.450	44.68	36.00	1.380	49.68	5.00	89.9%
3.349	2.999	79.2	0.500	49.64	36.00	1.538	55.37	5.72	89.7%
3.3V Output		80V Output		Pout	Vin	Iin	Pin	Losses	Efficiency
Vout	Iout	Vout	Iout						
3.338	0.000	79.3	0.000	0.00	48.0	0.011	0.53	0.53	0.0%
3.346	0.299	79.2	0.050	4.96	48.0	0.125	6.00	1.04	82.7%
3.347	0.600	79.2	0.100	9.93	48.0	0.237	11.38	1.45	87.3%
3.346	0.900	79.2	0.150	14.89	48.0	0.347	16.65	1.76	89.4%
3.347	1.200	79.2	0.200	19.86	48.0	0.459	22.04	2.18	90.1%
3.347	1.500	79.2	0.250	24.82	48.0	0.571	27.40	2.58	90.6%
3.348	1.800	79.2	0.300	29.79	48.0	0.684	32.83	3.05	90.7%
3.348	2.101	79.2	0.350	34.75	48.0	0.795	38.17	3.41	91.1%
3.348	2.399	79.2	0.400	39.71	48.0	0.912	43.77	4.06	90.7%
3.349	2.699	79.2	0.450	44.68	48.0	1.032	49.55	4.87	90.2%
3.349	3.000	79.2	0.500	49.65	48.0	1.150	55.19	5.54	90.0%
3.3V Output		80V Output		Pout	Vin	Iin	Pin	Losses	Efficiency
Vout	Iout	Vout	Iout						
3.338	0.000	79.3	0.000	0.00	75.0	0.010	0.75	0.75	0.0%
3.346	0.300	79.2	0.050	4.96	75.0	0.082	6.15	1.19	80.7%
3.347	0.601	79.2	0.100	9.93	75.0	0.154	11.55	1.62	86.0%
3.346	0.901	79.2	0.150	14.89	75.0	0.225	16.88	1.98	88.3%
3.347	1.199	79.2	0.200	19.85	75.0	0.297	22.28	2.42	89.1%
3.347	1.500	79.2	0.249	24.74	75.0	0.368	27.60	2.86	89.6%
3.348	1.801	79.2	0.299	29.71	75.0	0.438	32.85	3.14	90.4%
3.348	2.098	79.2	0.349	34.66	75.0	0.512	38.40	3.74	90.3%
3.348	2.401	79.2	0.402	39.88	75.0	0.585	43.88	4.00	90.9%
3.349	2.700	79.2	0.450	44.68	75.0	0.659	49.43	4.74	90.4%
3.349	3.001	79.2	0.499	49.57	75.0	0.727	54.53	4.95	90.9%

6 Thermal Images

The images below show top thermal images of the board. The ambient temperature was 26°C with no forced air flow. Both outputs were load at 100% rated loads. This data was captured on a PMP4113 Rev E board.

