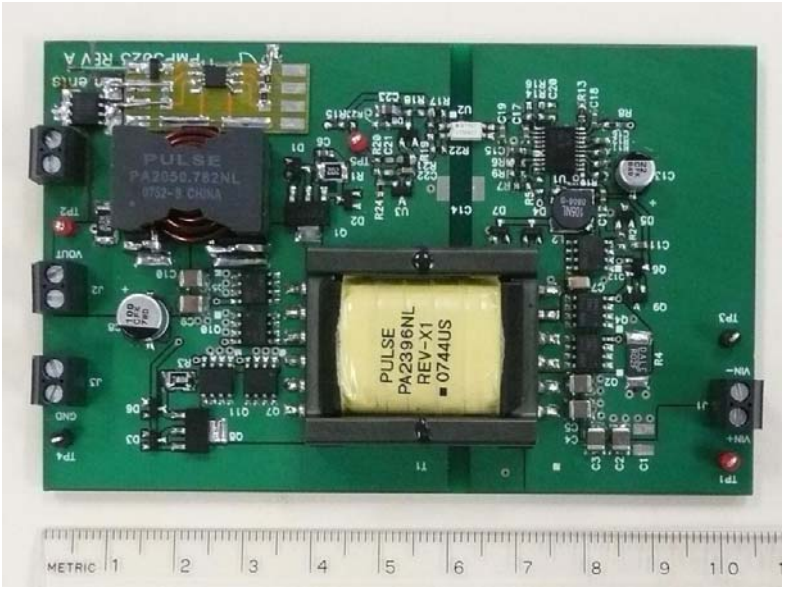
1 Photo

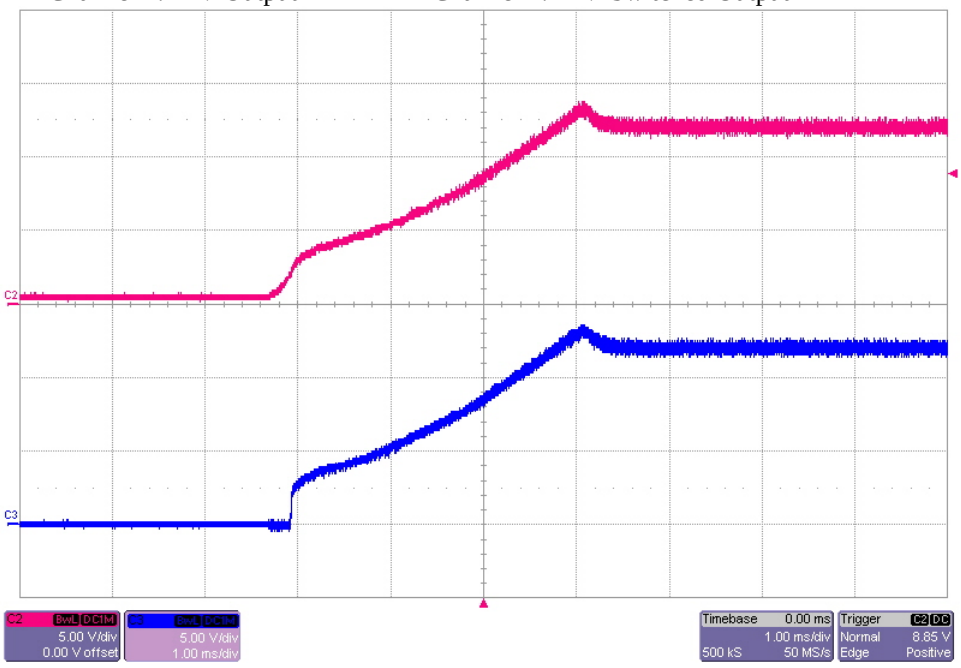
The photograph below shows the PMP4028 Rev B demo board. The circuit is built on a PMP3023 Rev A PWB.



