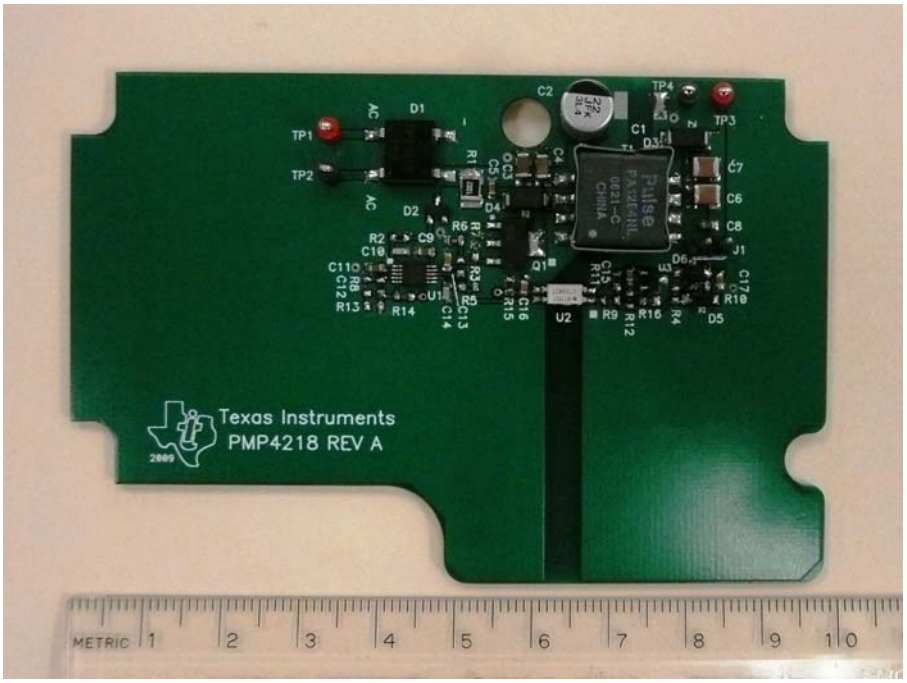
PMP4218 Rev B Test Results

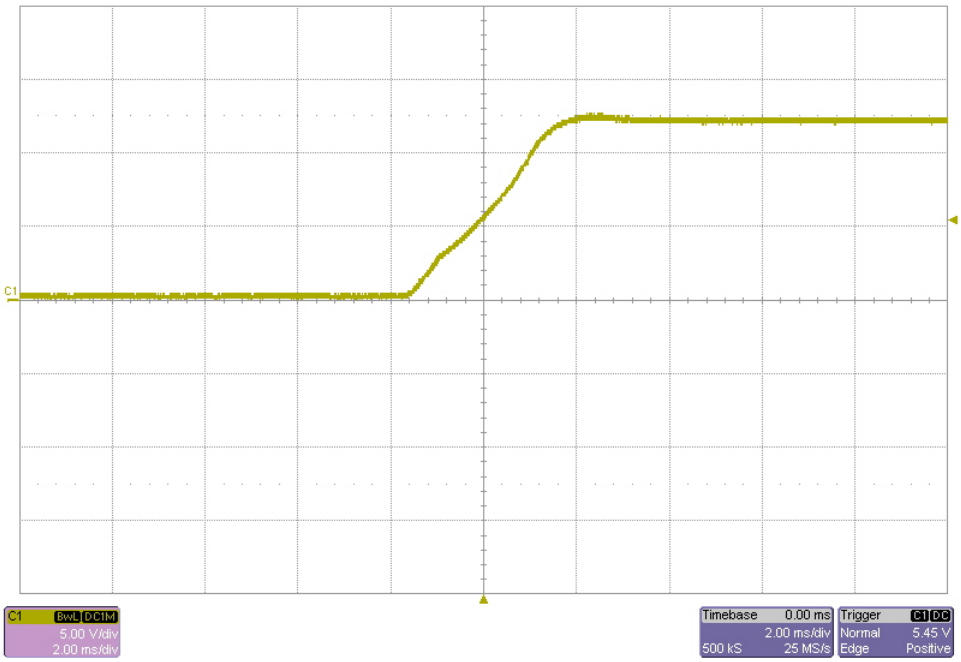
1 Photo

The photograph below shows a top view of the PMP4218 Rev B demo board. The circuit is built on a PMP4218 Rev A PWB.



