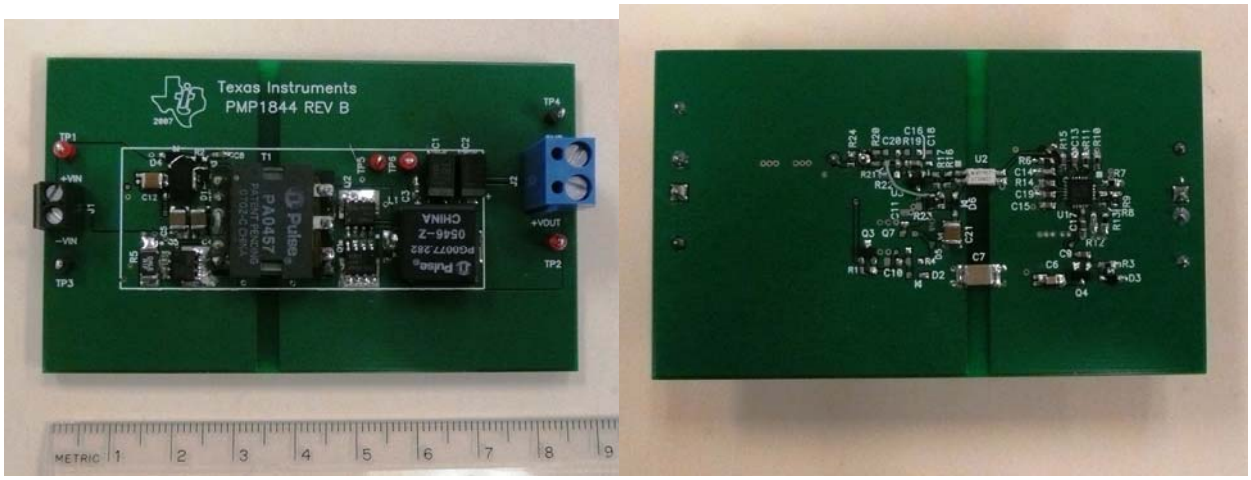
1 Photo

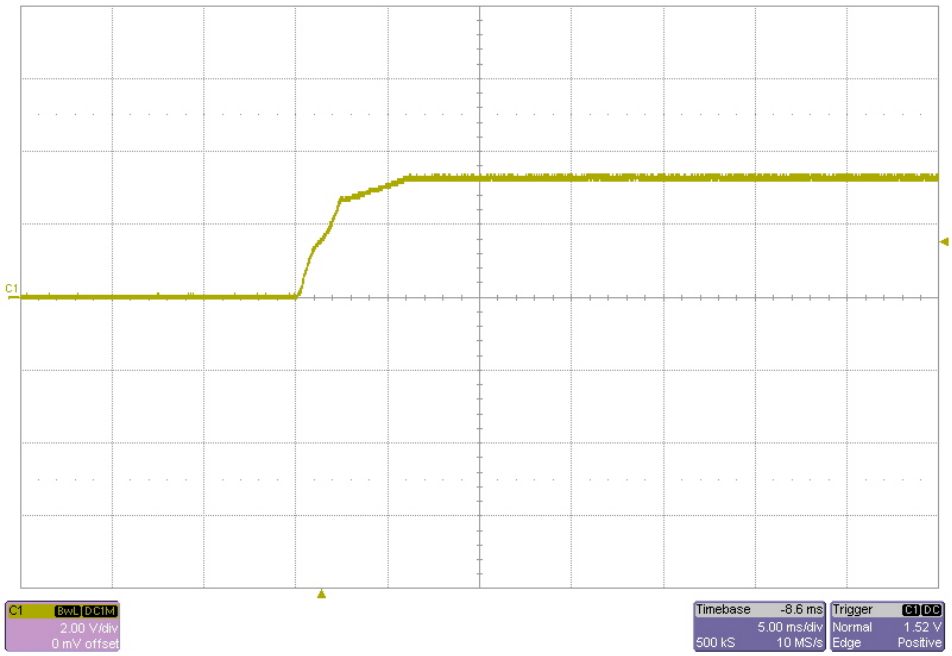
The photographs below show a top and bottom view of the PMP4234 Rev B demo board. The circuit is built on a PMP1844 Rev B PWB.