2 Startup

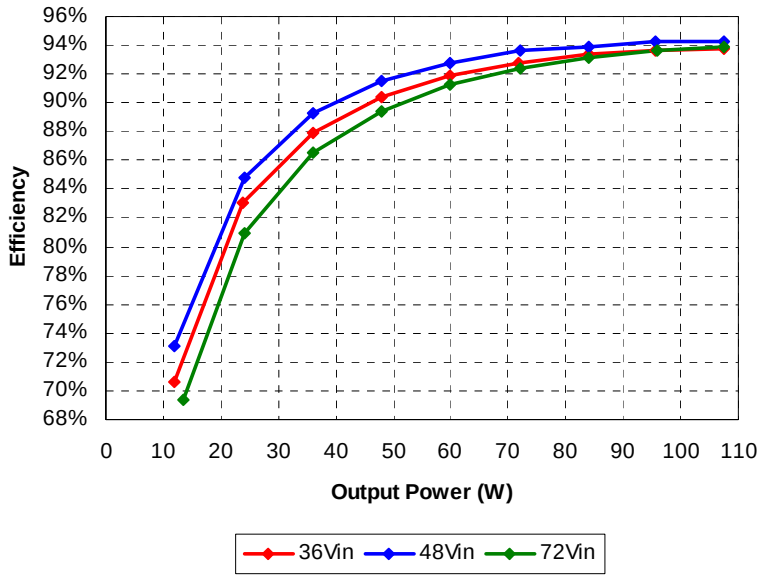
The output voltages at startup are shown in the image below. The input was 48VDC and both outputs were unloaded.

Channel 1: 12V Output Channel 2: 12V-Switched Output



3 Efficiency

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



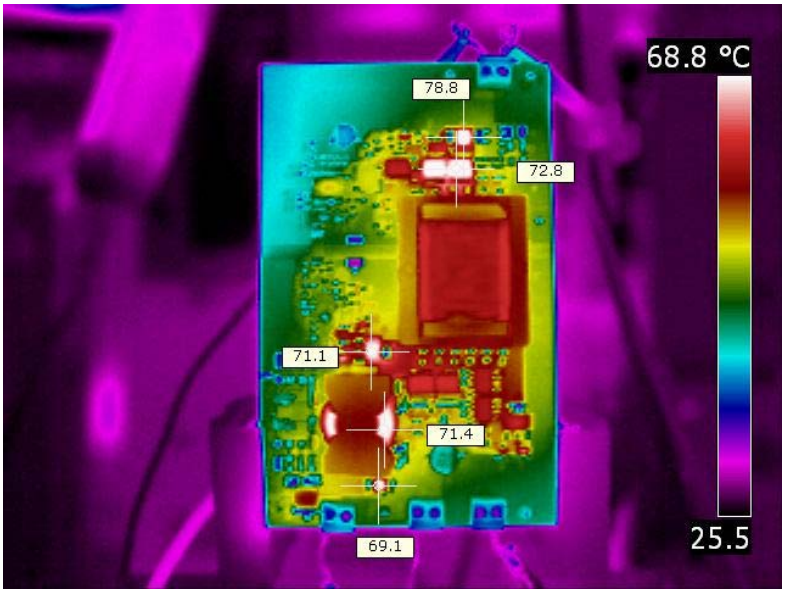
12V		12V-Switched						
Iout	Vout	Iout	Vout	Vin	Iin	Pout	Losses	Efficiency
0.000	12.04	0.000	12.04	36.00	0.143	0.00	5.148	0.0%
0.499	12.03	0.491	12.02	36.01	0.468	11.90	4.948	70.6%
1.000	12.03	0.995	12.00	36.01	0.801	23.97	4.874	83.1%
1.497	12.02	1.501	11.98	35.99	1.137	35.98	4.945	87.9%
2.000	12.02	1.996	11.97	35.99	1.473	47.93	5.081	90.4%
2.500	12.02	2.500	11.95	36.00	1.812	59.93	5.307	91.9%
2.996	12.02	3.005	11.94	36.00	2.152	71.89	5.580	92.8%
3.500	12.02	3.512	11.92	36.00	2.498	83.93	5.995	93.3%
3.998	12.01	4.004	11.91	36.01	2.839	95.70	6.529	93.6%
4.501	12.01	4.500	11.89	36.01	3.185	107.56	7.130	93.8%

12V		12V-Switched						
Iout	Vout	Iout	Vout	Vin	Iin	Pout	Losses	Efficiency
0.000	12.04	0.000	12.04	48.00	0.096	0.00	4.608	0.0%
0.503	12.04	0.497	12.03	48.00	0.343	12.04	4.429	73.1%
1.001	12.04	0.999	12.01	48.00	0.591	24.05	4.318	84.8%
1.498	12.03	1.494	11.99	48.00	0.839	35.93	4.338	89.2%
1.999	12.03	2.002	11.98	48.00	1.094	48.03	4.480	91.5%
2.498	12.03	2.502	11.96	48.00	1.347	59.97	4.681	92.8%
3.003	12.03	3.000	11.95	48.00	1.602	71.98	4.920	93.6%
3.500	12.02	3.504	11.93	48.00	1.860	83.87	5.407	93.9%
4.000	12.02	3.998	11.91	48.00	2.115	95.70	5.824	94.3%
4.496	12.02	4.500	11.90	48.00	2.377	107.59	6.504	94.3%