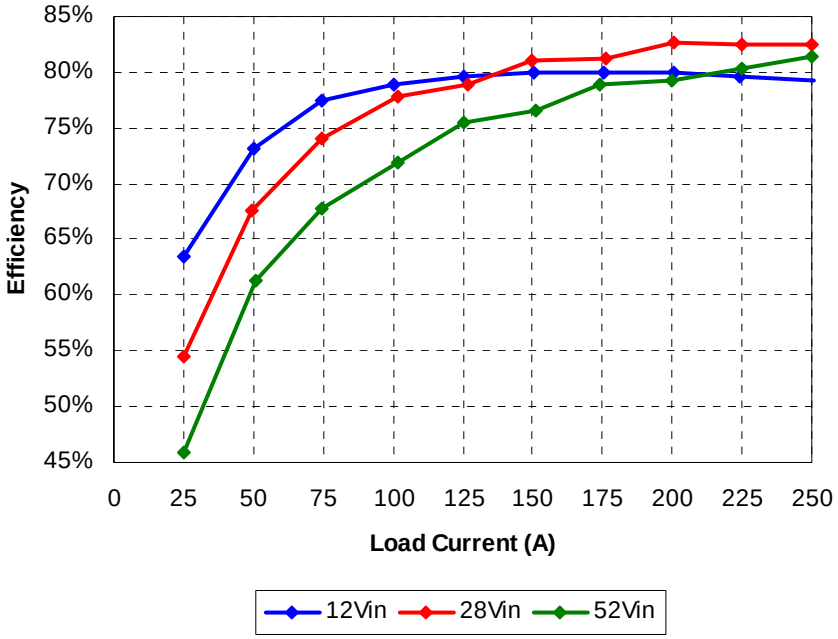
2 Startup

The output voltage at startup is shown in the image below. The input was 28VDC. The startup waveform is not dependent on load current.



3 Efficiency

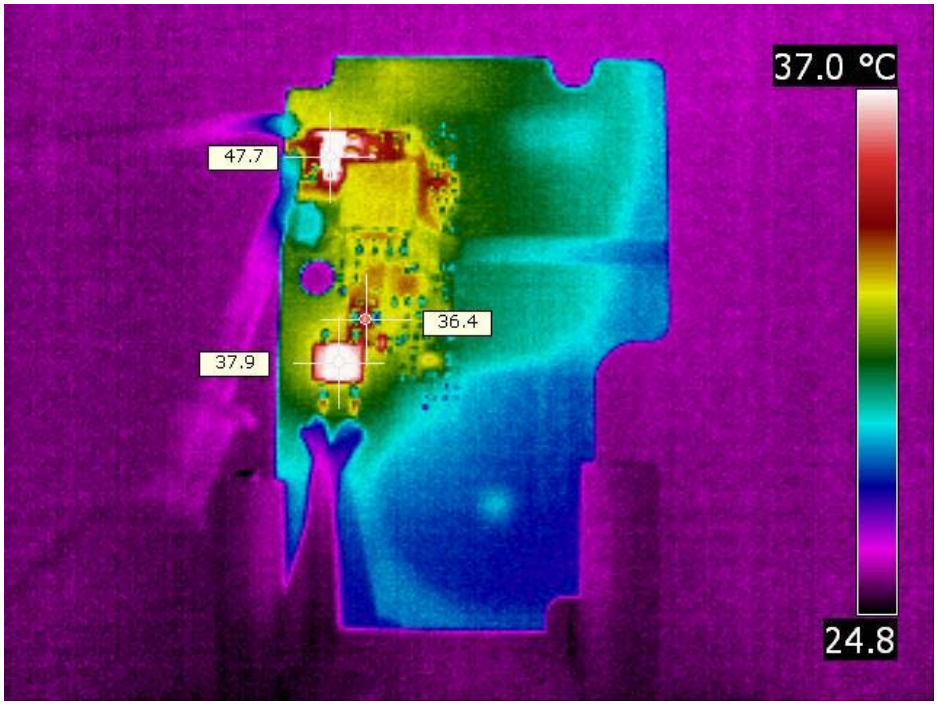
The efficiency data is shown in the tables and graph below. A DC input voltage was used. The input voltage was measured after the diode bridge.



