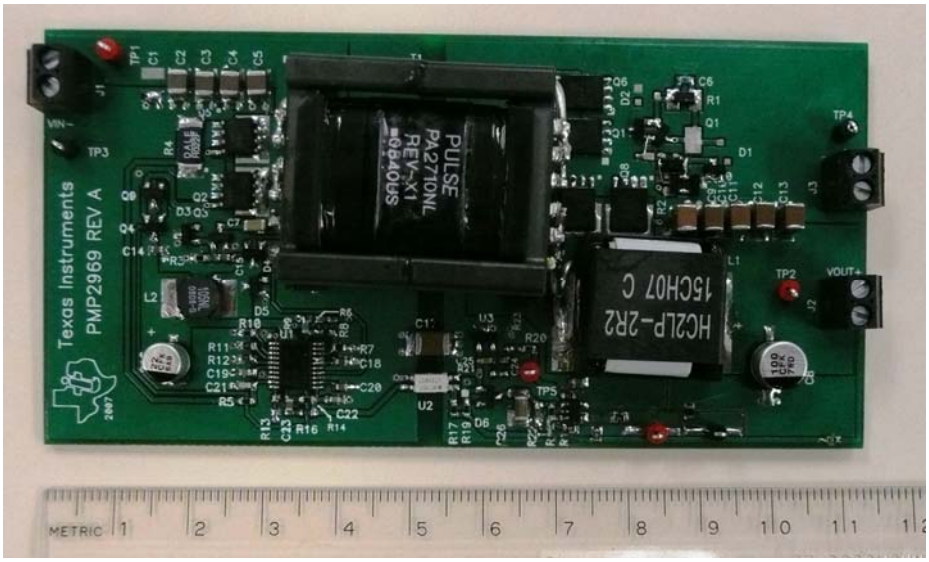
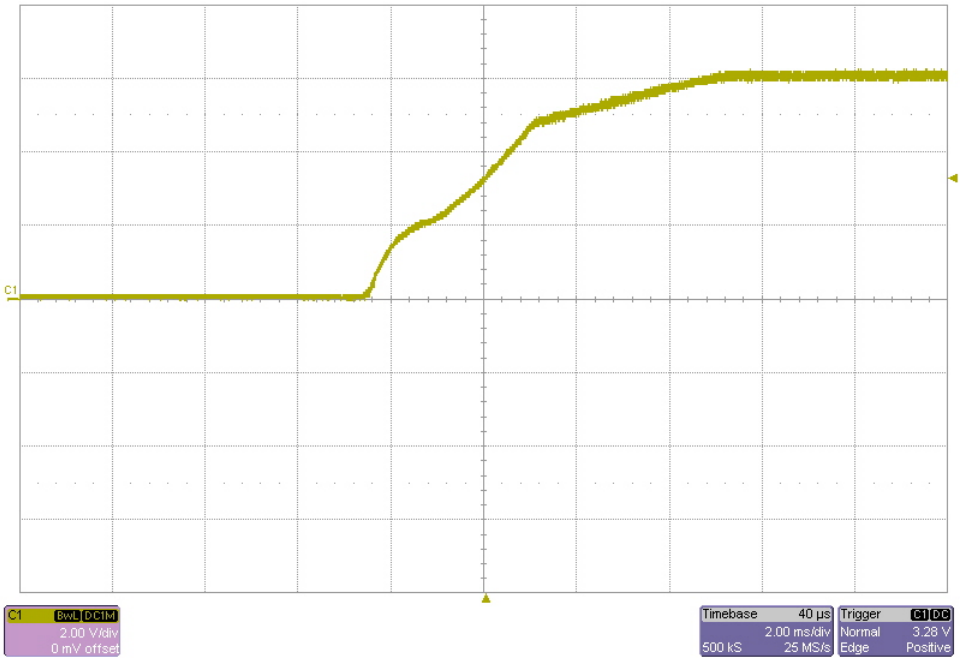
1 Photo

The photograph below shows a top view of the PMP4074 Rev B demo board. The circuit is built on a PMP2969 Rev A PWB.



