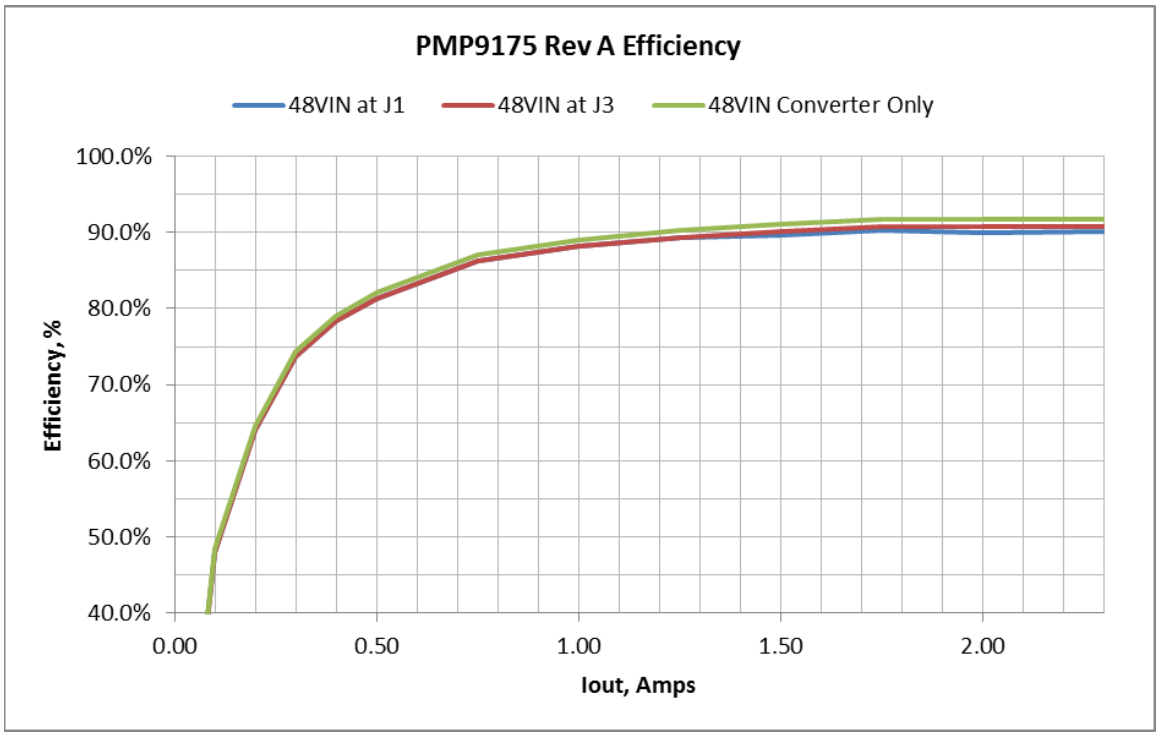
Efficiency

The efficiency of the converter is shown below:

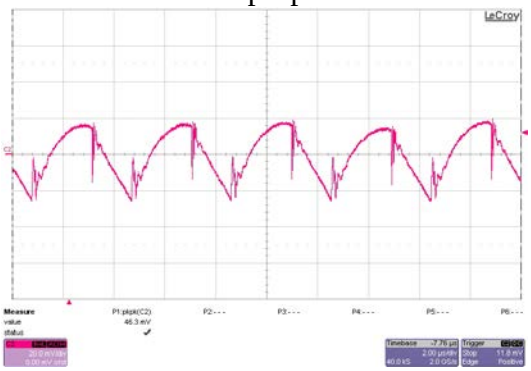
								Conv Only	Conv Only
		J1	J1	J1	J3	J3	J3	D1-K	D1-K
Iout	**Vout**	**Iin**	**Vin**	**Eff**	**Iin**	**Vin**	**Eff**	**Vin**	**Eff**
0.00	5.077	0.011	48.00	0.0%	0.011	48.00	0.0%	47.66	0.0%
0.10	5.077	0.022	48.00	48.1%	0.022	48.00	48.1%	47.63	48.5%
0.20	5.077	0.033	48.00	64.1%	0.033	48.00	64.1%	47.61	64.6%
0.30	5.077	0.043	48.00	73.8%	0.043	48.00	73.8%	47.60	74.4%
0.40	5.077	0.054	48.00	78.3%	0.054	48.00	78.3%	47.59	79.0%
0.50	5.077	0.065	48.00	81.4%	0.065	48.00	81.4%	47.58	82.1%
0.75	5.076	0.092	48.00	86.2%	0.092	48.00	86.2%	47.56	87.0%
1.00	5.076	0.120	48.00	88.1%	0.120	48.00	88.1%	47.54	89.0%
1.25	5.076	0.148	48.00	89.3%	0.148	48.00	89.3%	47.52	90.2%
1.50	5.076	0.177	48.00	89.6%	0.176	48.00	90.1%	47.51	91.1%
1.75	5.075	0.205	48.00	90.3%	0.204	48.00	90.7%	47.49	91.7%
2.00	5.075	0.235	48.00	90.0%	0.233	48.00	90.8%	47.47	91.8%
2.30	5.075	0.270	48.00	90.1%	0.268	48.00	90.7%	47.46	91.8%



