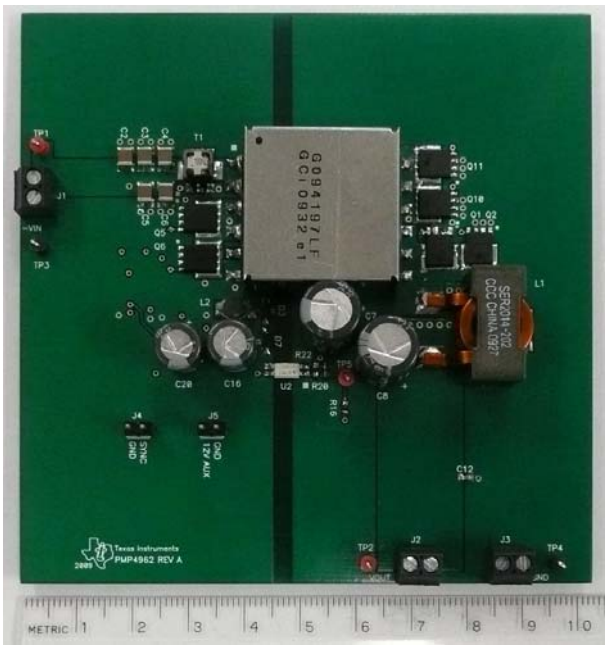
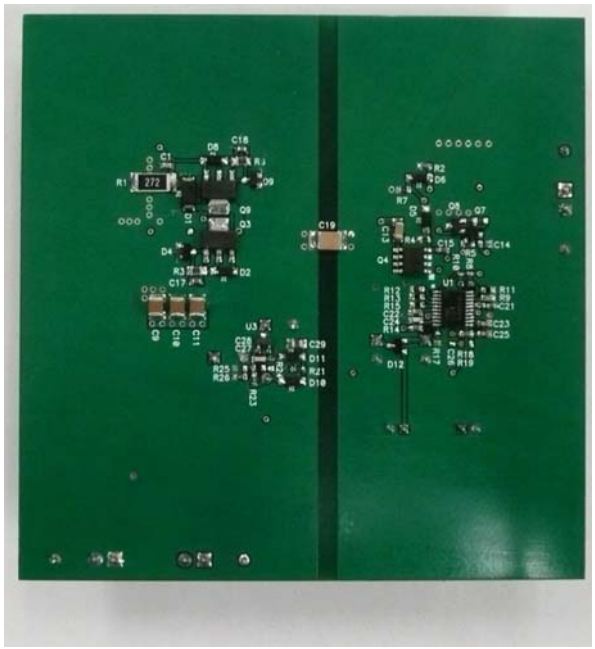
PMP5753 Rev A Test Results

1 Photo

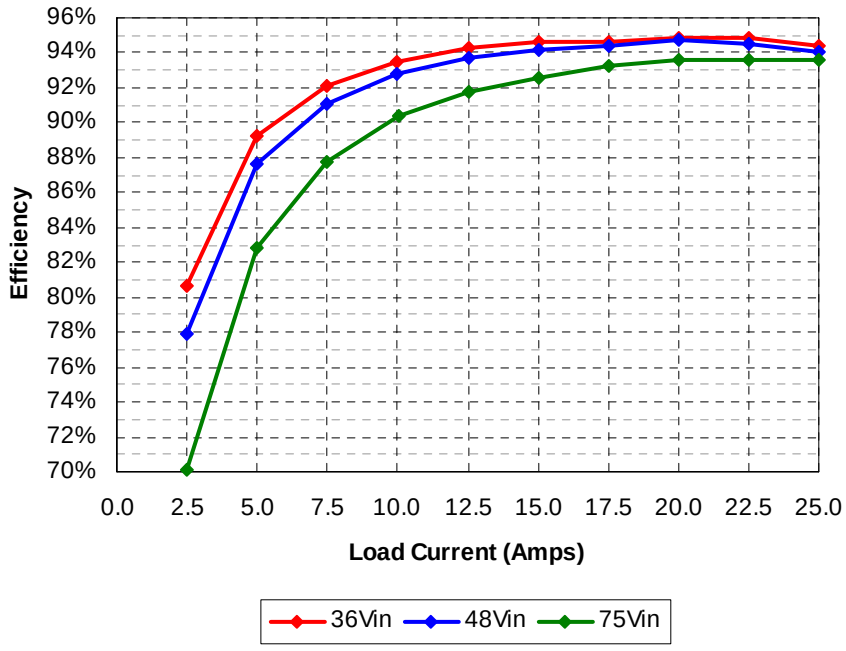
The photographs below show a top and bottom view of the PMP5753 Rev A demo board. The circuit is built on a PMP4962 Rev A PWB.