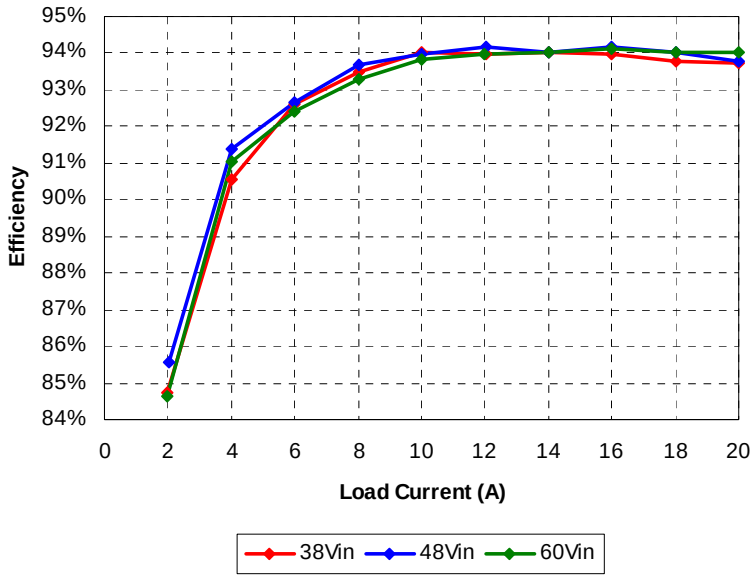
2 Startup

The output voltage at startup is shown in the image below. The input was 48VDC and the output was unloaded.



3 Efficiency

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



Iout	Vout	Vin	Iin	Pout	Losses	Efficiency
0.00	6.07	38.0	0.055	0.00	2.090	0.0%
1.994	6.07	38.0	0.376	12.10	2.184	84.7%
4.007	6.07	38.0	0.707	24.32	2.544	90.5%
6.00	6.07	38.0	1.035	36.42	2.910	92.6%
8.03	6.07	38.0	1.372	48.74	3.394	93.5%
10.01	6.07	38.0	1.701	60.76	3.877	94.0%
12.01	6.07	38.0	2.042	72.90	4.695	93.9%
13.99	6.07	38.0	2.377	84.92	5.407	94.0%
16.0	6.07	38.0	2.719	97.12	6.202	94.0%
18.0	6.07	38.0	3.066	109.26	7.248	93.8%
20.0	6.07	38.0	3.408	121.40	8.104	93.7%

Iout	Vout	Vin	Iin	Pout	Losses	Efficiency
0.00	6.08	48.0	0.041	0.00	1.968	0.0%
2.010	6.07	48.0	0.297	12.20	2.055	85.6%
4.003	6.07	48.0	0.554	24.30	2.294	91.4%
5.97	6.07	48.0	0.815	36.24	2.882	92.6%
8.00	6.07	48.0	1.080	48.56	3.280	93.7%
9.99	6.07	48.0	1.344	60.64	3.873	94.0%
12.02	6.07	48.0	1.614	72.96	4.511	94.2%
13.99	6.07	48.0	1.882	84.92	5.417	94.0%
16.0	6.07	48.0	2.149	97.12	6.032	94.2%
18.0	6.07	48.0	2.421	109.26	6.948	94.0%
20.0	6.07	48.0	2.697	121.40	8.056	93.8%

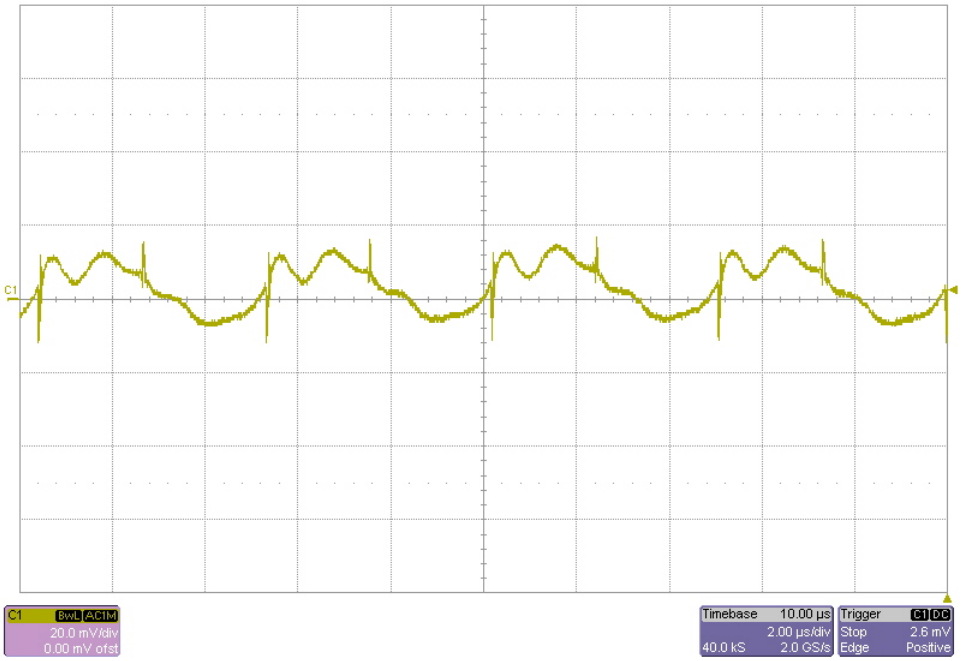
Iout	Vout	Vin	Iin	Pout	Losses	Efficiency
0.00	6.08	60.0	0.036	0.00	2.160	0.0%
2.005	6.08	60.0	0.240	12.19	2.210	84.7%
3.997	6.08	60.0	0.445	24.30	2.398	91.0%
6.00	6.08	60.0	0.658	36.48	3.000	92.4%
8.00	6.08	60.0	0.869	48.64	3.500	93.3%
10.00	6.08	60.0	1.080	60.80	4.000	93.8%
11.99	6.08	60.0	1.293	72.90	4.681	94.0%
13.99	6.08	60.0	1.508	85.06	5.421	94.0%
16.0	6.08	60.0	1.723	97.28	6.100	94.1%
18.0	6.08	60.0	1.940	109.44	6.960	94.0%
20.0	6.08	60.0	2.155	121.60	7.700	94.0%

