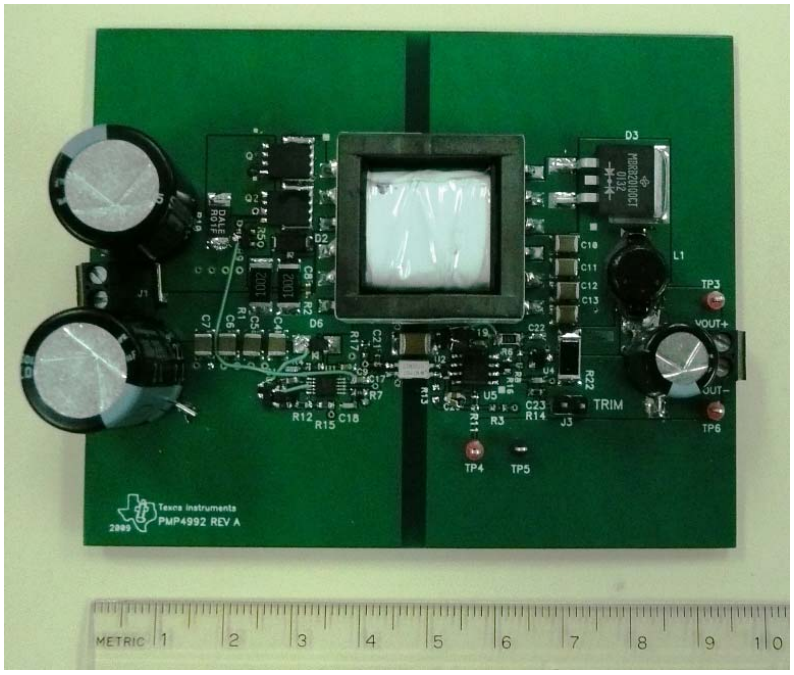
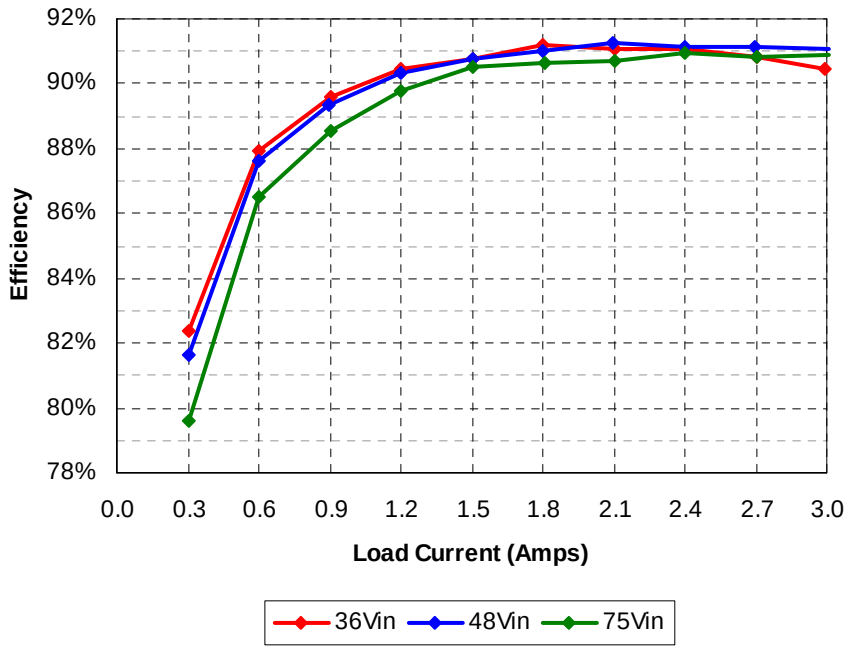
1 Photo

The photograph below shows the PMP4992 Rev C demo board. The circuit is built on a PMP4992 Rev A PWB.



2 Efficiency

The efficiency data is shown in the tables and graph below.



Vin	Iin	Iout	Vout	Pout	Losses	Efficiency
36.0	0.047	0.000	34.81	0.00	1.692	0.0%
36.0	0.351	0.301	34.58	10.41	2.226	82.4%
36.0	0.649	0.598	34.34	20.54	2.826	87.9%
36.0	0.953	0.901	34.11	30.73	3.571	89.6%
36.0	1.250	1.202	33.87	40.71	4.283	90.5%
36.0	1.544	1.500	33.64	50.46	5.117	90.8%
36.0	1.831	1.799	33.40	60.09	5.821	91.2%
36.0	2.125	2.101	33.16	69.67	6.821	91.1%
36.0	2.409	2.397	32.94	78.96	7.755	91.1%
36.0	2.707	2.707	32.69	88.49	8.946	90.8%
36.0	2.986	2.995	32.46	97.22	10.262	90.5%