2 Efficiency

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



Vin	Iin	Iout	Vout	Pout	Losses	Efficiency
36.0	0.087	0.000	5.01	0.00	3.132	0.0%
36.0	0.431	2.498	5.01	12.51	2.999	80.7%
36.0	0.781	5.01	5.01	25.08	3.033	89.2%
36.0	1.133	7.50	5.01	37.58	3.208	92.1%
36.0	1.489	10.00	5.01	50.10	3.497	93.5%
36.0	1.847	12.51	5.01	62.68	3.809	94.3%
36.0	2.207	15.0	5.01	75.15	4.292	94.6%
36.0	2.573	17.5	5.01	87.68	4.941	94.7%
36.0	2.933	20.0	5.01	100.20	5.374	94.9%
36.0	3.303	22.5	5.01	112.73	6.166	94.8%
36.0	3.687	25.0	5.01	125.25	7.462	94.4%

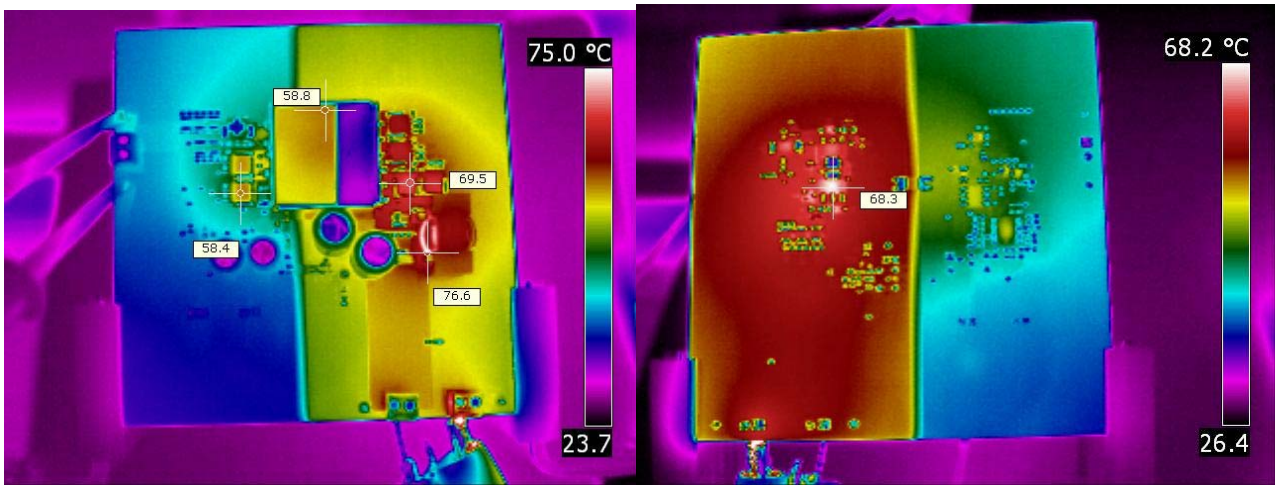
Vin	Iin	Iout	Vout	Pout	Losses	Efficiency
48.0	0.078	0.000	5.01	0.00	3.744	0.0%
48.0	0.335	2.499	5.01	12.52	3.560	77.9%
48.0	0.597	5.01	5.01	25.10	3.556	87.6%
48.0	0.859	7.50	5.01	37.58	3.657	91.1%
48.0	1.125	10.00	5.01	50.10	3.900	92.8%
48.0	1.393	12.50	5.01	62.63	4.239	93.7%
48.0	1.662	15.0	5.01	75.15	4.626	94.2%
48.0	1.935	17.5	5.01	87.68	5.205	94.4%
48.0	2.204	20.0	5.01	100.20	5.592	94.7%
48.0	2.484	22.5	5.01	112.73	6.507	94.5%
48.0	2.773	25.0	5.01	125.25	7.854	94.1%