Vout	Iout (mA)	Pout	Vin	Iin (mA)	Pin	Losses	Efficiency
12.08	0.00	0.00	12.02	12.04	0.14	0.14	0.0%
12.08	25.05	0.30	12.01	39.7	0.48	0.17	63.5%
12.08	49.8	0.60	12.00	68.5	0.82	0.22	73.2%
12.08	74.7	0.90	12.01	96.9	1.16	0.26	77.5%
12.08	100.0	1.21	11.99	127.7	1.53	0.32	78.9%
12.08	125.0	1.51	12.01	157.9	1.90	0.39	79.6%
12.08	150.1	1.81	12.00	189.0	2.27	0.45	79.9%
12.08	175.7	2.12	11.99	221.3	2.65	0.53	80.0%
12.08	200.4	2.42	12.01	252.2	3.03	0.61	79.9%
12.08	224.5	2.71	12.01	283.5	3.40	0.69	79.7%
12.08	250.6	3.03	11.99	318.2	3.82	0.79	79.3%
Vout	Iout (mA)	Pout	Vin	Iin (mA)	Pin	Losses	Efficiency
12.08	0.00	0.00	27.99	7.37	0.21	0.21	0.0%
12.08	24.88	0.30	28.01	19.70	0.55	0.25	54.5%
12.08	49.1	0.59	27.98	31.37	0.88	0.28	67.6%
12.08	74.6	0.90	28.02	43.4	1.22	0.31	74.1%
12.08	101.8	1.23	28.00	56.4	1.58	0.35	77.9%
12.08	126.7	1.53	28.03	69.2	1.94	0.41	78.9%
12.08	149.8	1.81	27.99	79.8	2.23	0.42	81.0%
12.08	176.0	2.13	28.02	93.4	2.62	0.49	81.2%
12.08	200.5	2.42	27.99	104.7	2.93	0.51	82.6%
12.08	225.1	2.72	27.99	117.9	3.30	0.58	82.4%
12.08	250.1	3.02	28.02	130.8	3.67	0.64	82.4%
Vout	Iout (mA)	Pout	Vin	Iin (mA)	Pin	Losses	Efficiency
12.08	0.00	0.00	52.0	6.27	0.33	0.33	0.0%
12.08	25.06	0.30	52.0	12.69	0.66	0.36	45.9%
12.08	50.7	0.61	52.0	19.19	1.00	0.39	61.4%
12.08	74.6	0.90	52.0	25.55	1.33	0.43	67.8%
12.08	101.7	1.23	52.0	32.87	1.71	0.48	71.9%
12.08	125.2	1.51	52.0	38.50	2.00	0.49	75.5%
12.08	150.8	1.82	52.0	45.8	2.38	0.56	76.5%
12.08	174.4	2.11	52.0	51.4	2.67	0.57	78.8%
12.08	199.5	2.41	52.0	58.5	3.04	0.63	79.2%
12.08	225.2	2.72	52.0	65.1	3.39	0.66	80.4%
12.08	250.3	3.02	52.0	71.5	3.72	0.69	81.3%