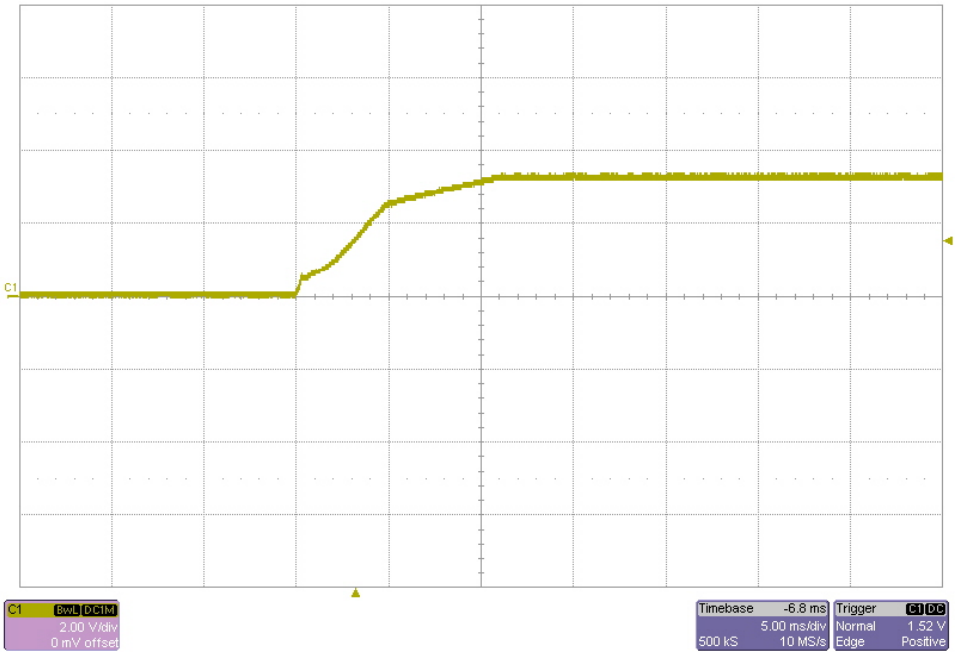
2 Startup

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

2.1 No Load

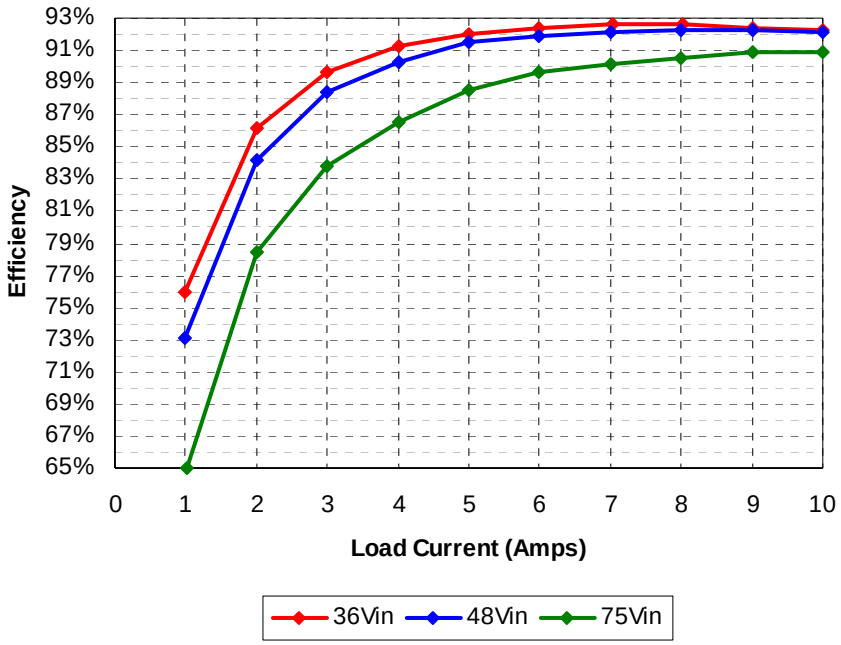


2.2 Full Load



3 Efficiency

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



Iout	Vout	Vin	Iin	Pout	Losses	Efficiency
0.000	3.295	36.01	0.031	0.00	1.116	0.0%
0.995	3.295	36.00	0.120	3.28	1.041	75.9%
1.997	3.294	36.01	0.212	6.58	1.056	86.2%
3.008	3.294	35.99	0.307	9.91	1.141	89.7%
4.00	3.293	36.01	0.401	13.17	1.268	91.2%
5.01	3.293	35.99	0.498	16.50	1.425	92.0%
6.00	3.293	36.01	0.594	19.76	1.632	92.4%
7.03	3.292	36.02	0.694	23.14	1.855	92.6%
8.01	3.292	36.00	0.791	26.37	2.107	92.6%
9.01	3.292	35.99	0.892	29.66	2.442	92.4%
10.01	3.292	36.00	0.992	32.95	2.759	92.3%

Iout	Vout	Vin	Iin	Pout	Losses	Efficiency
0.000	3.295	48.0	0.026	0.00	1.248	0.0%
1.000	3.295	48.0	0.094	3.30	1.217	73.0%