Vin	Iin	Iout	Vout	Pout	Losses	Efficiency
75.0	0.074	0.000	5.01	0.00	5.550	0.0%
75.0	0.238	2.499	5.01	12.52	5.330	70.1%
75.0	0.403	5.00	5.01	25.02	5.200	82.8%
75.0	0.571	7.50	5.01	37.58	5.250	87.7%
75.0	0.740	10.01	5.01	50.15	5.350	90.4%
75.0	0.910	12.50	5.01	62.63	5.625	91.8%
75.0	1.082	15.0	5.01	75.15	6.000	92.6%
75.0	1.254	17.5	5.01	87.68	6.375	93.2%
75.0	1.427	20.0	5.01	100.20	6.825	93.6%
75.0	1.605	22.5	5.01	112.73	7.650	93.6%
75.0	1.784	25.0	5.01	125.25	8.550	93.6%

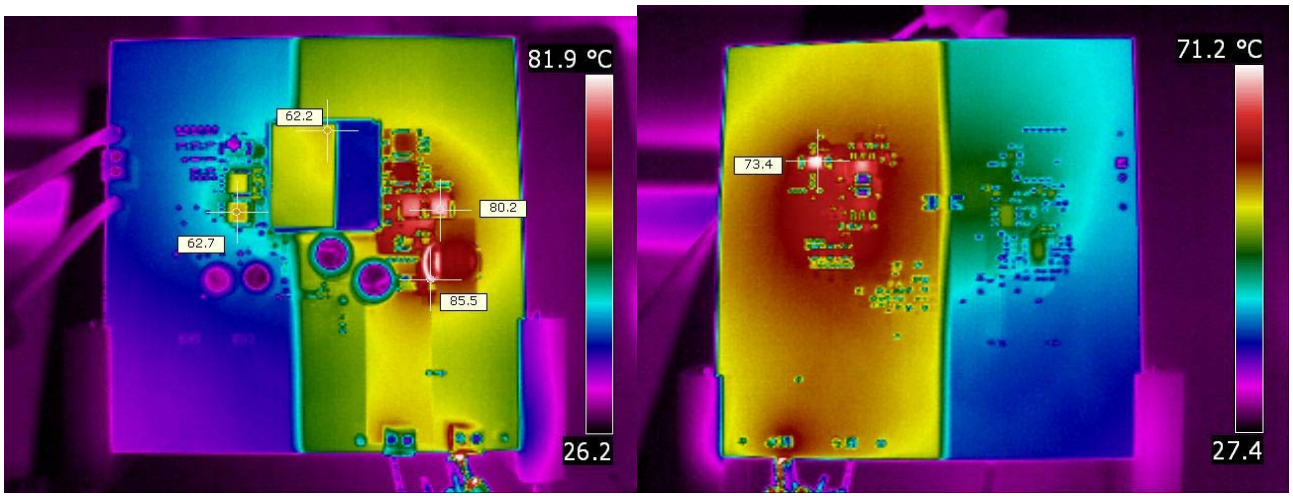
3 Thermal Images

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 output was loaded with 25A.

