

Efficiency and Regulation

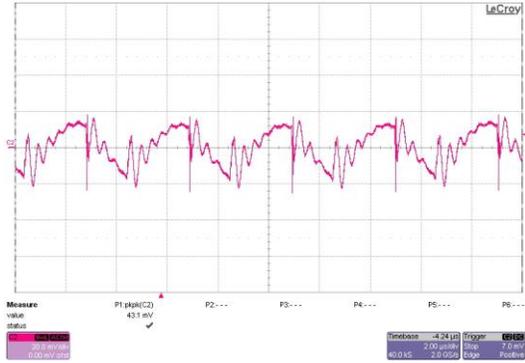
The efficiency and regulation are shown below:

				J3	J3	J3	
<u>I_{out}</u>	<u>V_{out}</u>	<u>I_{out}</u>	<u>V_{out}</u>	<u>I_{in}</u>	<u>V_{in}</u>	<u>Eff</u>	
0.000	3.349	0.000	5.012	0.0052	36.0	0.0%	
0.700	3.348	0.145	5.047	0.0962	36.0	88.8%	
0.700	3.348	0.000	5.056	0.0742	36.0	87.7%	
0.000	3.349	0.145	5.002	0.0257	36.0	78.4%	
0.350	3.348	0.015	5.032	0.0411	36.0	84.3%	
				J3	J3	J3	
<u>I_{out}</u>	<u>V_{out}</u>	<u>I_{out}</u>	<u>V_{out}</u>	<u>I_{in}</u>	<u>V_{in}</u>	<u>Eff</u>	
0.000	3.349	0.000	5.011	0.0045	48.0	0.0%	
0.700	3.348	0.145	5.040	0.0720	48.0	89.0%	
0.700	3.348	0.000	5.048	0.0557	48.0	87.7%	
0.000	3.349	0.145	5.002	0.0198	48.0	76.3%	
0.350	3.348	0.015	5.028	0.0312	48.0	83.3%	
				J3	J3	J3	
<u>I_{out}</u>	<u>V_{out}</u>	<u>I_{out}</u>	<u>V_{out}</u>	<u>I_{in}</u>	<u>V_{in}</u>	<u>Eff</u>	
0.000	3.349	0.000	5.011	0.0042	57.0	0.0%	
0.700	3.348	0.145	5.037	0.0608	57.0	88.7%	
0.700	3.348	0.000	5.045	0.0471	57.0	87.3%	
0.000	3.349	0.145	5.002	0.0170	57.0	74.8%	
0.350	3.348	0.015	5.026	0.0266	57.0	82.3%	
<u>Max Load Efficiency without bridge</u>							
<u>I_{out}</u>	<u>V_{out}</u>	<u>I_{out}</u>	<u>V_{out}</u>	<u>I_{in}</u>	<u>V_{in}</u>	<u>Eff</u>	
0.700	3.348	0.145	5.047	0.0962	35.49	90.1%	36.0V J3
0.700	3.348	0.145	5.040	0.0720	47.55	89.8%	48.0V J3
0.700	3.348	0.145	5.037	0.0608	56.55	89.4%	57.0V J3
Vin measured at FB1/FB2							

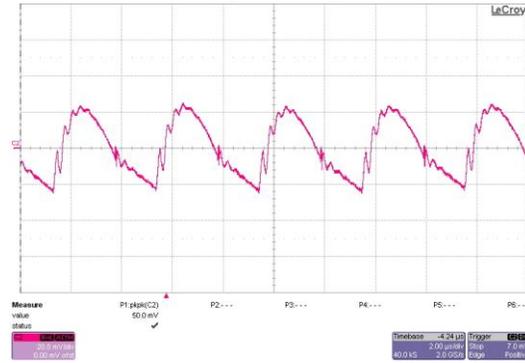
Ripple and Noise

48V input; 3.3V/700mA, 5V/145mA loads; 20MHz BWL.