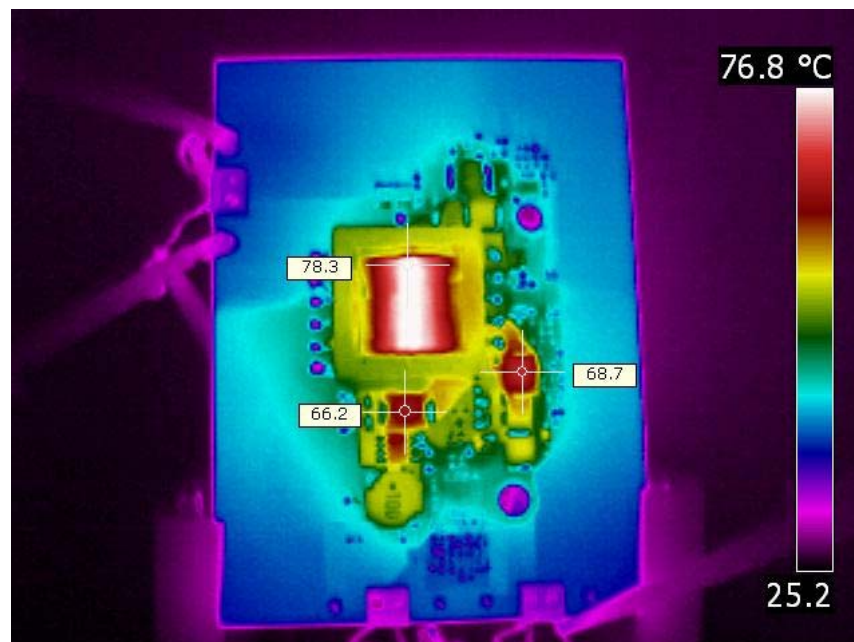
6.1 36V Input

The 80V output diode (D1) was the hottest component on the board and measured 77.8°C. The transformer windings measured 74.9°C.



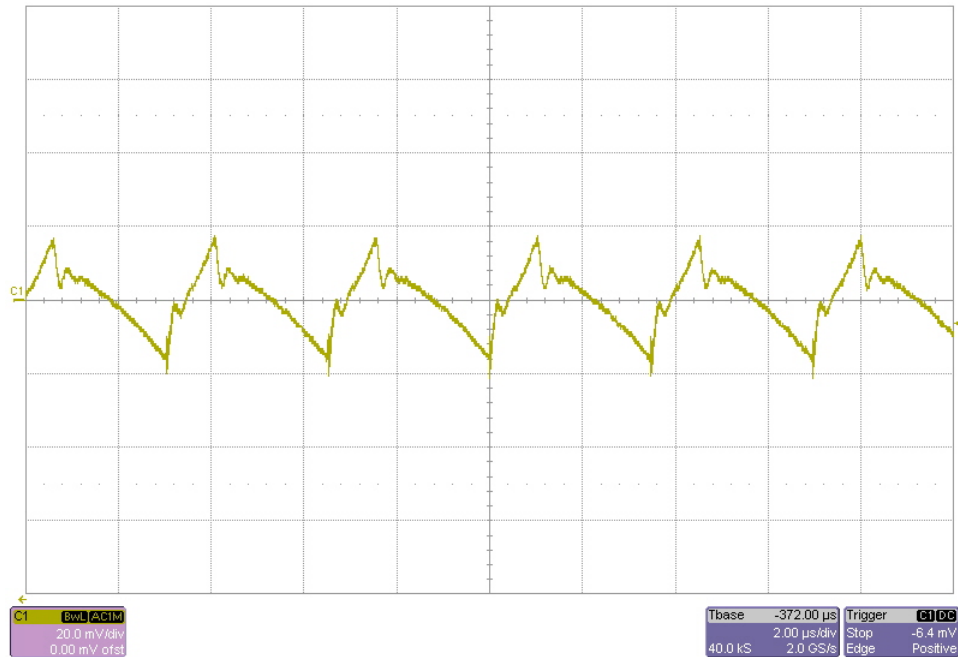
6.2 75Vin

The transformer was the hottest component on the board and measured 78.3°C.