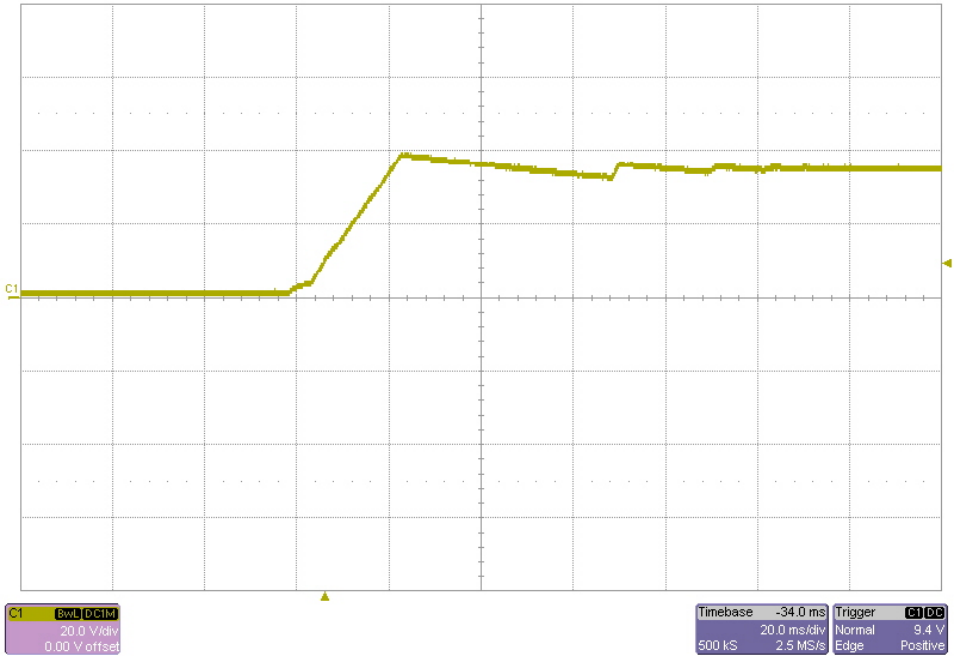
Vin	Iin	Iout	Vout	Pout	Losses	Efficiency
48.0	0.039	0.000	34.87	0.00	1.872	0.0%
48.0	0.265	0.300	34.62	10.39	2.332	81.7%
48.0	0.493	0.603	34.37	20.73	2.936	87.6%
48.0	0.714	0.897	34.13	30.61	3.653	89.3%
48.0	0.936	1.197	33.89	40.57	4.355	90.3%
48.0	1.163	1.506	33.65	50.68	5.139	90.8%
48.0	1.377	1.800	33.41	60.14	5.948	91.0%
48.0	1.589	2.098	33.18	69.61	6.649	91.3%
48.0	1.808	2.401	32.94	79.09	7.681	91.1%
48.0	2.018	2.699	32.70	88.26	8.591	91.1%
48.0	2.232	3.005	32.46	97.54	9.575	91.1%

Vin	Iin	Iout	Vout	Pout	Losses	Efficiency
75.0	0.030	0.000	34.87	0.00	2.250	0.0%
75.0	0.174	0.300	34.62	10.39	2.664	79.6%
75.0	0.318	0.600	34.38	20.63	3.222	86.5%
75.0	0.464	0.903	34.13	30.82	3.981	88.6%
75.0	0.605	1.202	33.89	40.74	4.639	89.8%
75.0	0.744	1.501	33.65	50.51	5.291	90.5%
75.0	0.887	1.805	33.41	60.31	6.220	90.7%
75.0	1.027	2.105	33.18	69.84	7.181	90.7%
75.0	1.160	2.402	32.94	79.12	7.878	90.9%
75.0	1.297	2.702	32.70	88.36	8.920	90.8%
75.0	1.431	3.007	32.45	97.58	9.748	90.9%

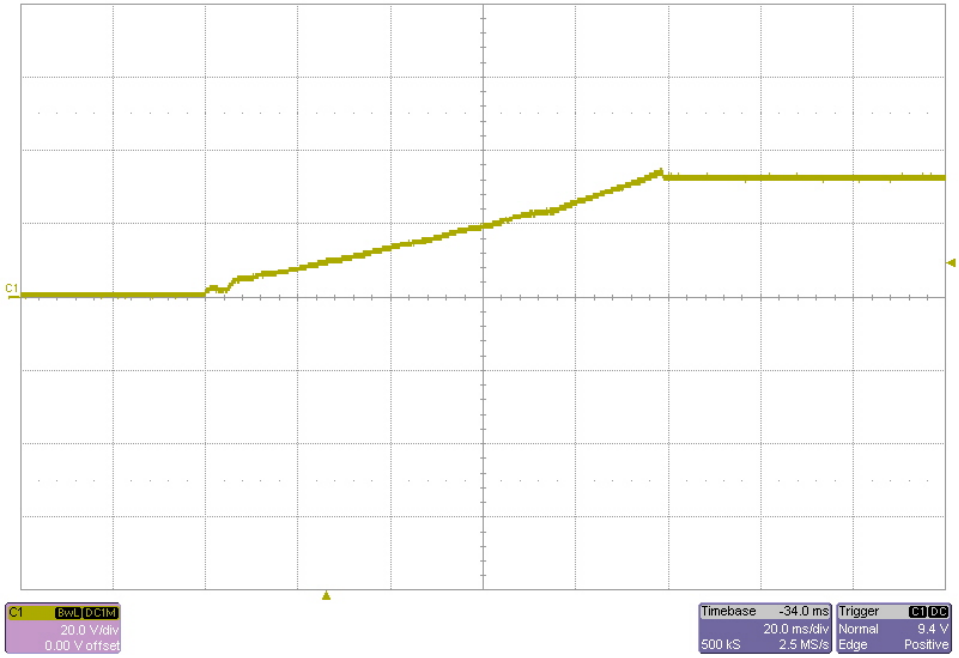
3 Startup

The output voltage at startup is shown in the images below. The input voltage was 48V.