12V		12V-Switched						
Iout	Vout	Iout	Vout	Vin	Iin	Pout	Losses	Efficiency
0.000	12.31	0.000	12.32	72.0	0.088	0.00	6.336	0.0%
0.496	12.14	0.606	12.13	71.9	0.268	13.37	5.897	69.4%
0.994	12.06	0.999	12.03	72.0	0.412	24.01	5.658	80.9%
1.495	12.05	1.502	12.01	72.0	0.579	36.05	5.634	86.5%
2.000	12.04	1.999	11.99	72.0	0.746	48.05	5.664	89.5%
2.497	12.04	2.493	11.97	72.0	0.912	59.91	5.759	91.2%
2.997	12.04	2.998	11.96	72.0	1.081	71.94	5.892	92.4%
3.499	12.03	3.502	11.94	72.0	1.251	83.91	6.165	93.2%
3.994	12.03	4.003	11.92	72.0	1.420	95.76	6.476	93.7%
4.492	12.03	4.500	11.91	72.0	1.592	107.63	6.990	93.9%

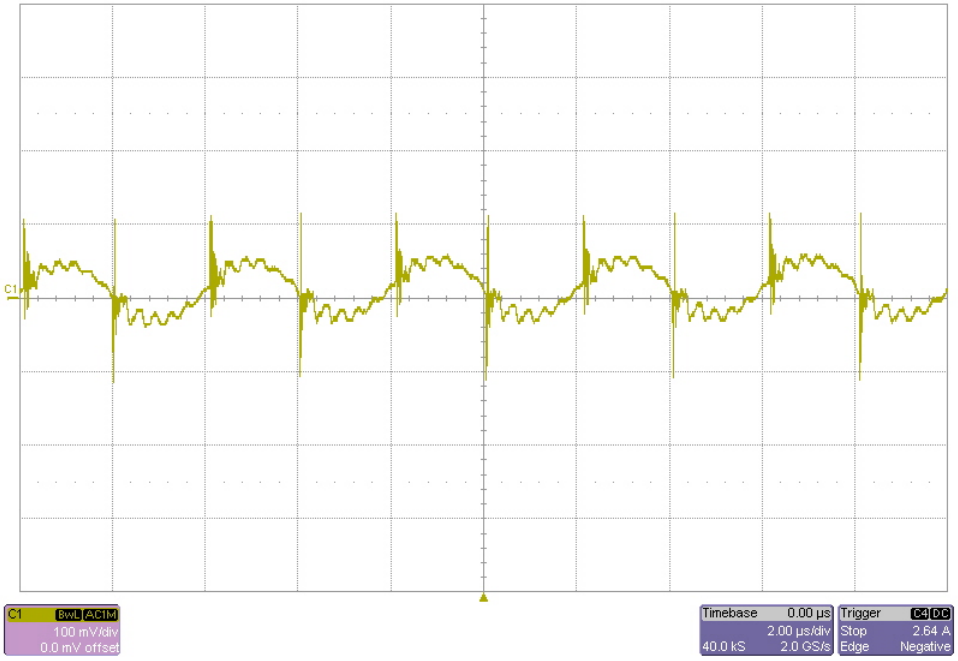
4 Thermal Image

The image below shows a thermal image of the board. The ambient temperature was 26ºC with no forced air flow. The input was 48VDC, the 12V output was loaded with 4.5A, and the 12V switched output was loaded with 4.5A. The primary current sense resistor (R4) was the hottest component on the board and measured 78.8ºC.