1.998	3.294	48.0	0.163	6.58	1.243	84.1%
3.003	3.294	48.0	0.233	9.89	1.292	88.4%
4.00	3.294	48.0	0.304	13.18	1.416	90.3%
5.00	3.293	48.0	0.375	16.47	1.535	91.5%
6.00	3.293	48.0	0.448	19.76	1.746	91.9%
7.00	3.293	48.0	0.521	23.05	1.957	92.2%
8.00	3.293	48.0	0.595	26.34	2.216	92.2%
9.00	3.292	48.0	0.669	29.63	2.484	92.3%
10.00	3.292	48.0	0.744	32.92	2.792	92.2%

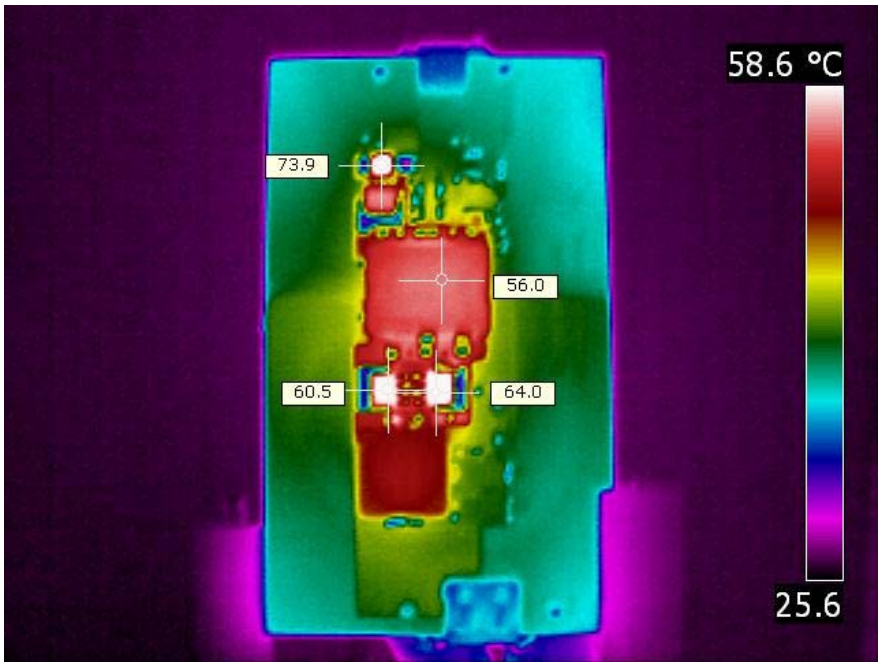
Iout	Vout	Vin	Iin	Pout	Losses	Efficiency
0.000	3.296	75.0	0.025	0.00	1.875	0.0%
1.006	3.295	75.0	0.068	3.31	1.785	65.0%
1.999	3.295	75.0	0.112	6.59	1.813	78.4%
2.994	3.294	75.0	0.157	9.86	1.913	83.8%
4.00	3.294	75.0	0.203	13.18	2.049	86.5%
5.00	3.294	75.0	0.248	16.47	2.130	88.5%
6.00	3.294	75.0	0.294	19.76	2.286	89.6%
7.00	3.293	75.0	0.341	23.05	2.524	90.1%
8.00	3.293	75.0	0.388	26.34	2.756	90.5%
9.00	3.293	75.0	0.435	29.64	2.988	90.8%
10.00	3.293	75.0	0.483	32.93	3.295	90.9%