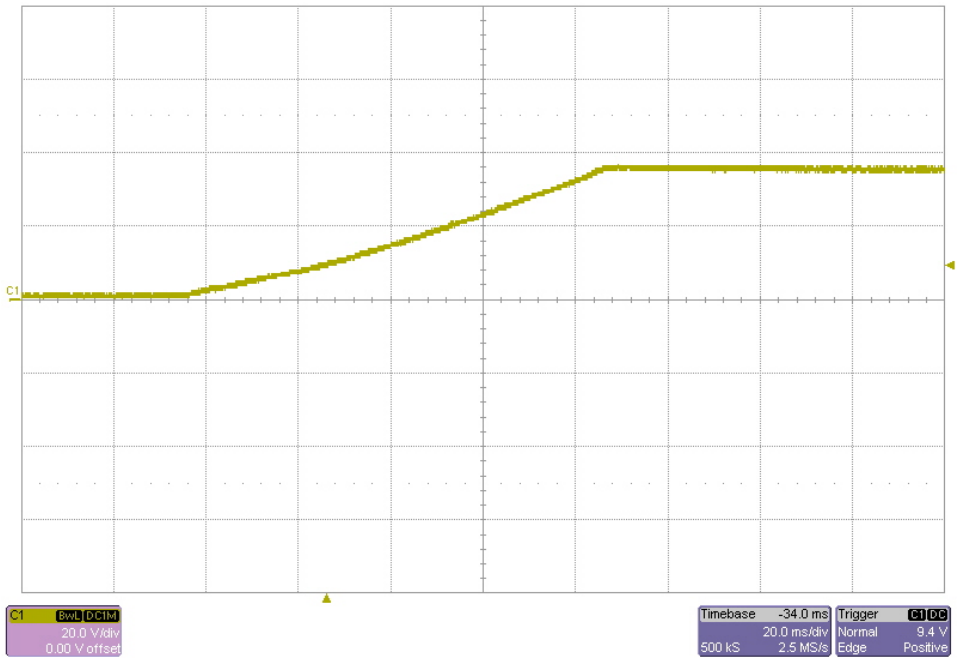
3.1 No External Capacitance – No Load



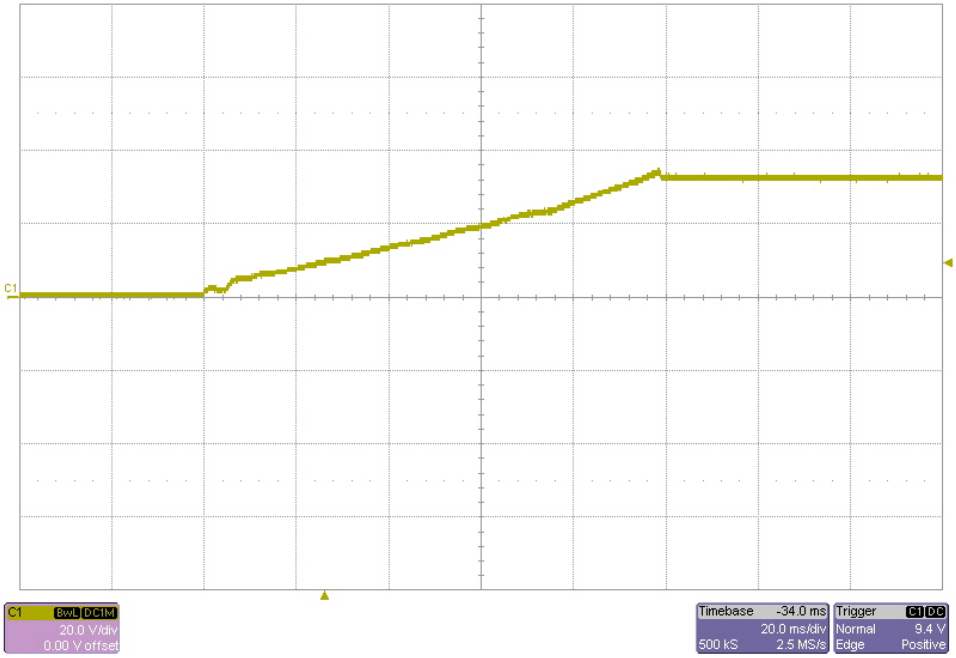
3.2 No External Capacitance – 3A Load



3.3 4400uF External Capacitance – No Load



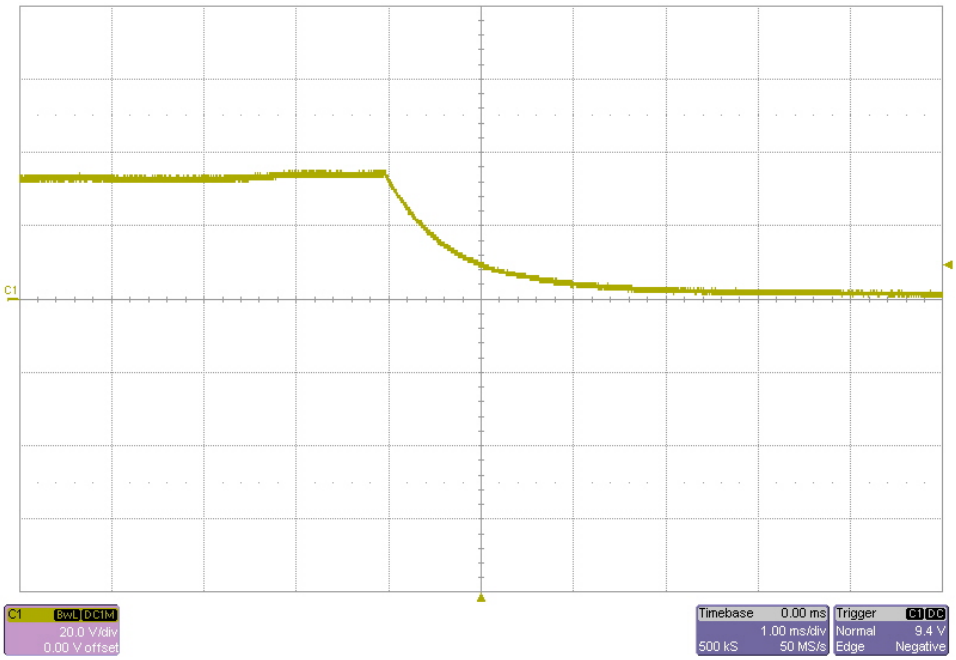
3.4 4400uF External Capacitance – 3A Load