3.1 36Vdc Input

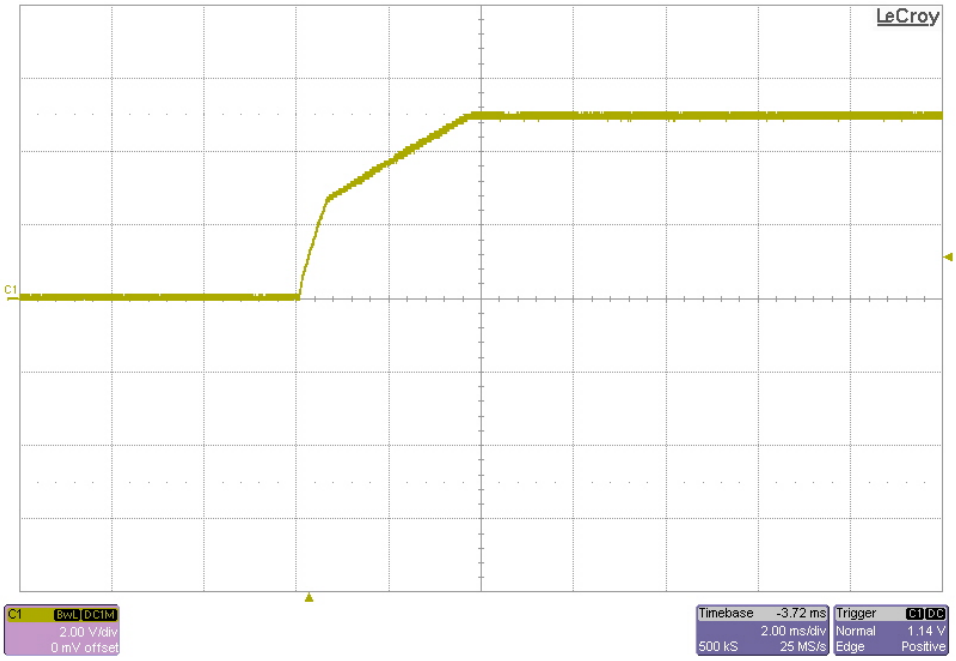


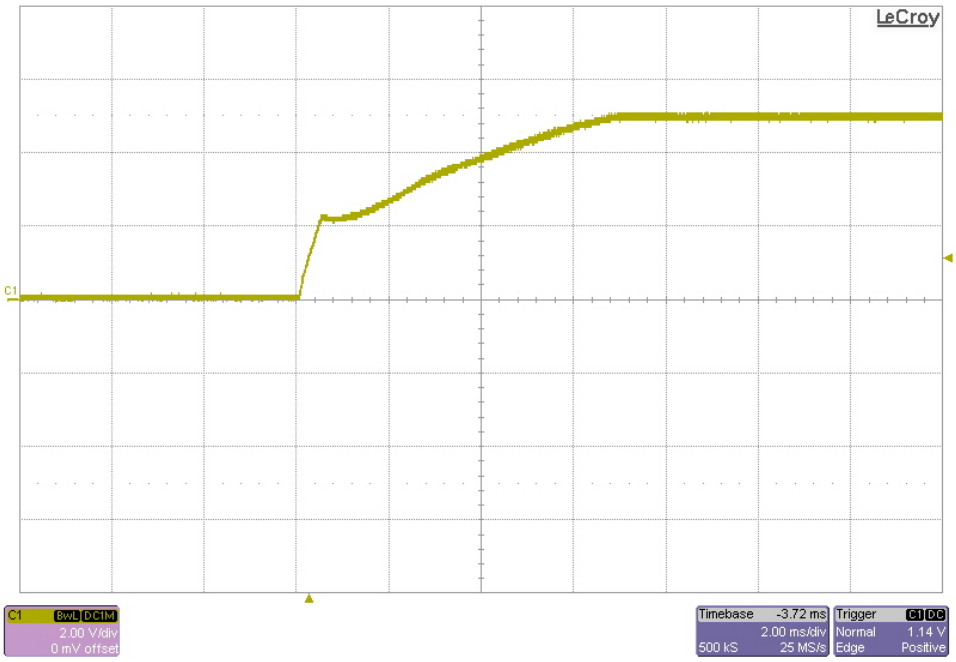
3.2 75Vdc Input



4 Startup

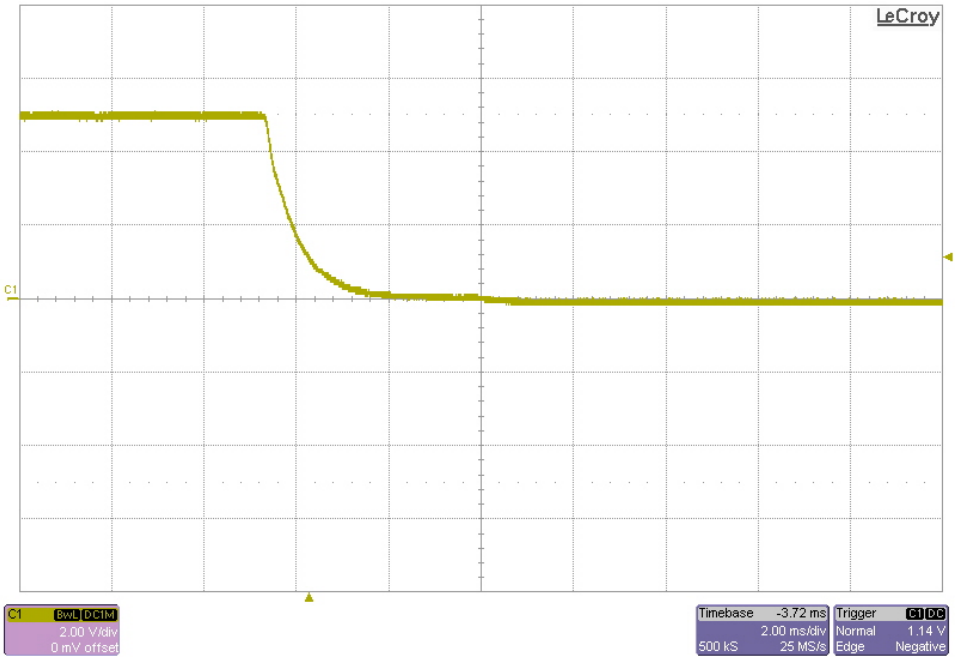
The output voltage at startup is shown in the images below. The input was 48VDC. For the top image the output was unloaded. For the bottom image, the output was loaded with 25A.