4 Thermal Images

The images below show top thermal images of the board. The ambient temperature was 26ºC with no forced air flow. The output was loaded with 10A.

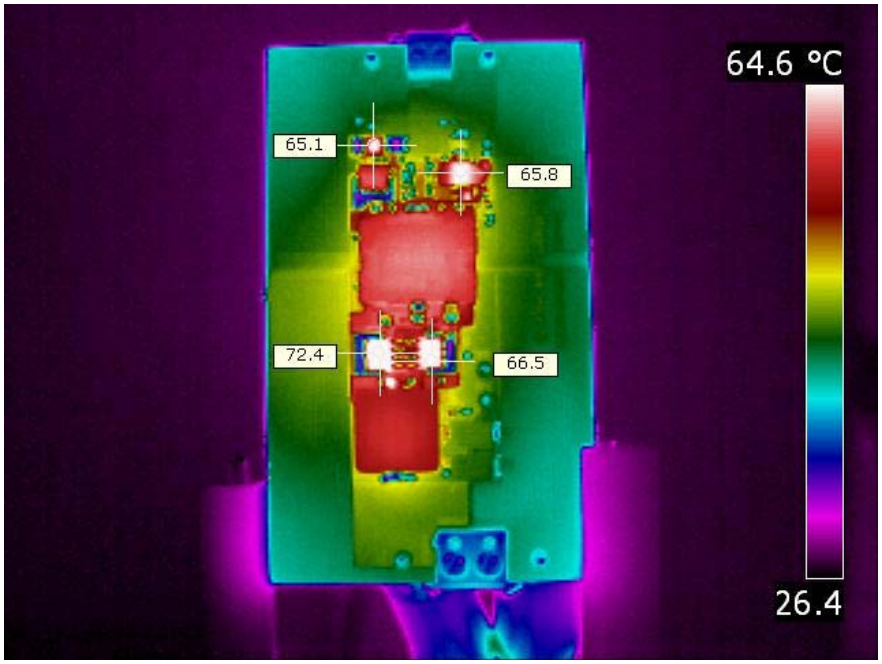
4.1 36V Input

The primary current sense resistor (R5) was the hottest component on the board and measured 73.9ºC.