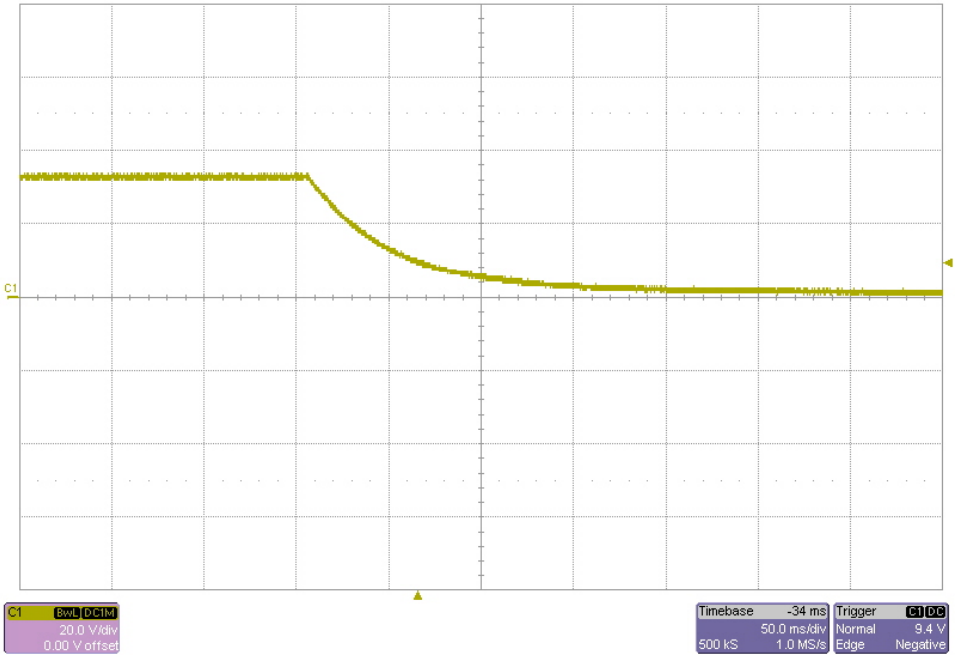
4 Turn-Off

The output voltage after removal of the input source is shown in the images below. The input voltage was 48V and the output was load with a 10 ohm resistive load.