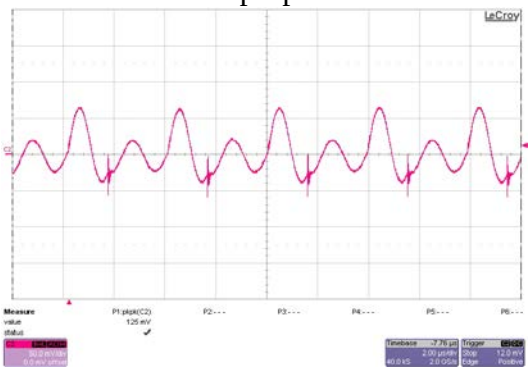
Ripple and Noise

Ripple measurements taken with 48VIN at J1, 2.3A load, and 20MHz BWL.

Output Ripple (C24), 20mV/div, 2us/div:
Measured 46.3mV pk-pk

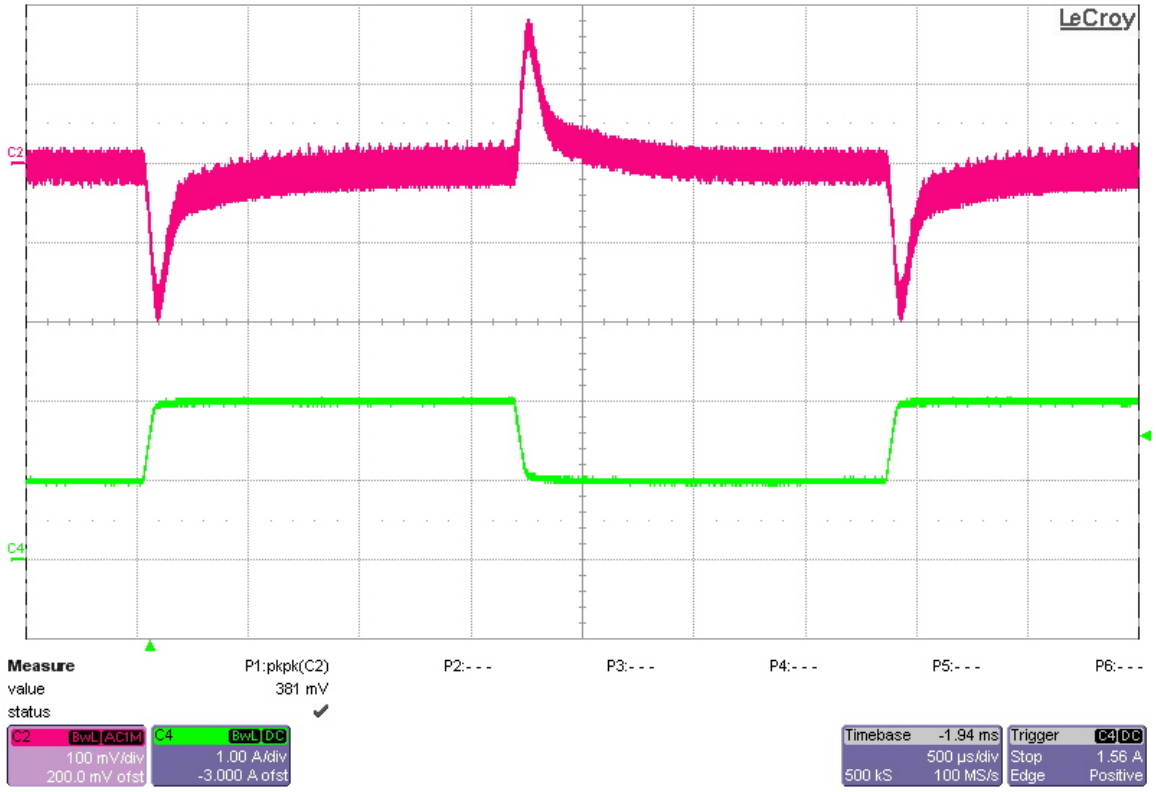


Input Ripple (C17), 50mV/div, 2us/div:
Measured 125mV pk-pk



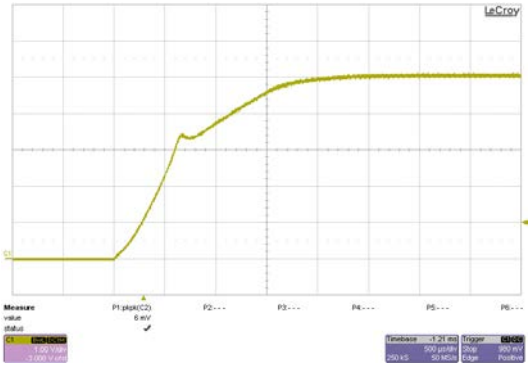
Dynamic Loading

Load Step, 48VIN at J1 100mV/div, 500usec/div
1A to 2A Load Step, 20mA/usec
Measured 381mV peak to peak:

