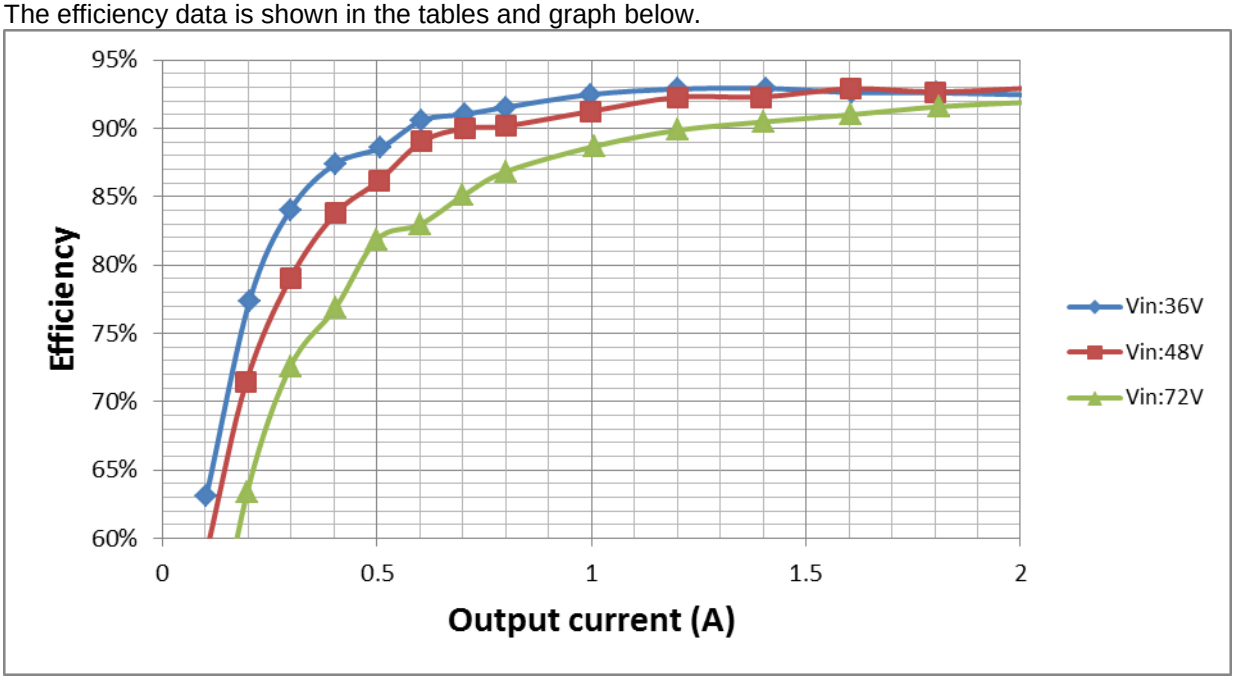
1 Photo

The photographs below show the PMP8917 Rev A assembly. This circuit was built on a PMP8917 Rev A PCB.

2 Efficiency

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



V_{in}=36V_{DC}

Vin(V)	Iin(A)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Efficiency (%)
36.07	0.305	11.00135	5.073	2.005	10.17137	0.829985	92.46%
36.07	0.274	9.88318	5.073	1.804	9.151692	0.731488	92.60%
36.08	0.244	8.80352	5.074	1.607	8.153918	0.649602	92.62%
36.04	0.213	7.67652	5.074	1.406	7.134044	0.542476	92.93%
36.05	0.182	6.5611	5.074	1.201	6.093874	0.467226	92.88%
36.06	0.152	5.48112	5.074	0.999	5.068926	0.412194	92.48%
36.06	0.123	4.43538	5.075	0.8	4.06	0.37538	91.54%
36.06	0.109	3.93054	5.075	0.705	3.577875	0.352665	91.03%
36.06	0.094	3.38964	5.075	0.605	3.070375	0.319265	90.58%
36	0.081	2.916	5.075	0.509	2.583175	0.332825	88.59%
36	0.065	2.34	5.075	0.403	2.045225	0.294775	87.40%
36	0.05	1.8	5.075	0.298	1.51235	0.28765	84.02%
36.01	0.037	1.33237	5.076	0.203	1.030428	0.301942	77.34%
36.01	0.023	0.82823	5.076	0.103	0.522828	0.305402	63.13%