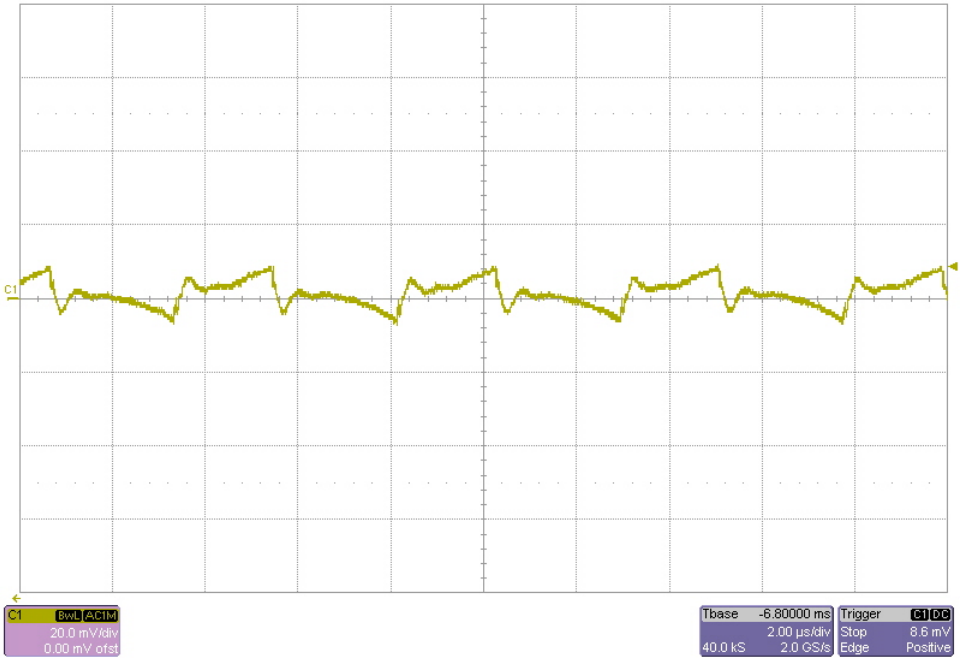
4.2 75V Input

The synchronous MOSFET (Q1) was the hottest component on the board and measured 72.4ºC.