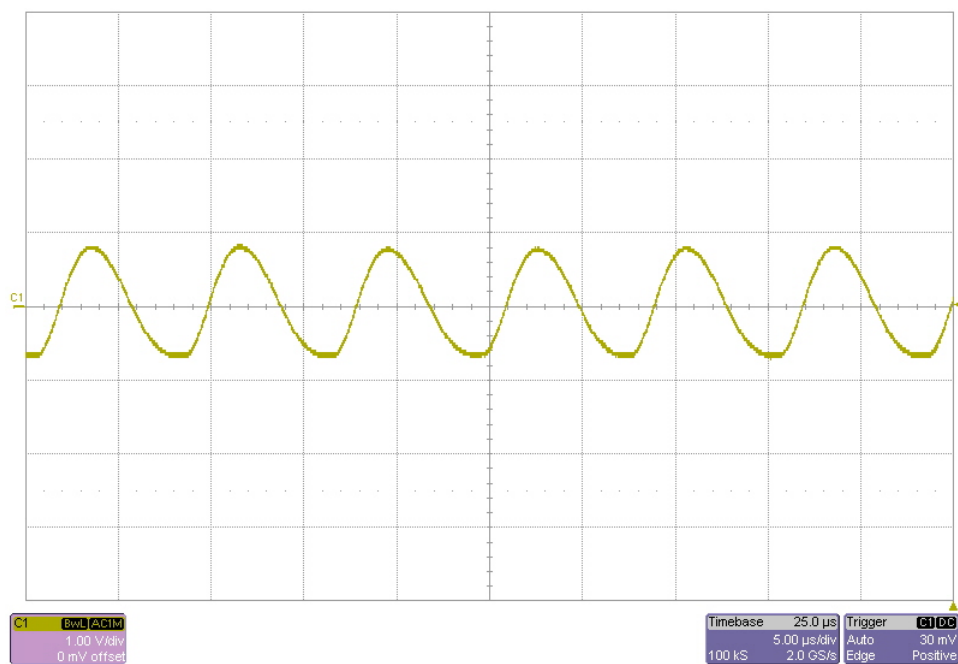
7 3.3V Output Ripple Voltage

The 3.3V output ripple voltage is shown in the plot below. The input voltage was 12V, and the output was loaded with 3A. This image was captured on a PMP4771 Rev A board.



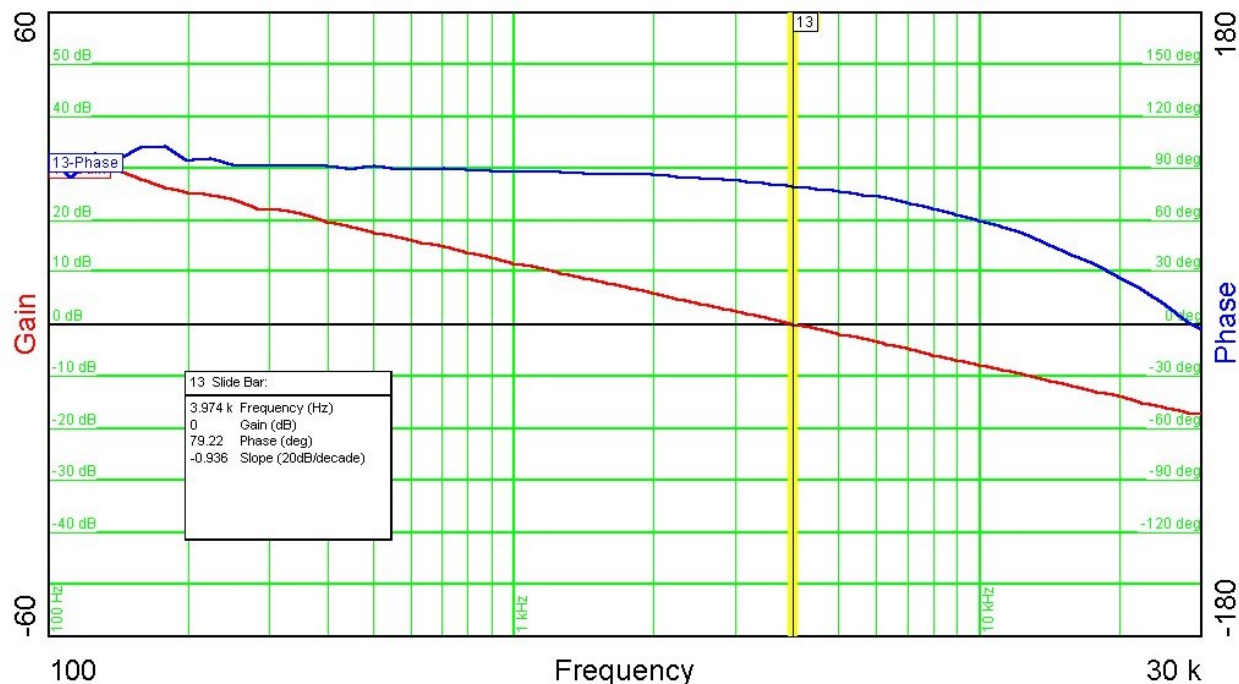
8 80V Output Ripple Voltage

The image below shows the 80V output ripple voltage with a 48V input and full load on both outputs. This image was captured on a PMP4113 Rev E board.