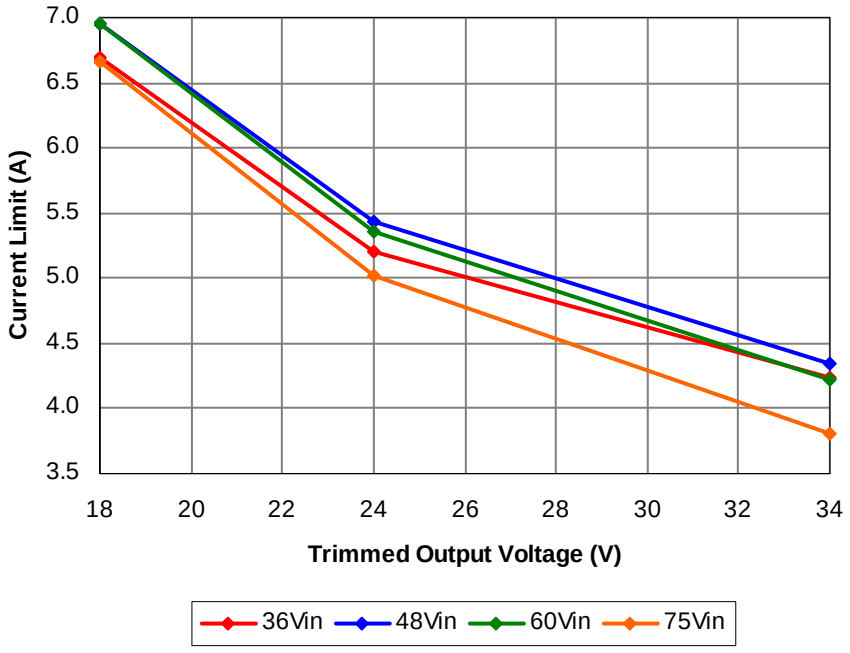
4.1 No External Capacitance



4.2 4400uF External Capacitance

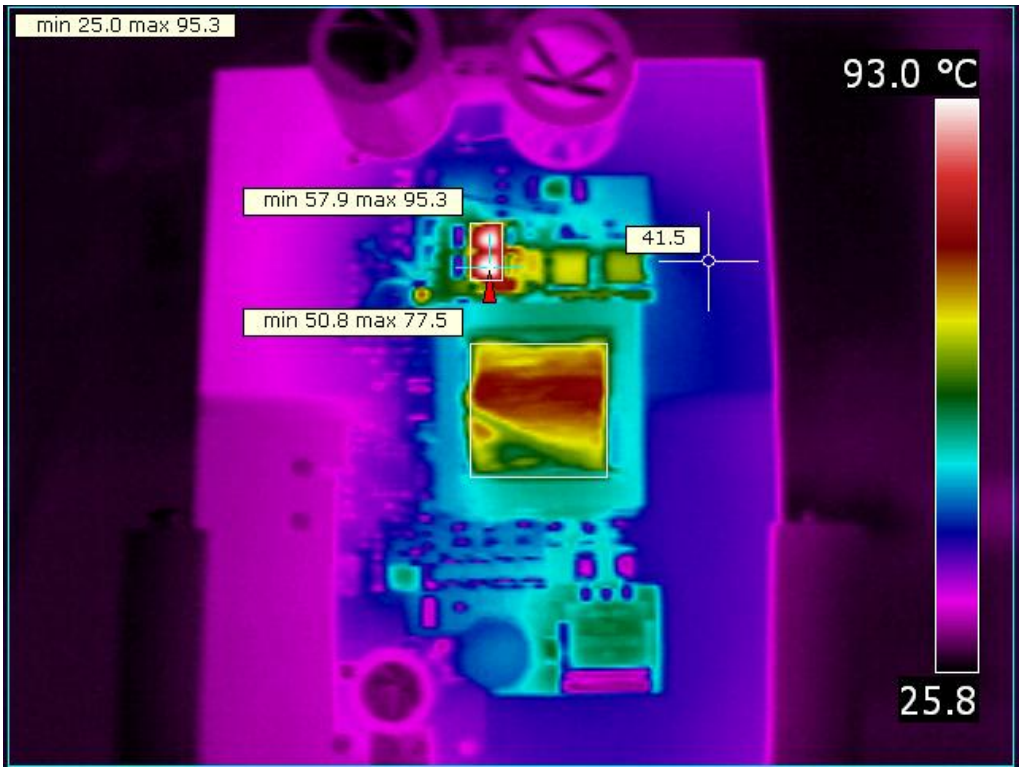


5 Current Limit



6 Thermal Image

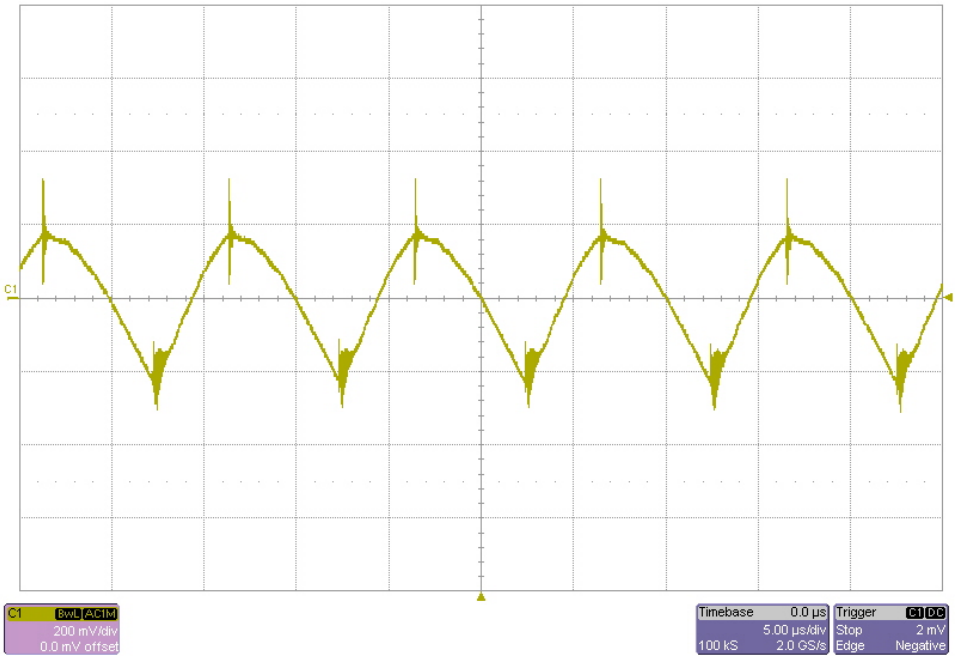
A thermal image of the top side of the board is shown with a 3A load. The ambient temperature was 26ºC, with ~200lfm of forced air flow.