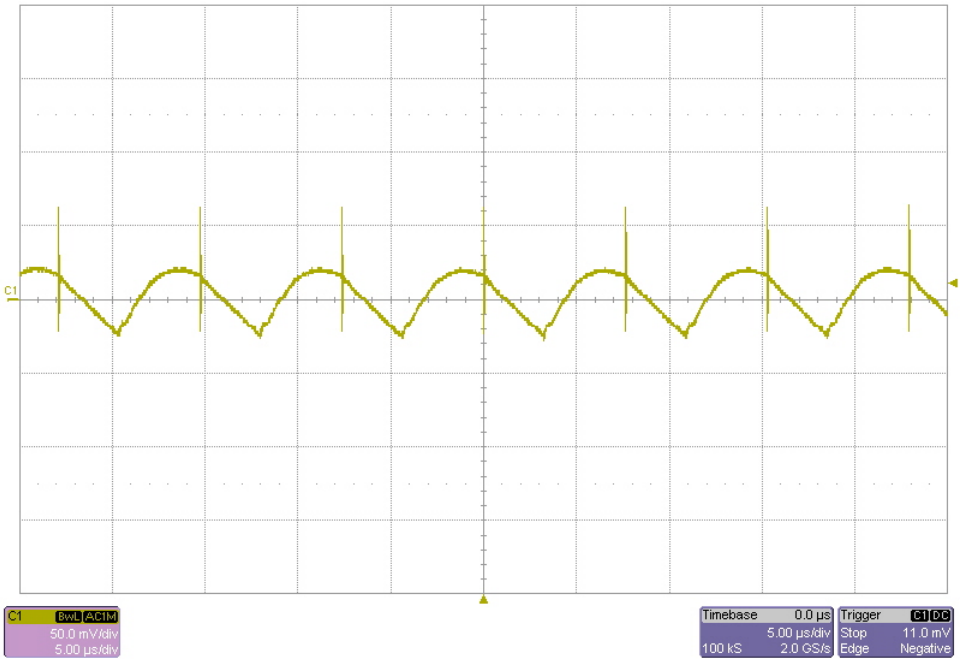
4 Thermal Image

The image below shows a top thermal image of the board. The ambient temperature was 26ºC with no forced air flow. The input voltage was 28Vdc, and the output was loaded with 250mA. The output diode (D3) was the hottest component on the board and measured 47.7ºC.