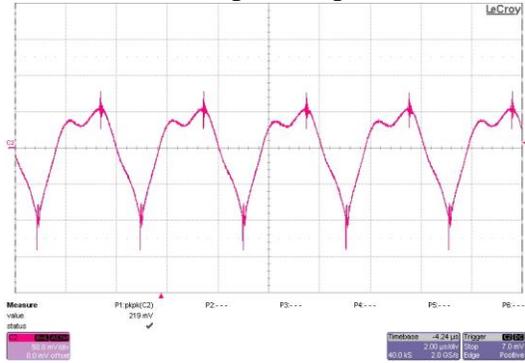
3.3V Output Ripple (C29), 20mV/div
Measured 43mV peak to peak:



5V Output Ripple (C19), 20mV/div
Measured 50mV peak to peak:

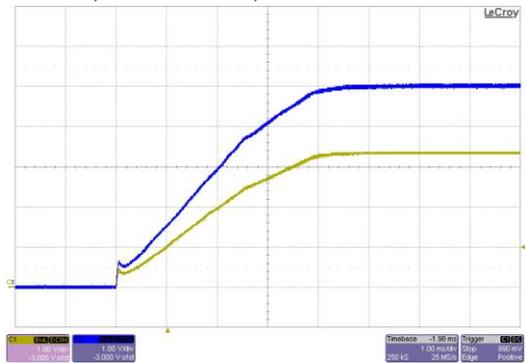


Input Ripple (C21), 50mV/div
Measured 219mV peak to peak:

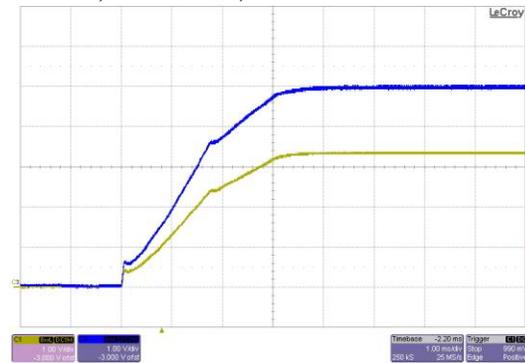


Turn On Response

48VIN, Max Loads, 1msec/div:



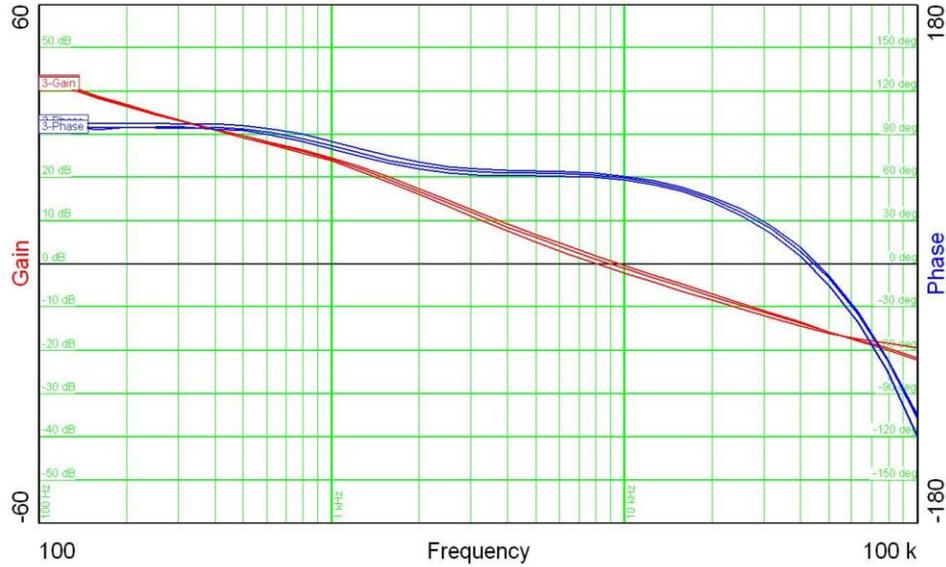
48VIN, 0A Loads, 1msec.div:



Top, 5V output, 1V/div; Bottom, 3.3V output, 1V/div

Loop Stability

The measured Bode plot of the converter is shown below.