4 Thermal Image

The image below shows a thermal image of the board. The ambient temperature was 26ºC with no forced air flow. The input was 48VDC and the output was loaded with 20A. The primary current sense resistor (R4) was the hottest component on the board and measured 78.1ºC.

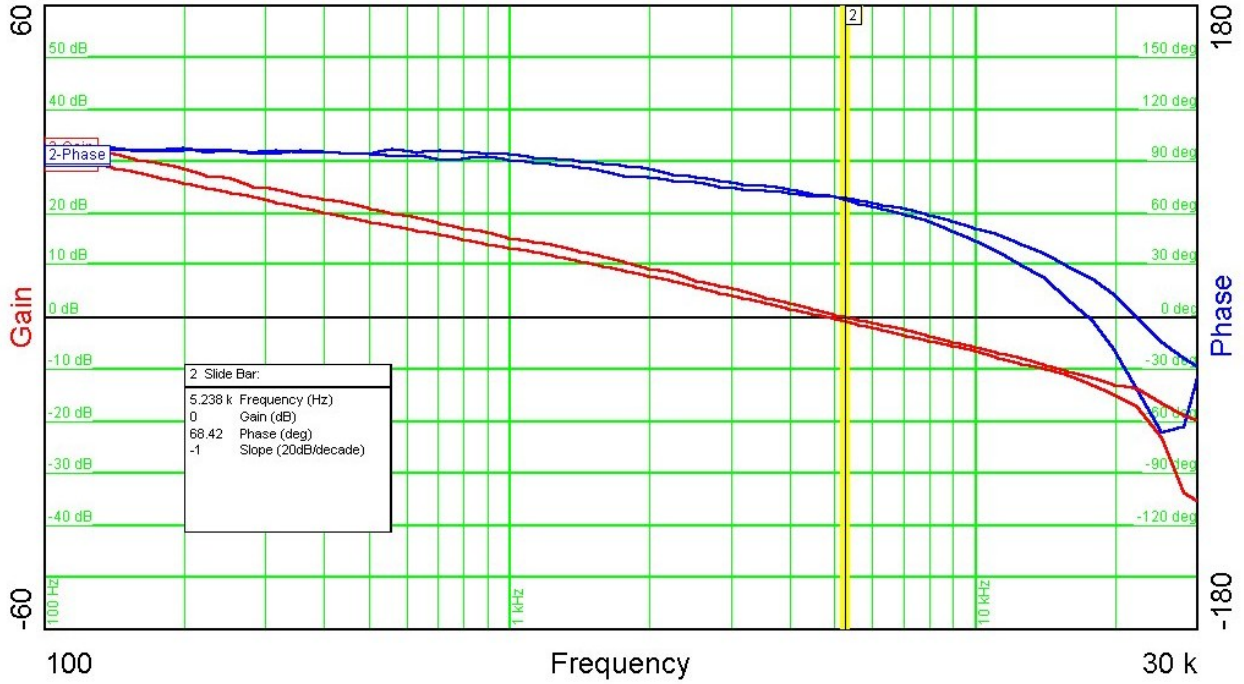
5 Output Ripple Voltage

The output ripple voltage is shown in the plot below. The input was set to 48VDC and the output was loaded with 20A.