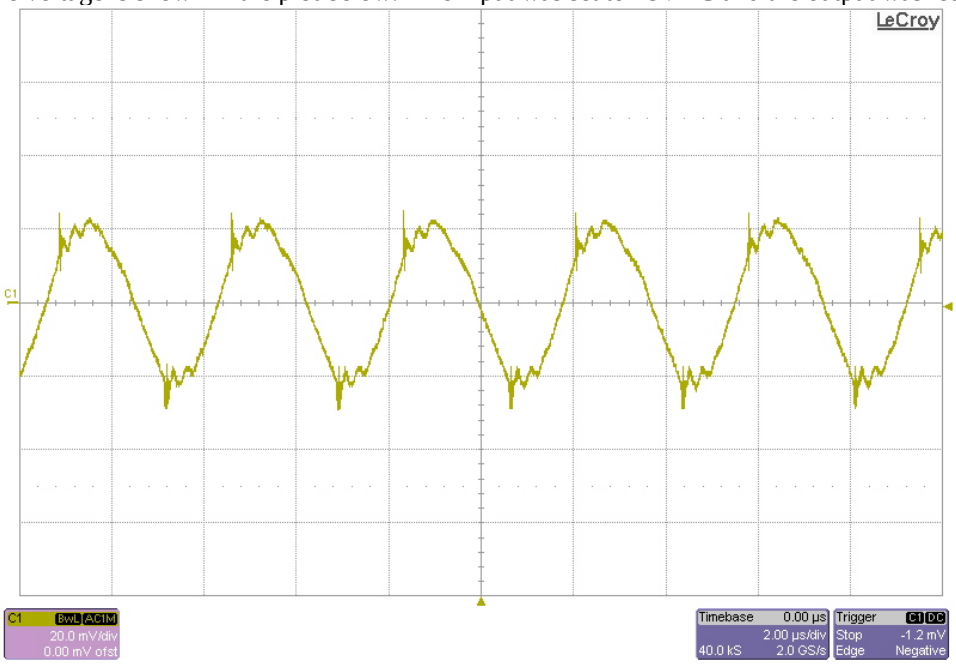
5 Shutdown

The output voltage at power down is shown in the image below. The input was 48VDC and the output was loaded with 25A.