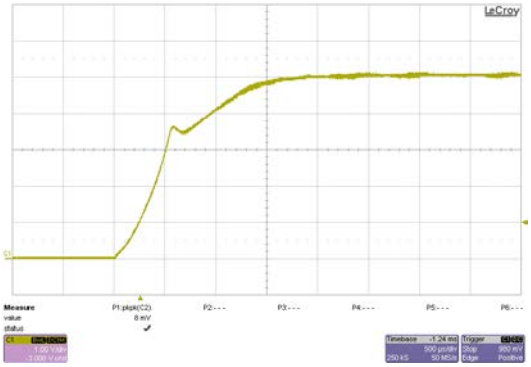


Turn On Response

48VIN, 2.3A Load, 500usec/div:



48VIN, 0A Load, 500usec.div:



Stability (Loop Gain)

The figure below is the loop gain of the converter with a 48V input and 2.3A load. The Bandwidth is 7.4 KHz, the Phase Margin is 59 degrees, and the Gain Margin is 15 dB.

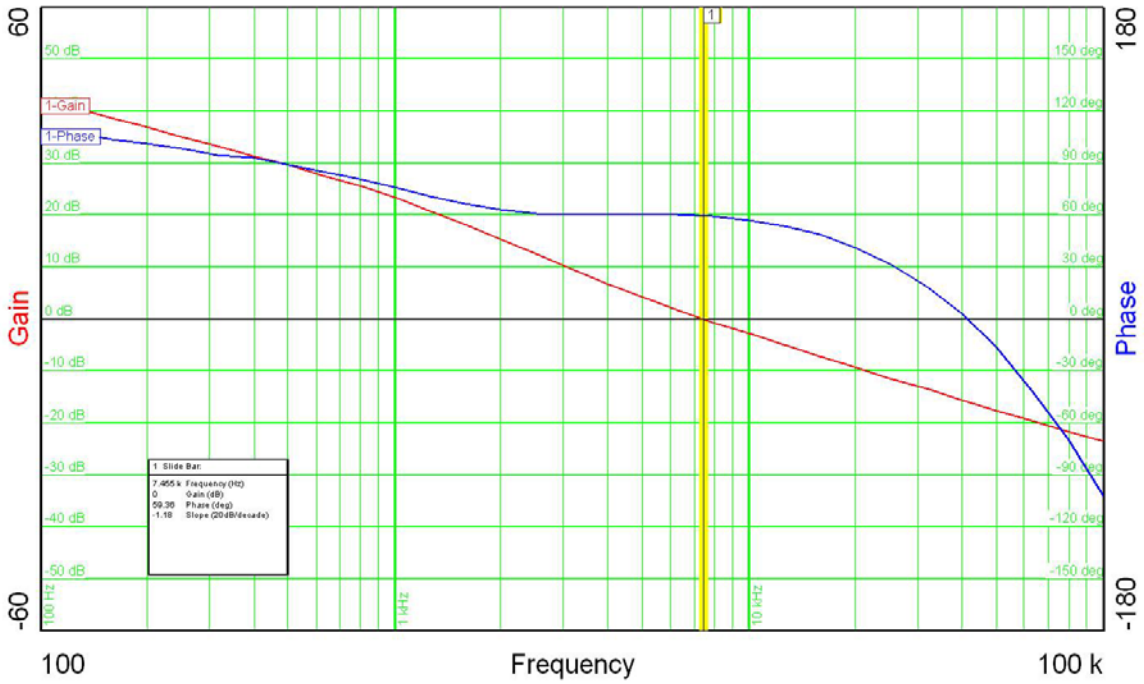
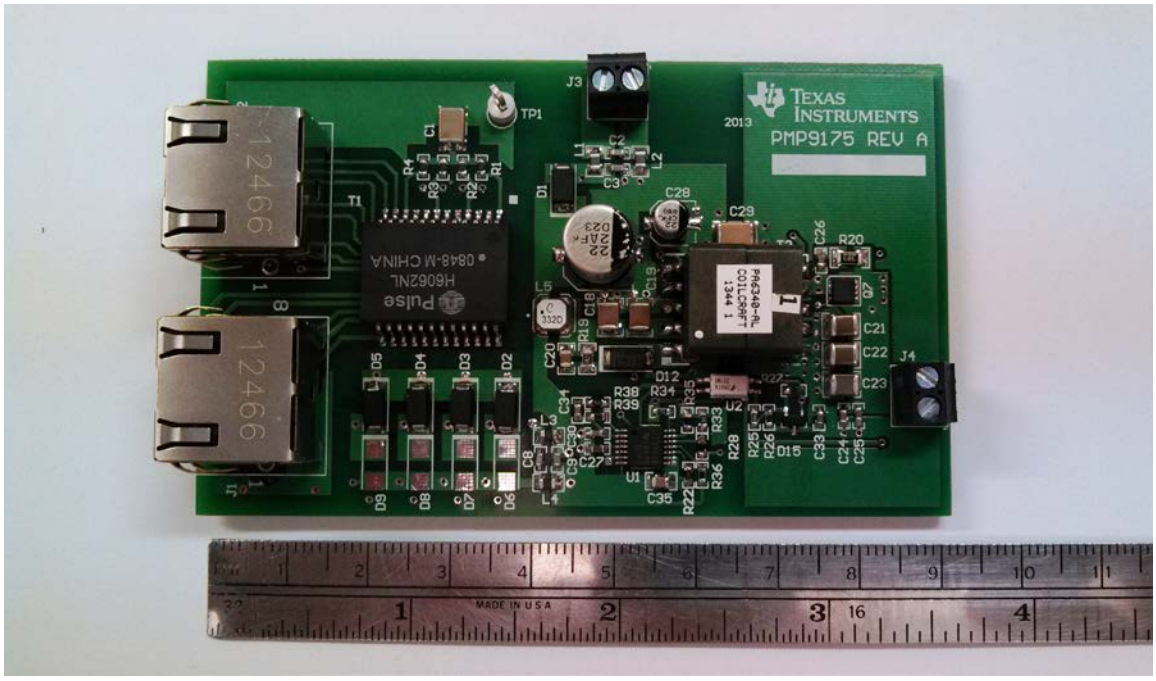
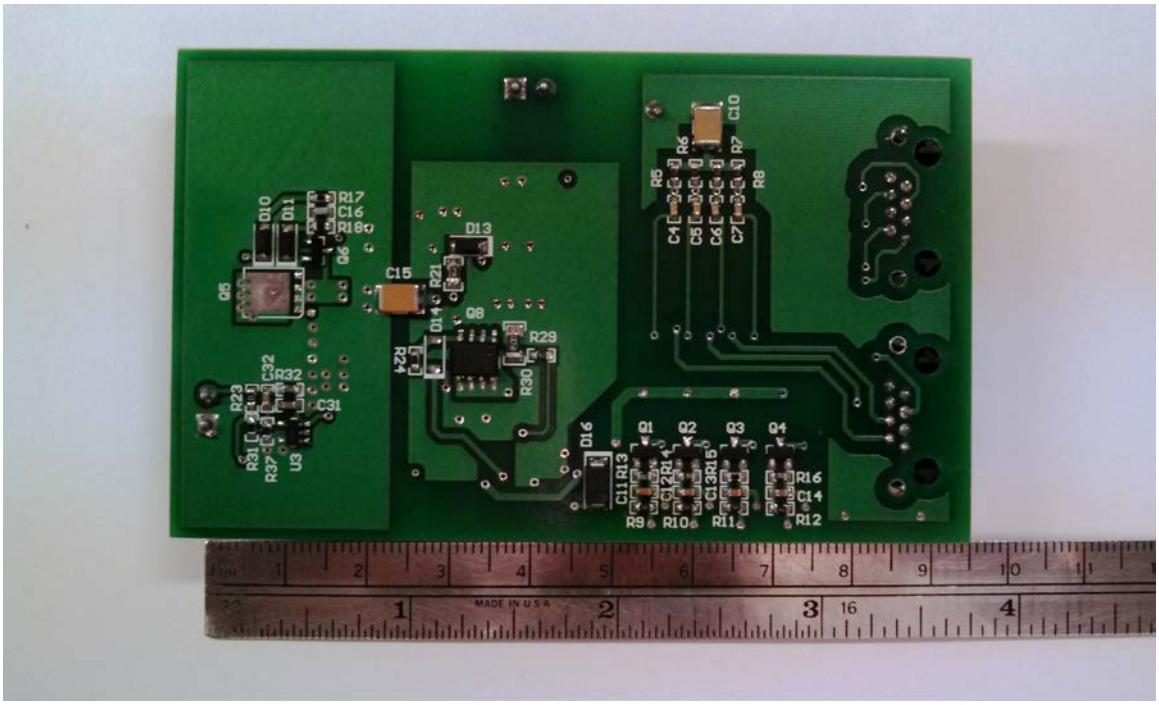


Photo:

TOP:



BOTTOM:



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