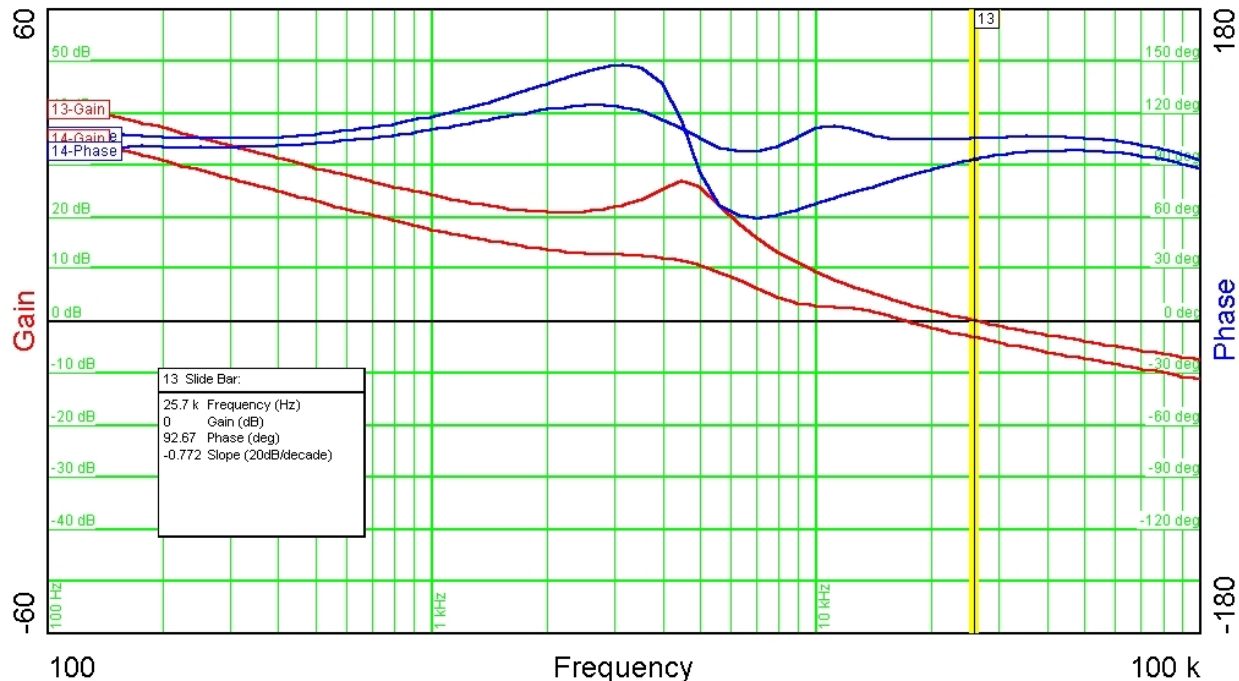
9 Flyback Frequency Response

The frequency response of the flyback feedback loop is shown below. The input was set to 48V and the outputs were loaded at maximum power. This measurement was taken on a PMP4113 Rev E board.