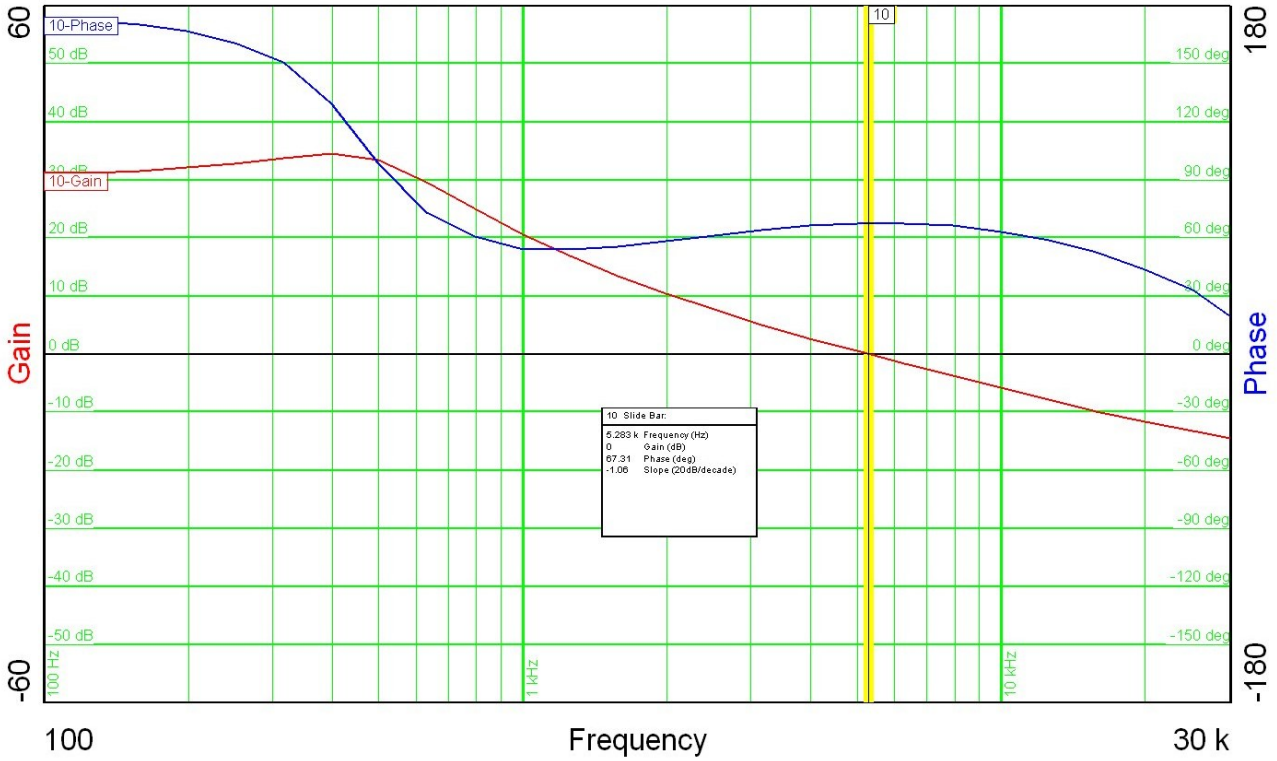
6 Output Ripple Voltage

The output ripple voltage is shown in the plot below. The input was set to 48VDC and the output was loaded with 25A.



7 Frequency Response

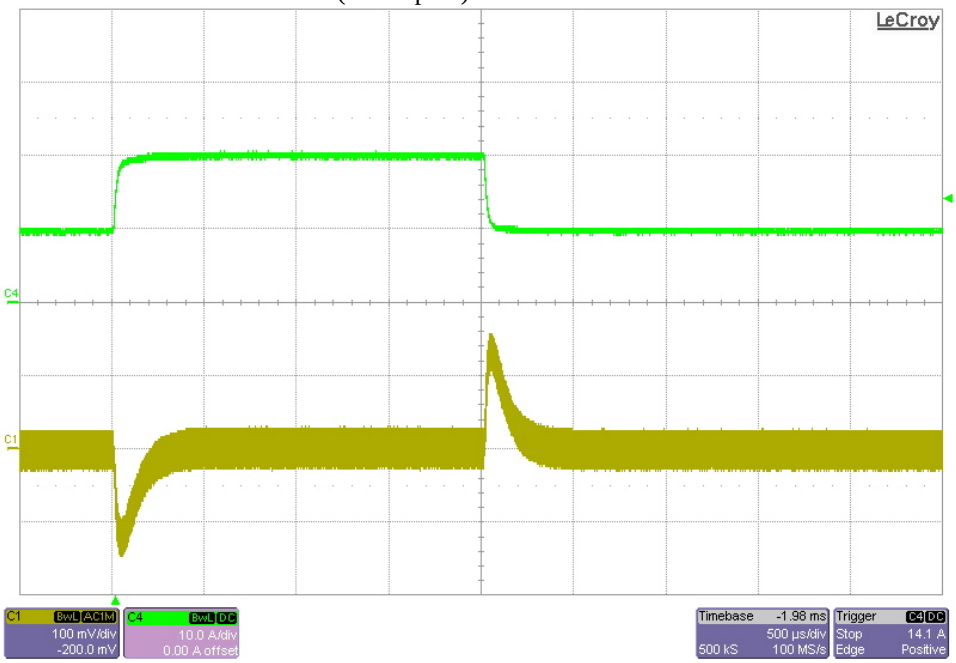
The frequency response of the feedback loop is shown below. The input was set to 48V and the output was loaded with 25A.



8 Load Transients

The response to a load step from 10A to 20A is shown in the image below. The input was set to 48V.