Vin=48V_{DC}

Vin(V)	Iin(A)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Efficiency (%)
48.2	0.228	10.9896	5.074	2.013	10.21396	0.775638	92.94%
47.9	0.206	9.8674	5.074	1.802	9.143348	0.724052	92.66%
47.9	0.183	8.7657	5.074	1.605	8.14377	0.62193	92.90%
47.9	0.16	7.664	5.074	1.394	7.073156	0.590844	92.29%
47.9	0.138	6.6102	5.075	1.202	6.10015	0.51005	92.28%
47.9	0.116	5.5564	5.075	0.999	5.069925	0.486475	91.24%
47.9	0.094	4.5026	5.075	0.8	4.06	0.4426	90.17%
47.9	0.083	3.9757	5.075	0.705	3.577875	0.397825	89.99%
47.9	0.072	3.4488	5.075	0.605	3.070375	0.378425	89.03%
47.9	0.062	2.9698	5.076	0.504	2.558304	0.411496	86.14%
48	0.051	2.448	5.076	0.404	2.050704	0.397296	83.77%
48	0.04	1.92	5.076	0.299	1.517724	0.402276	79.05%
48	0.029	1.392	5.076	0.196	0.994896	0.397104	71.47%
48	0.019	0.912	5.076	0.107	0.543132	0.368868	59.55%