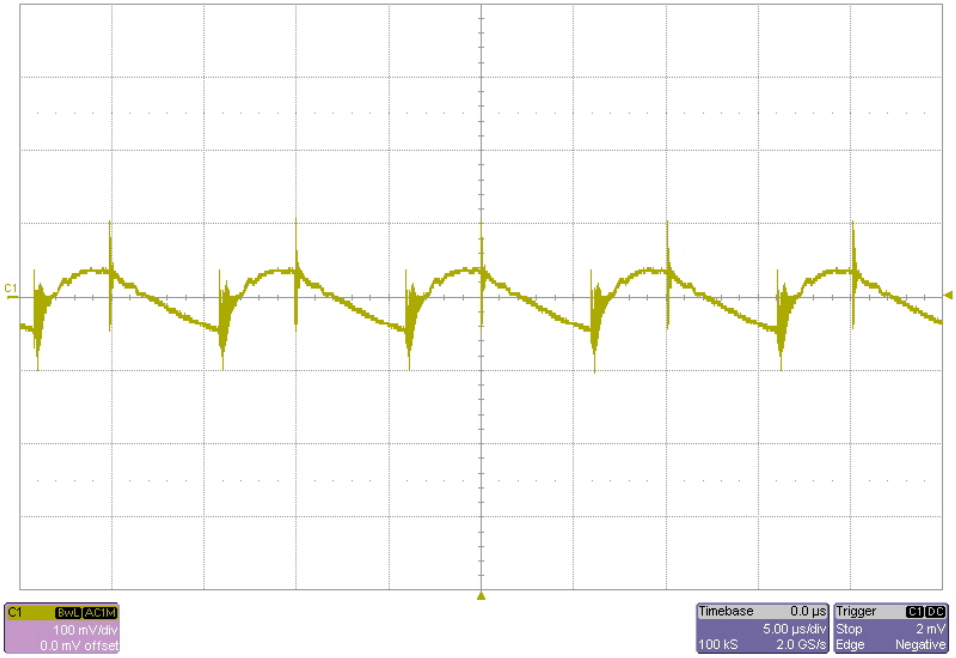
7 Output Ripple Voltage

The output ripple voltage is shown in the plots below. The input was set to 48V. The load was set to 3A.

7.1 No External Capacitance



7.2 4400uF External Capacitance

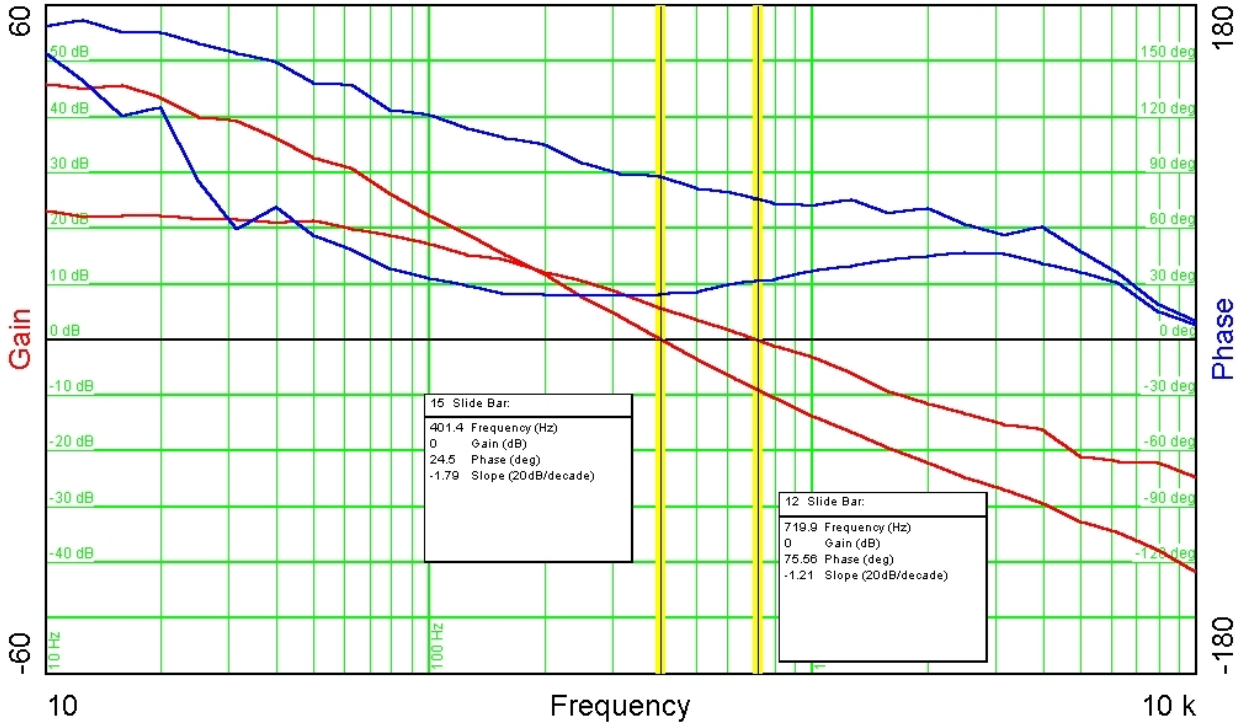


8 Frequency Response

The frequency response of feedback loop is shown in the image below. The input was set to 48V.