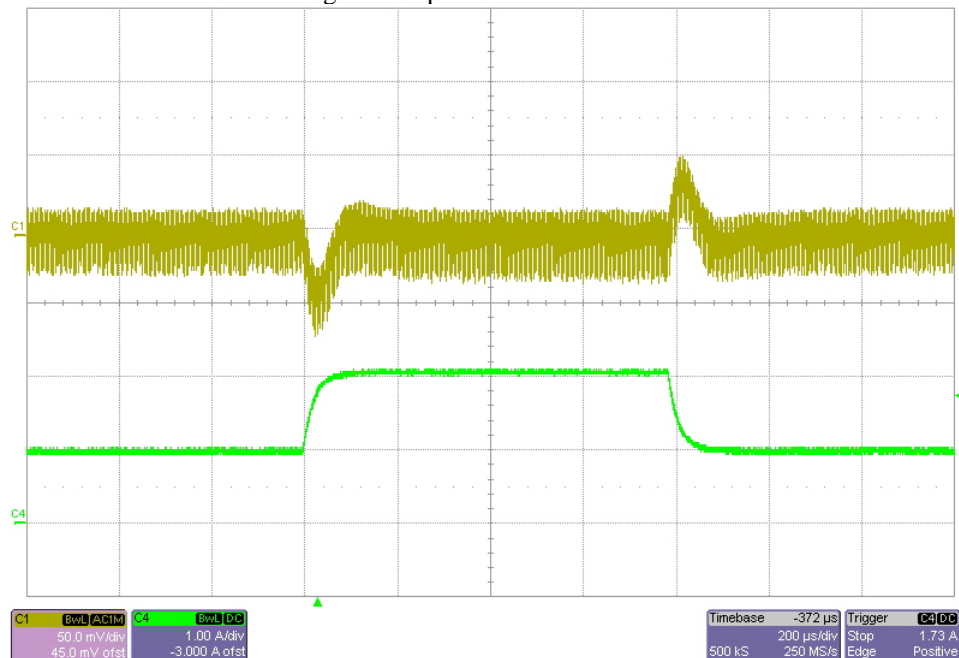
10 3.3V Frequency Response

The frequency response of the 3.3V feedback loop is shown below. The output was loaded with 3A. For the two sets of plots, the input voltage was set to 5V and 18V. This measurement was taken on a PMP4771 Rev A board



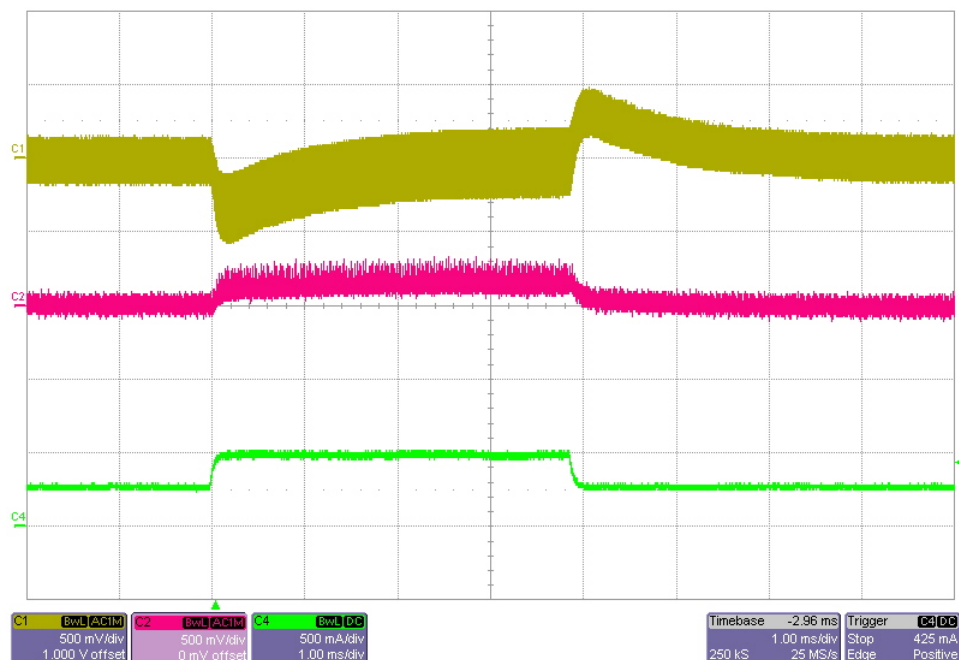
11 3.3V Transient Response

The image below shows the 3.3V response to a 1A to 2A pulsed load. Channel 1 is the AC-coupled output voltage, and channel 4 is the load current. This image was captured on a PMP4771 Rev A board.



12 80V Transient Response

The images below show the 80V response to a 250mA load step. Channel 1 is the AC-coupled 80V output voltage, channel 2 is the AC-coupled voltage on the cathode of D4 (input to the 3.3V converter), and channel 4 is the load current. This image was captured on a PMP4113 Rev E board.



13 Switching Waveforms

The image below shows main switching waveforms with a 75V input and full load on both outputs. Channel 1 is the drain-to-source voltage on the primary MOSFET (Q2). Channel 2 is the voltage on the anode of D4. Channel 3 is the voltage on the anode of D1. This image was captured on a PMP4113 Rev E board.