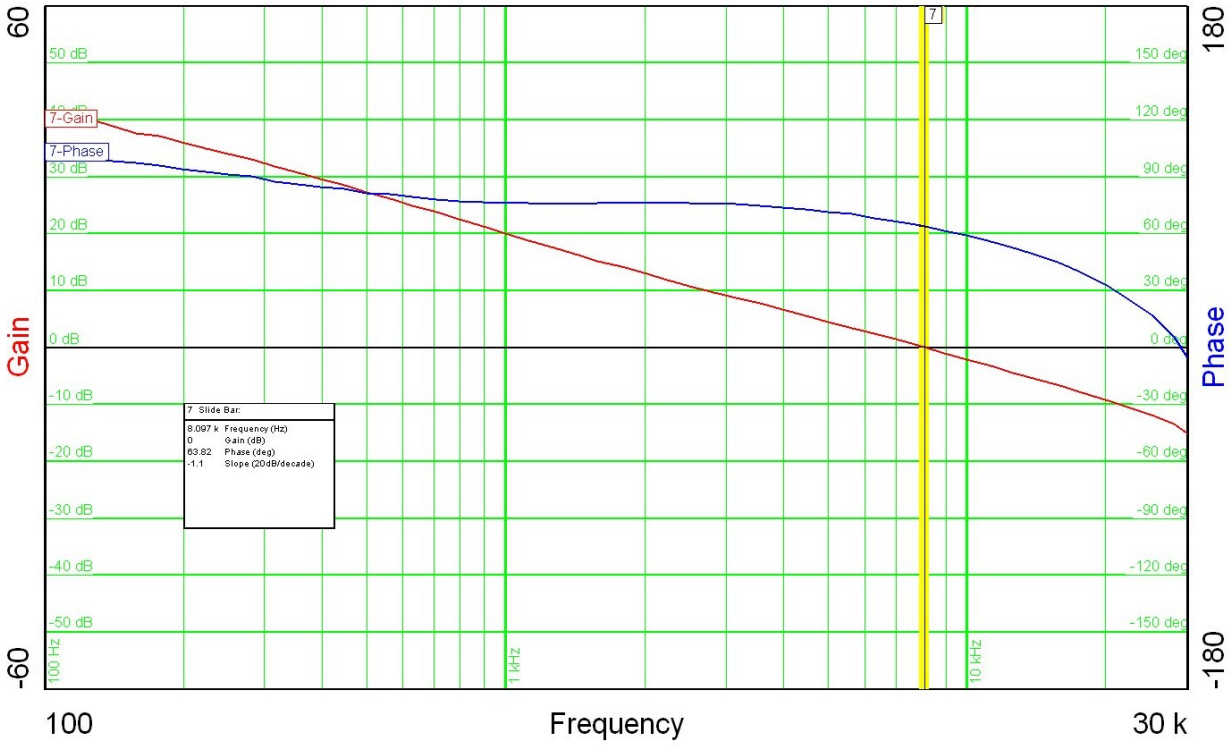
5 Output Ripple Voltage

The output ripple voltage is shown in the plot below. The input was set to 48VDC and the output was loaded with 10A.



6 Frequency Response

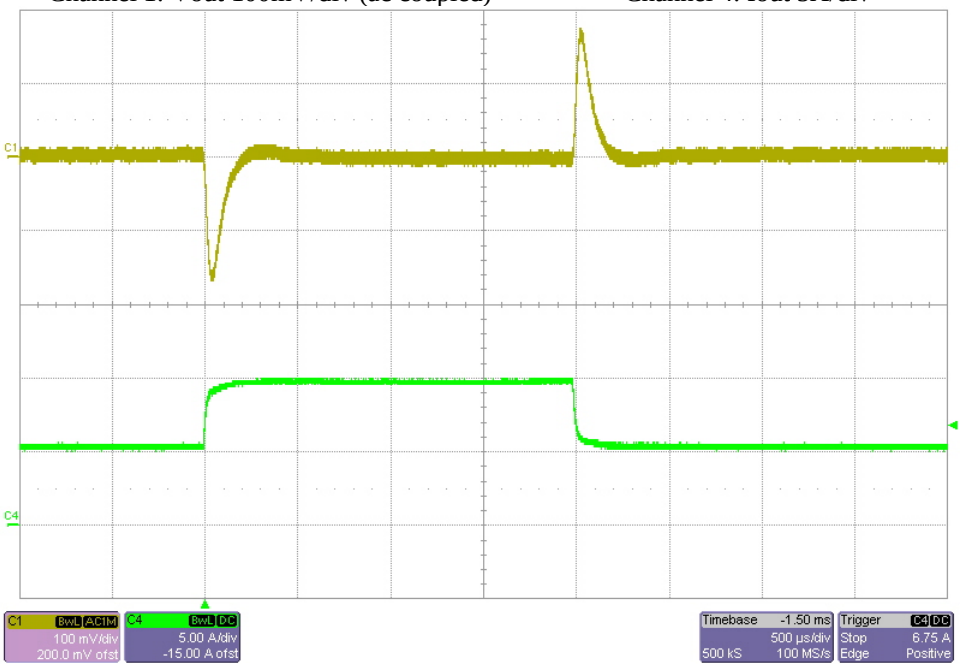
The frequency response of the feedback loop is shown below. The input was set to 48V and the output was loaded with 10A.



7 Load Transients

The response to a load step from 5A to 10A is shown in the image below. The input was set to 48V.