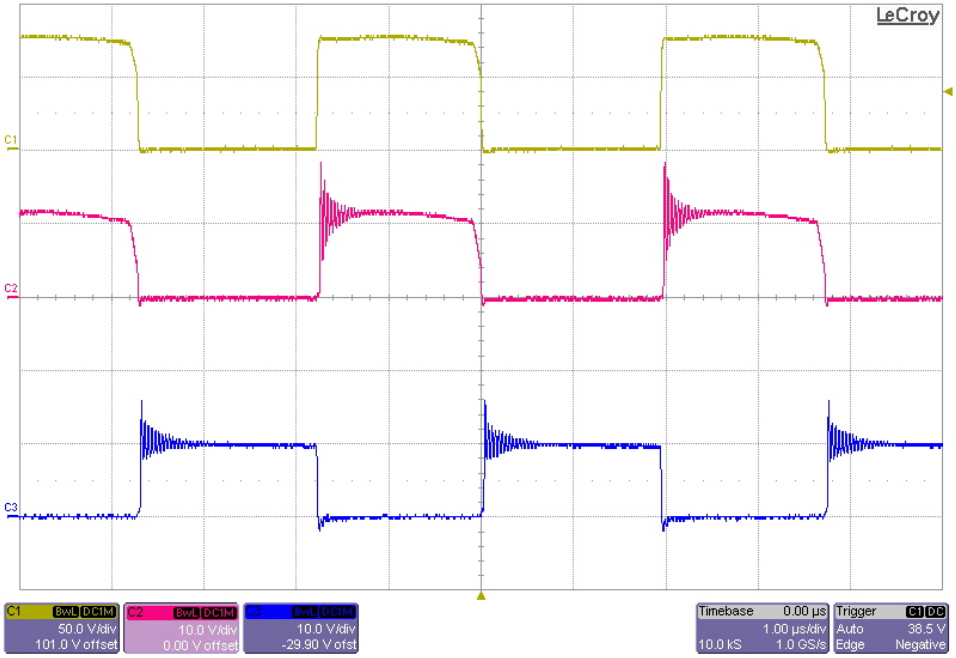
Channel 1: Vout 100mV/div (ac coupled) Channel 4: Iout 10A/div



9 Switching Waveforms

The image below shows the drain-to-source voltage waveforms on the switching MOSFETs. The output was loaded with 25A. For the top image, the input was 36Vdc. For the bottom image, the input was 75Vdc.

Channel 1: Q5 & Q6 Vds Channel 2: Q1 & Q2 Vds
Channel 3: Q10 & Q11 Vds



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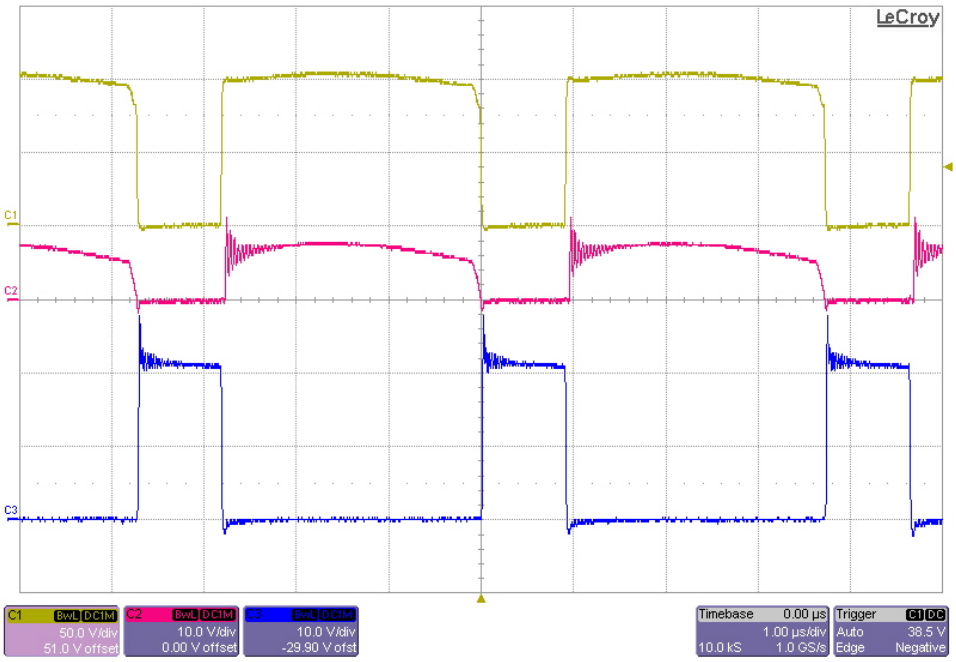

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