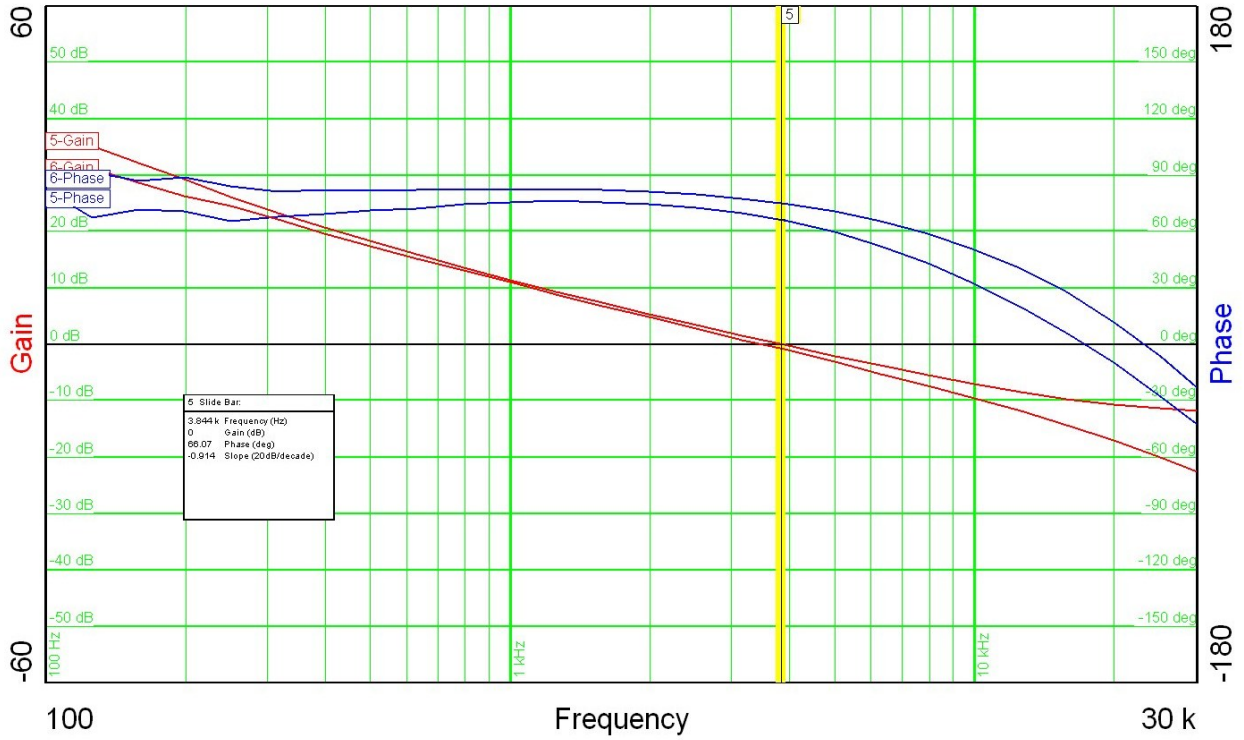
5 Output Ripple Voltage

The output ripple voltage is shown in the plot below. The input voltage was 28Vdc, and the output was loaded with 250mA.



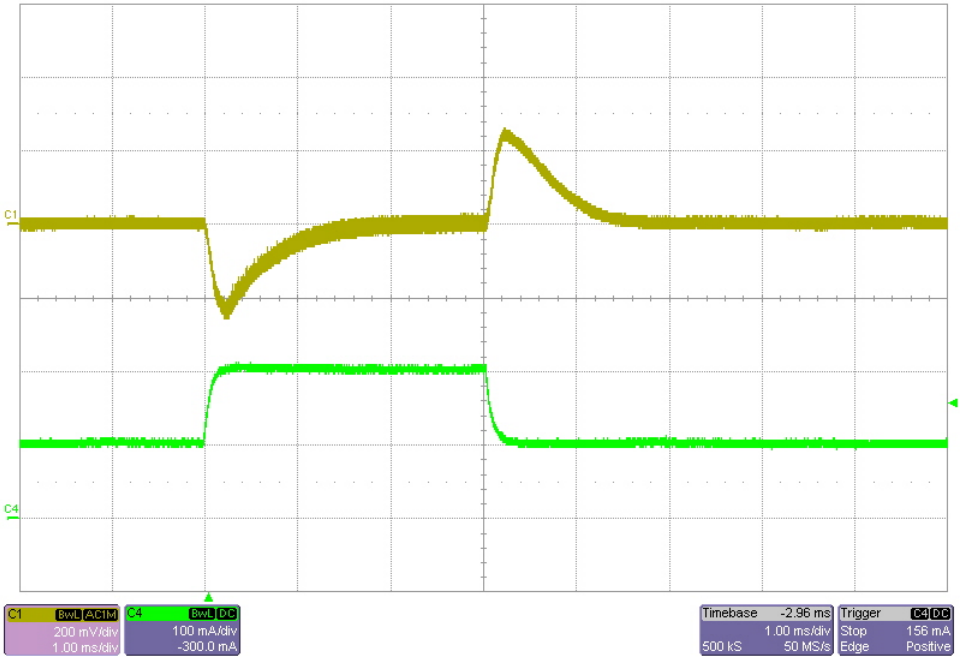
6 Frequency Response

The frequency response of the feedback loop is shown below. The output was loaded with 250mA. For the two sets of plots, the input voltage was set to 12Vdc and 52Vdc.



7 Transient Response

The image below shows the response to a 100mA to 200mA pulsed load. Channel 1 is the AC-coupled output voltage, and channel 4 is the load current.



8 Switching Waveform

The image below shows the switching voltage waveforms on the main power devices. The input voltage was 52V, and the output was loaded with 250mA. Channel 1 is the drain-to-source voltage of the primary MOSFET (Q1). Channel 2 is the anode-to-ground voltage of the output diode (D3).