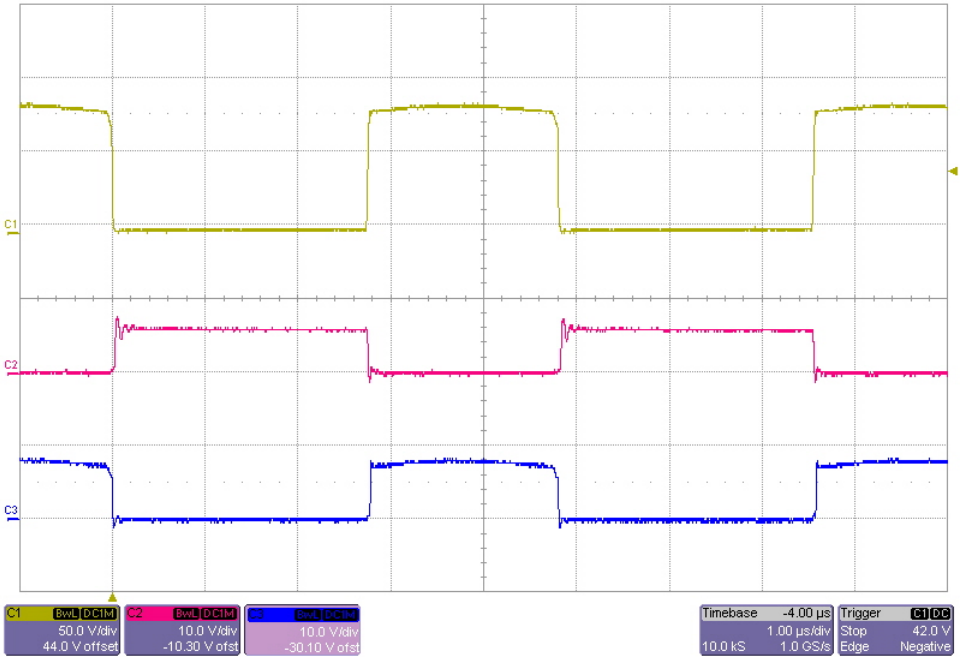
Channel 1: Vout 100mV/div (ac coupled) Channel 4: Iout 5A/div

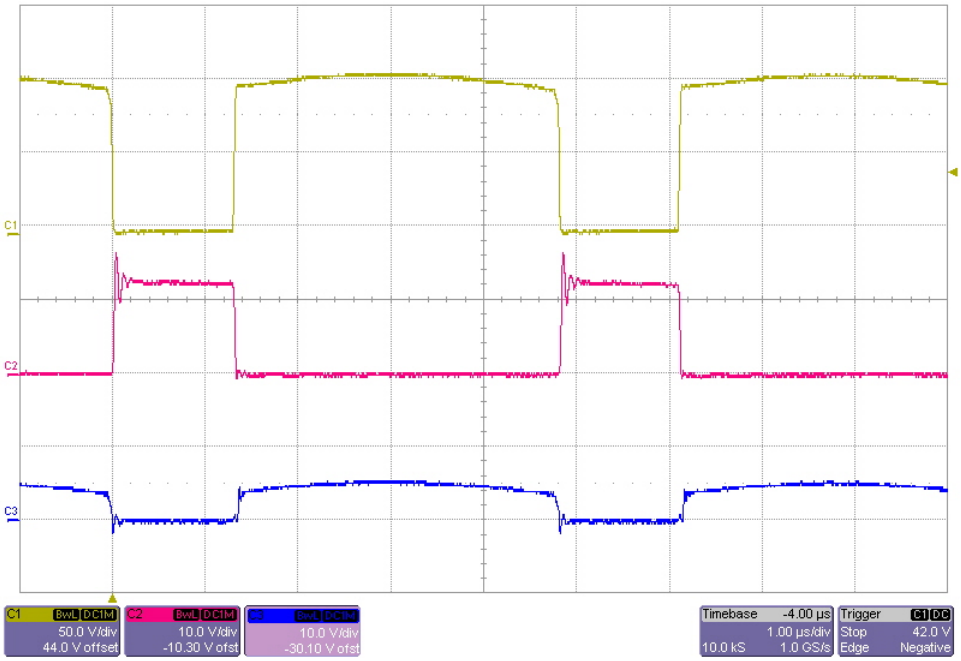


8 Switching Waveforms

The images below show the drain-to-source voltage waveforms on the switching MOSFETs. For the top image, the input was set to 36VDC. For the bottom image, the input was set to 75VDC. The output was loaded with 10A for both images.

Channel 1: Q5 Vds
Channel 2: Q1 Vds
Channel 3: Q2 Vds





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