6 Frequency Response

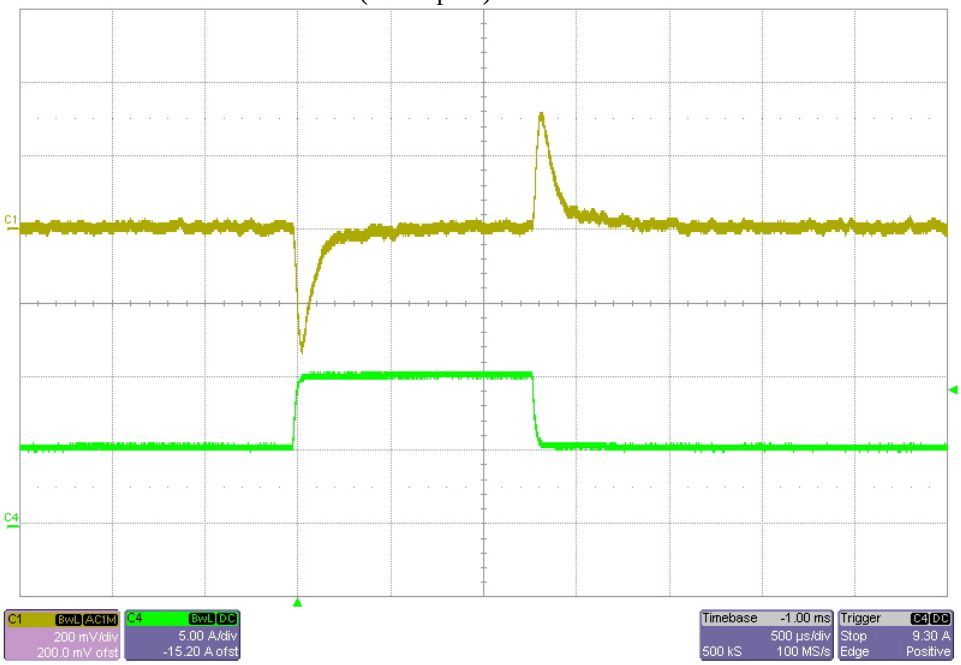
The frequency response of the feedback loop is shown below. For the two plots, the input was set to 38V and 60V and the output was loaded with 20A.



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.

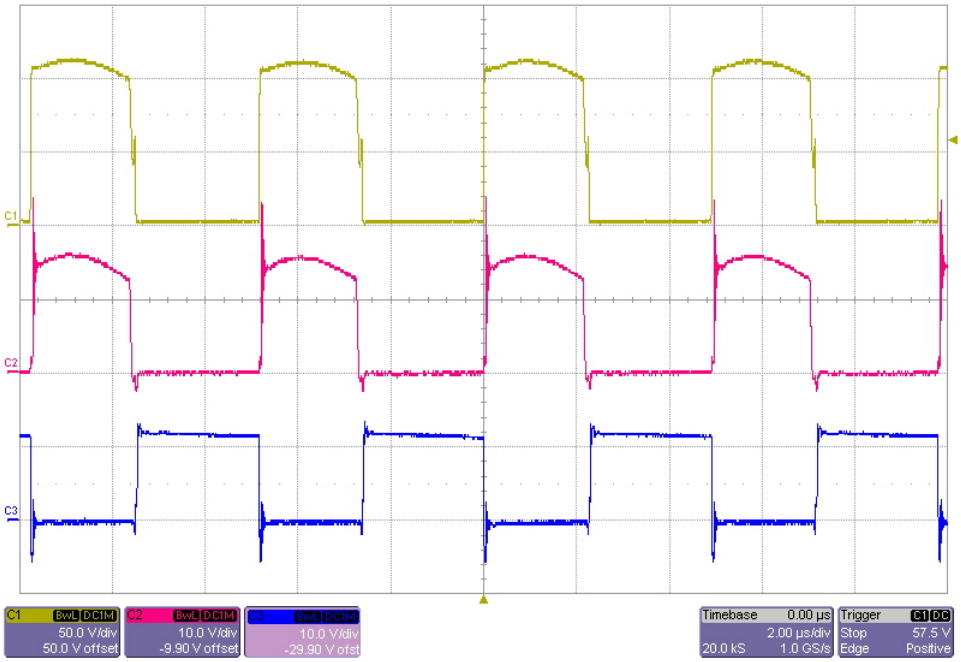
Channel 1: Vout 200mV/div (ac coupled) Channel 4: Iout 5A/div



8 Switching Waveforms

The image below shows the drain-to-source voltage waveforms on the switching MOSFETs. The input was set to 48VDC, and the output was loaded with 20A.

Channel 1: Q2 & Q5 Vds
Channel 2: Q6 & Q11 Vds
Channel 3: Q7 & Q8 Vds



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