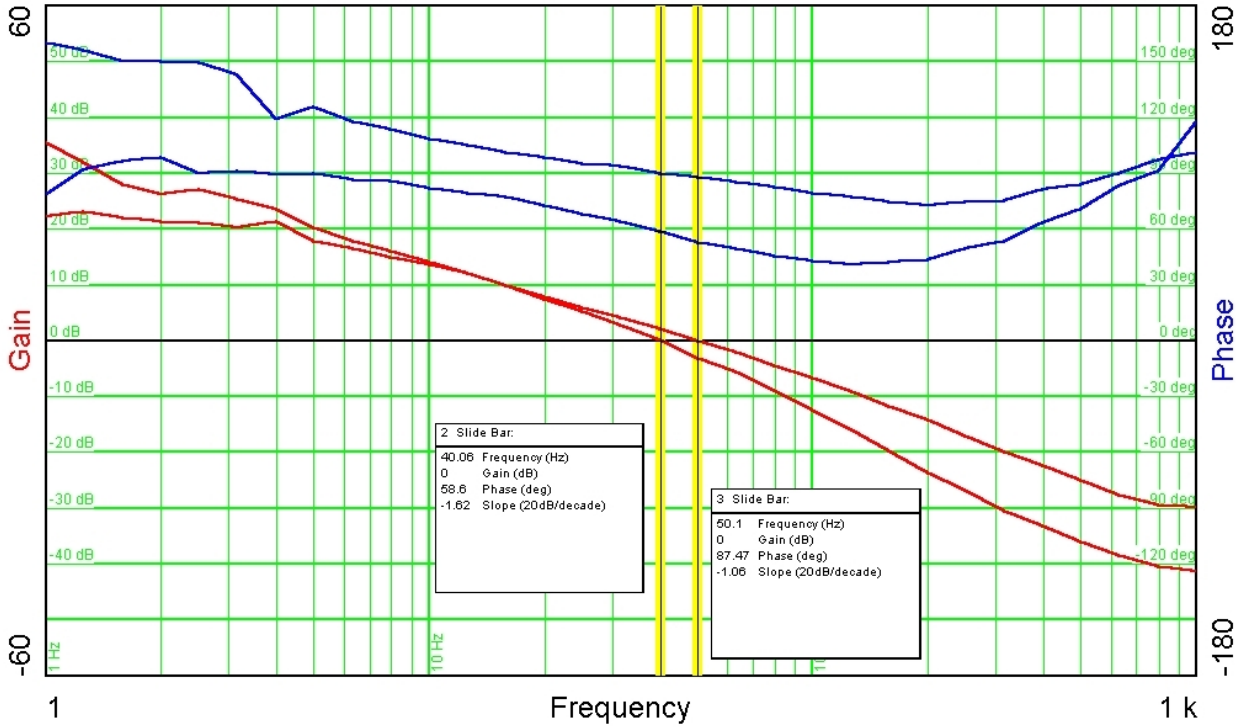
8.1 No External Capacitance

The gain-phase plots for a 3A load are labeled with “12 Slide Bar”. The gain-phase plots for a no load condition are labeled with “15 Slide Bar”.



8.2 4400uF External Capacitance

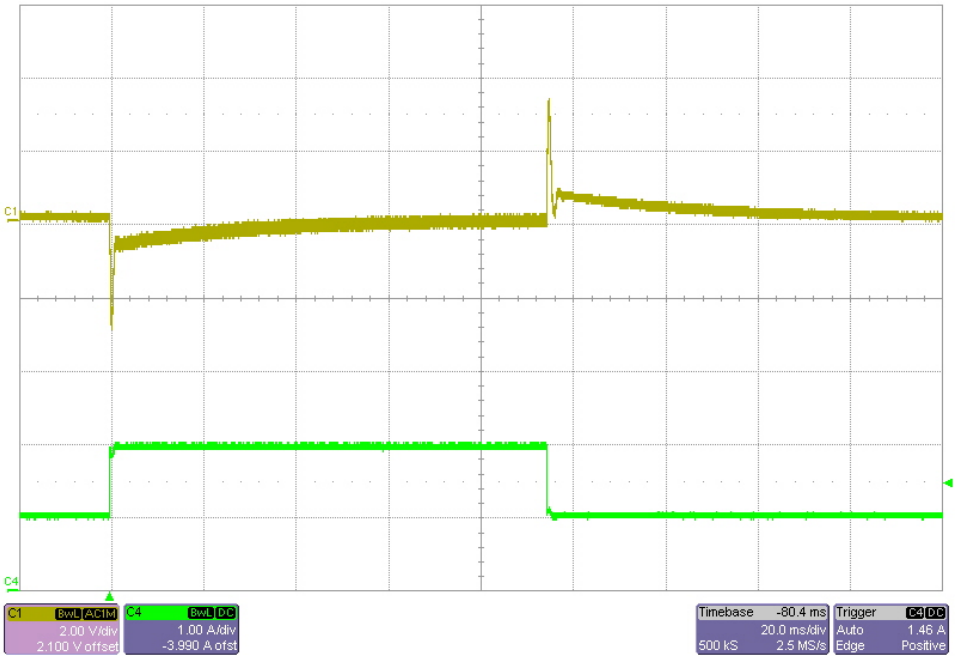
The gain-phase plots for a 3A load are labeled with “3 Slide Bar”. The gain-phase plots for a no load condition are labeled with “2 Slide Bar”.