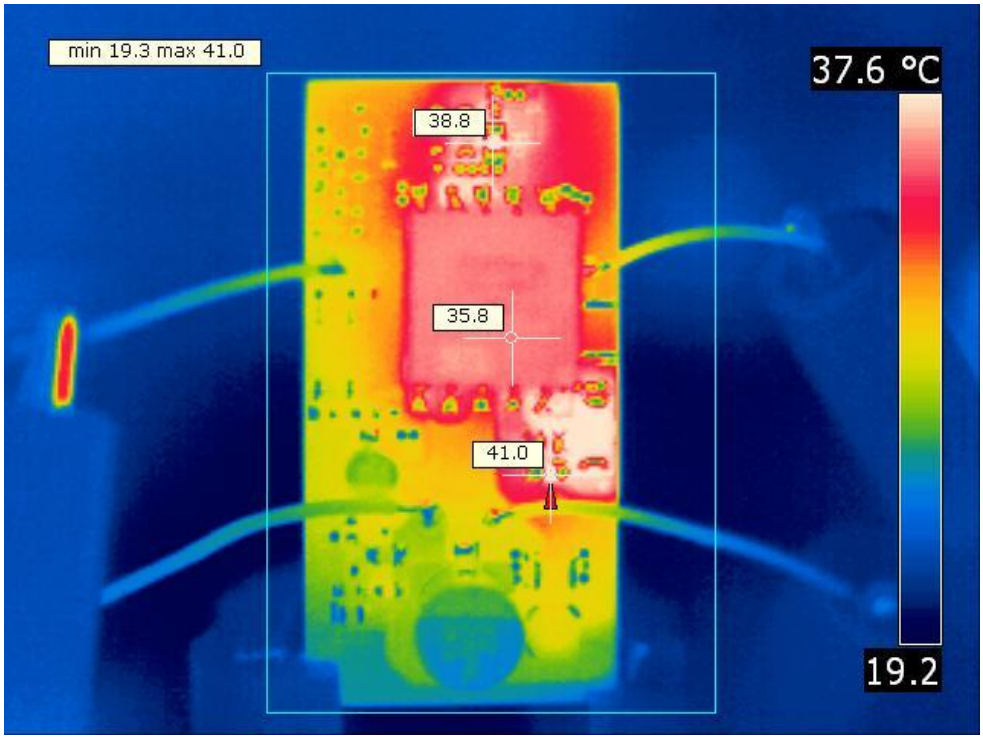
Vin=72V_{DC}

Vin(V)	Iin(A)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Efficiency (%)
72.1	0.154	11.1034	5.074	2.011	10.20381	0.899586	91.90%
72.1	0.139	10.0219	5.074	1.809	9.178866	0.843034	91.59%
72.1	0.124	8.9404	5.075	1.603	8.135225	0.805175	90.99%
72.1	0.109	7.8589	5.075	1.401	7.110075	0.748825	90.47%
72.1	0.094	6.7774	5.075	1.2	6.09	0.6874	89.86%
72.1	0.08	5.768	5.075	1.008	5.1156	0.6524	88.69%
72.1	0.065	4.6865	5.075	0.802	4.07015	0.61635	86.85%
72.1	0.058	4.1818	5.075	0.701	3.557575	0.624225	85.07%
72.1	0.051	3.6771	5.076	0.601	3.050676	0.626424	82.96%
72.1	0.043	3.1003	5.076	0.5	2.538	0.5623	81.86%
72.1	0.037	2.6677	5.076	0.404	2.050704	0.616996	76.87%
72.1	0.029	2.0909	5.076	0.299	1.517724	0.573176	72.59%
72.1	0.022	1.5862	5.076	0.198	1.005048	0.581152	63.36%
72.1	0.015	1.0815	5.076	0.102	0.517752	0.563748	47.87%

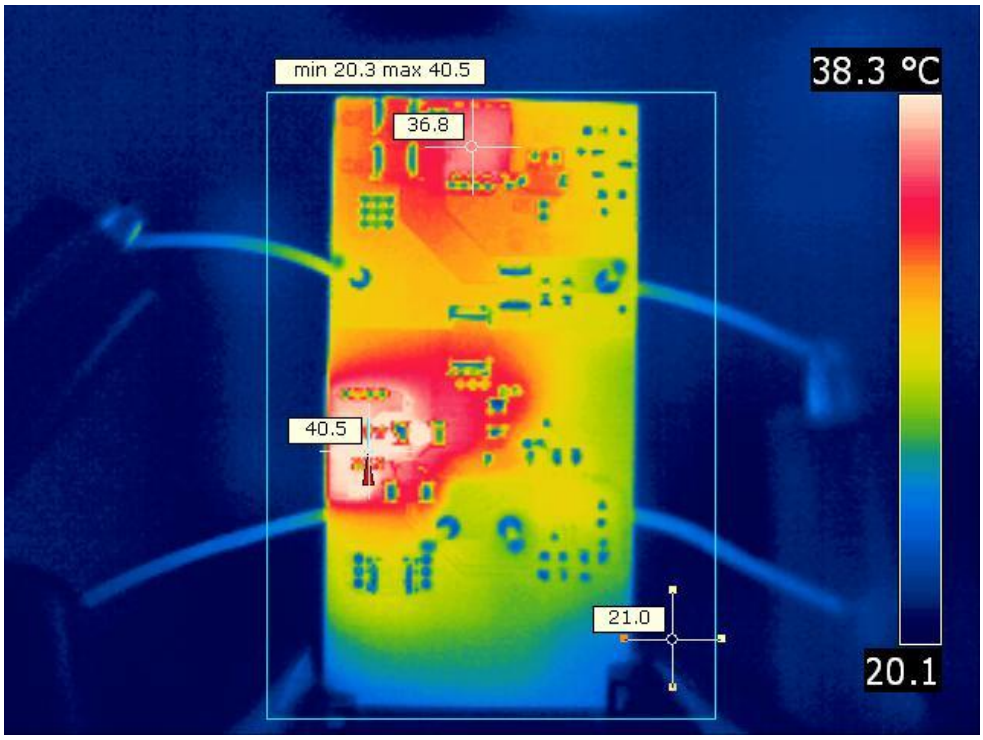
3 Thermal Images

The thermal images below show a top view and bottom view of the board. The ambient temperature was 25ºC with no forced air flow. The output was loaded with 2A and the input was 48V.