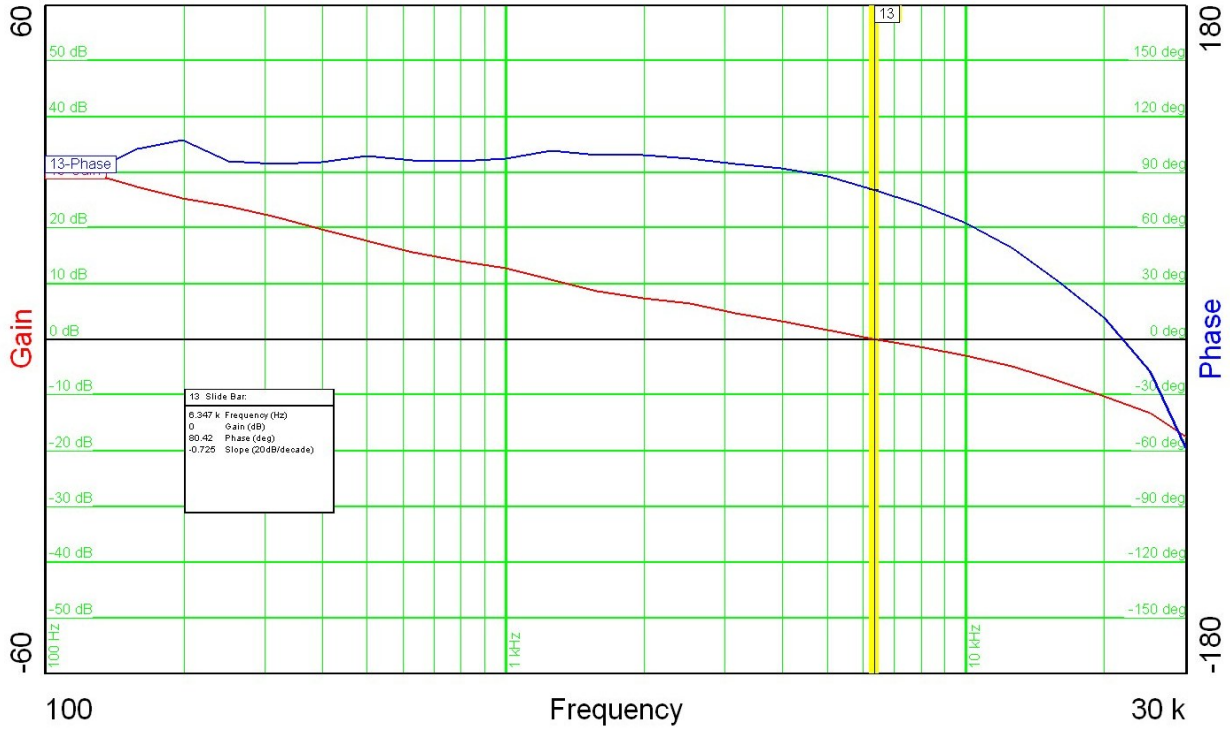
5 Output Ripple Voltage

The 12Voutput ripple voltage is shown in the plot below. The input was set to 48VDC and both outputs were loaded with 4.5A.



6 Frequency Response

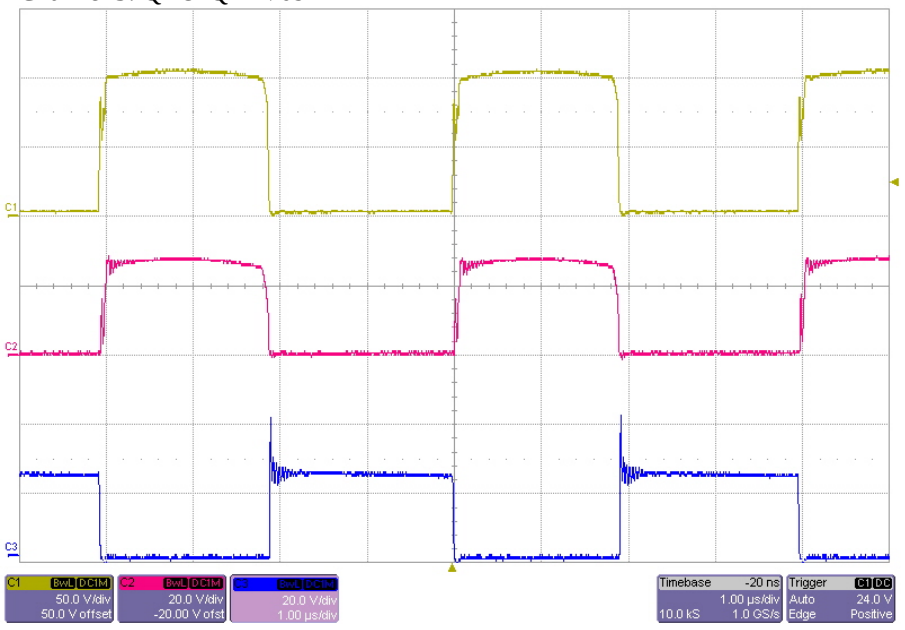
The frequency response of the feedback loop is shown below. The input was set to 48VDC and both outputs were loaded with 4.5A.



7 Switching Waveforms

The image below shows the drain-to-source voltage waveforms on the switching MOSFETs. The input was set to 48VDC, and the both outputs were loaded with 4.5A.

Channel 1: Q2 & Q4 Vds
Channel 2: Q5 & Q10 Vds
Channel 3: Q7 & Q11 Vds



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