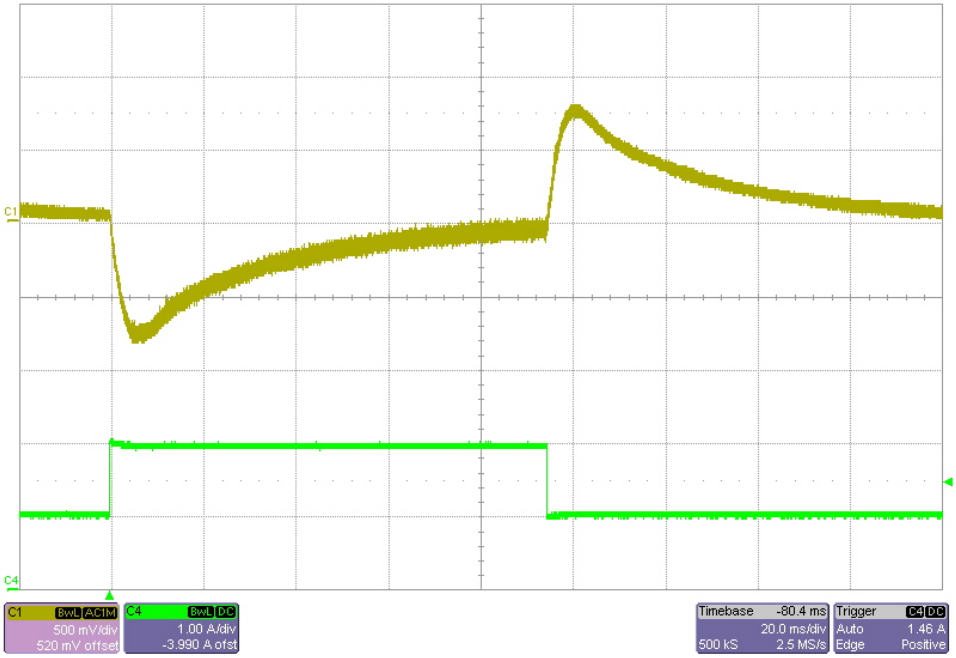
9 Load Transients

The images below show the response to a 1A to 2A load transient. The input voltage was set to 48V. Channel 1 shows the output voltage (ac coupled). Channel 4 shows the load current.

9.1 No External Capacitance



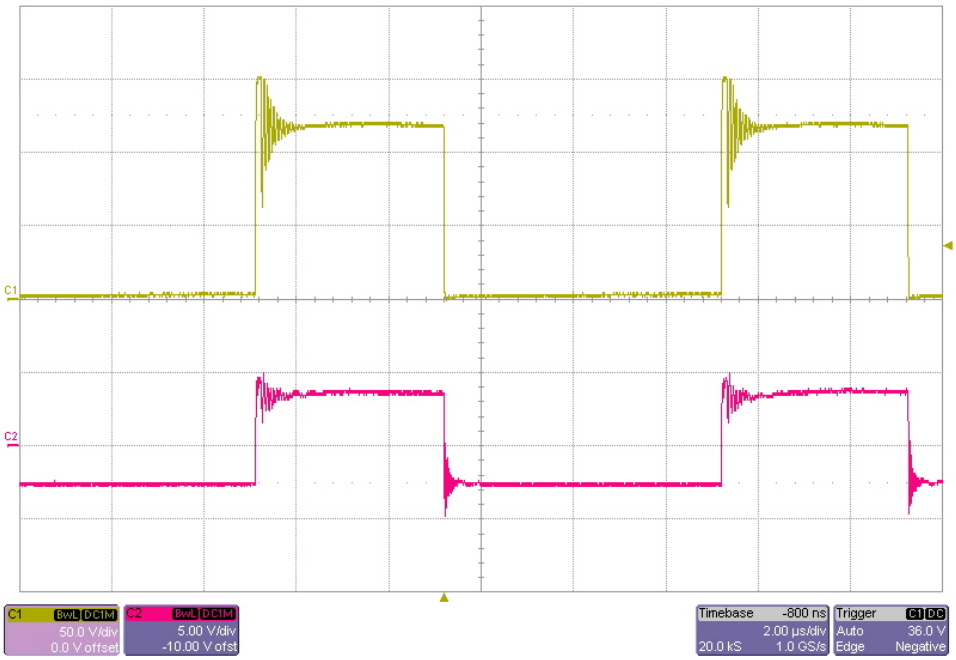
9.2 4400uF External Capacitance



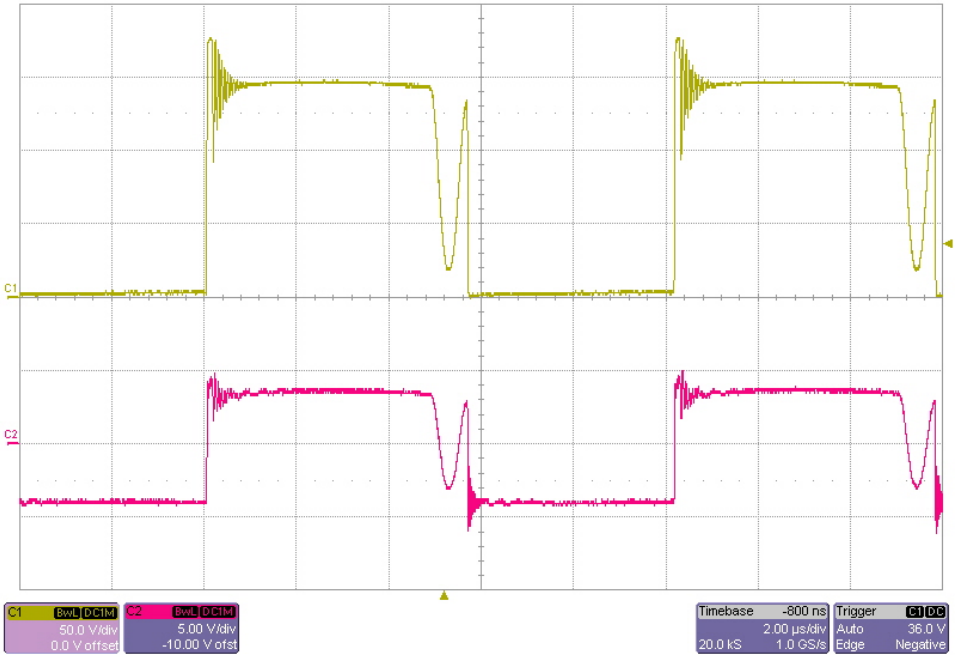
10 Switching Waveforms

The images below show the drain-to-source voltage waveform on the primary MOSFETs (channel 1) and the voltage on the anode of the output diode (channel 2). The output was loaded with 3A.

10.1 48V Input Voltage



10.2 75V Input Voltage



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