Top Side



Bottom Side

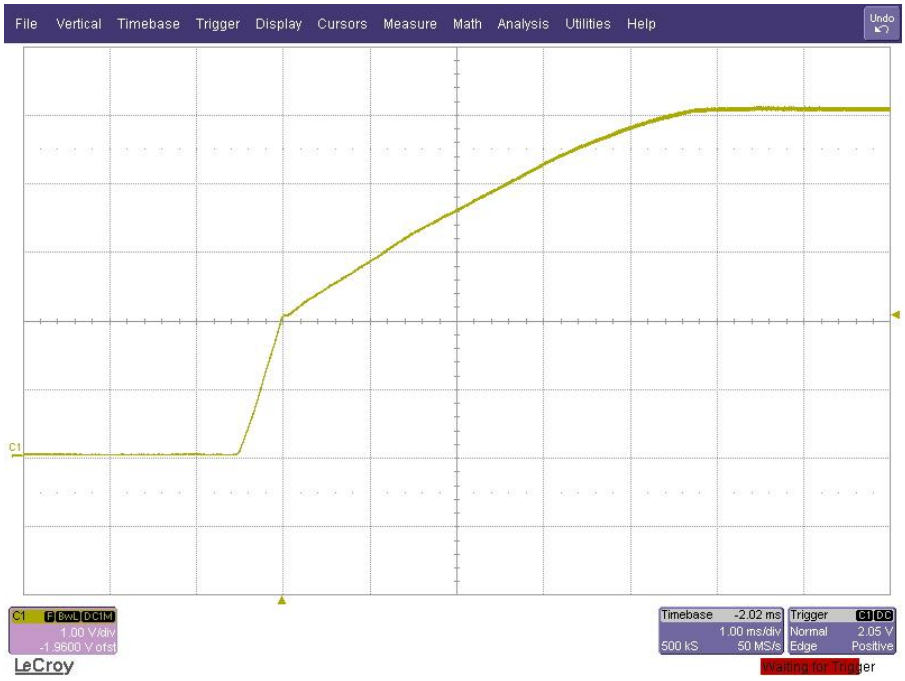


4 Startup

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

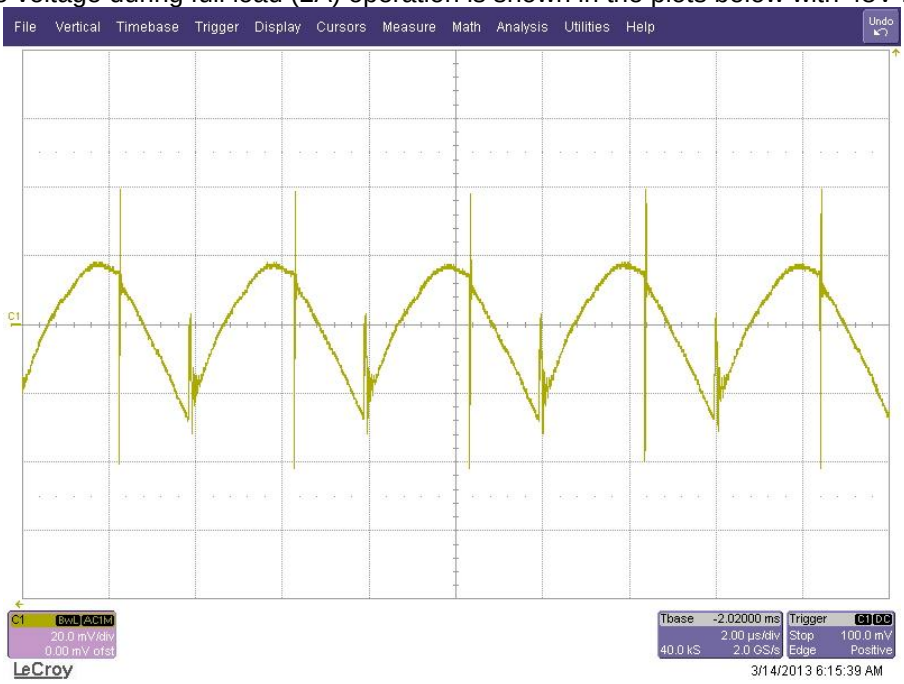
4.1 10% Load: I_{out}=0.2A

4.2 2A Load: I_{out}=2A



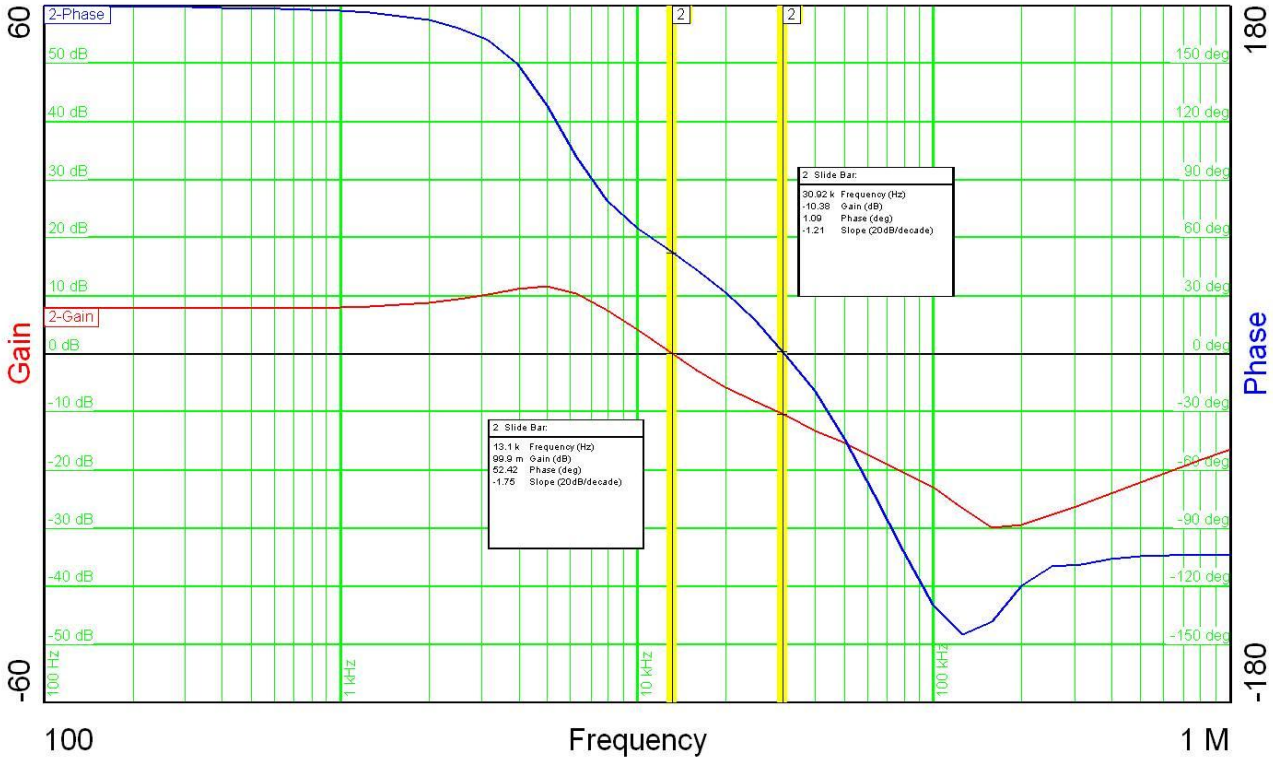
5 Output Ripple Voltage - Full Load

The output ripple voltage during full load (2A) operation is shown in the plots below with 48V input voltage.



6 Loop Response

The plot below shows the frequency response of the feedback loop. The input voltage was 48V and the output current was 2A.



7 Load Transients

The image below shows the output voltage response to a **0.2A** to **2A** load transient with a 48V input voltage.

8 Switching Waveforms

The image below shows key switching waveforms of PMP8917RevA. The waveforms are measured with 72V input voltage and 2A output current.

8.1 Primary MOSFET Q2

8.2 Secondary MOSFET Q1 (C1: Q1 Vgs; C2: Q1 Vds)

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