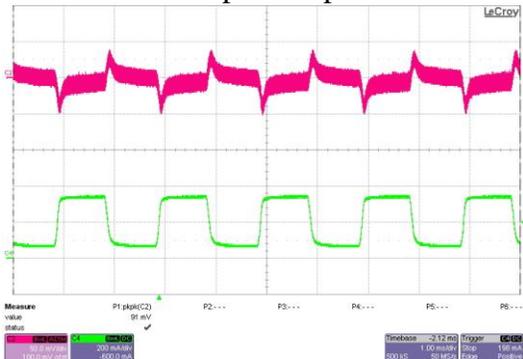
Volts	KHz	Degrees	dB
<u>Vin</u>	<u>BW</u>	<u>PM</u>	<u>GM</u>
36.0	8.0	60	14.8
48.0	8.9	60	14.7
57.0	9.6	61	14.8

Dynamic Loading

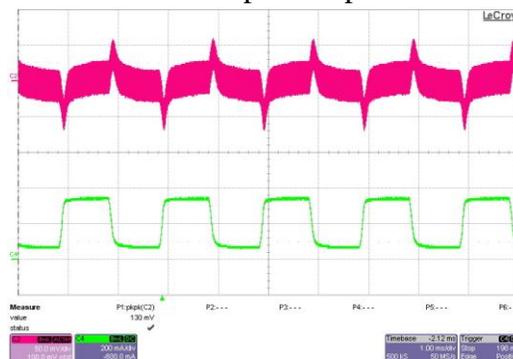
One output at a time was pulsed. The output not being pulsed was loaded to its maximum value. The input voltage is 48V at J3.

3.3V load step, 70mA to 350mA:

3.3V Response
 50mV/div, 1msec/div
 Measured 91mV peak to peak:

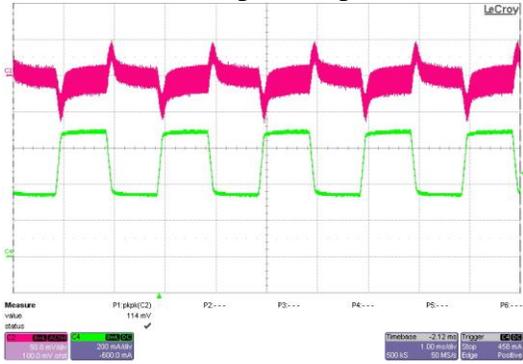


5V Response
 50mV/div
 Measured 130mV peak to peak:

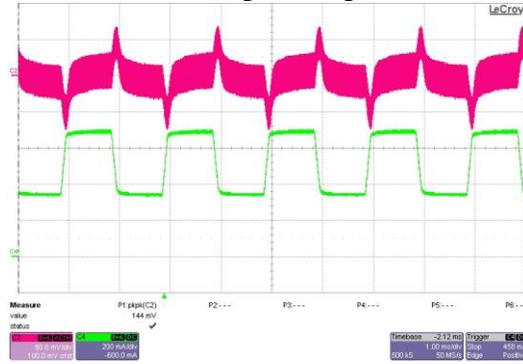


3.3V load step, 350mA to 700mA:

3.3V Response; 50mV/div, 1msec/div
Measured 114mV peak to peak:

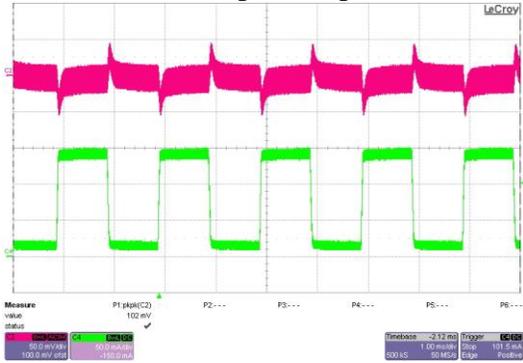


5V Response; 50mV/div, 1msec/div
Measured 144mV peak to peak:

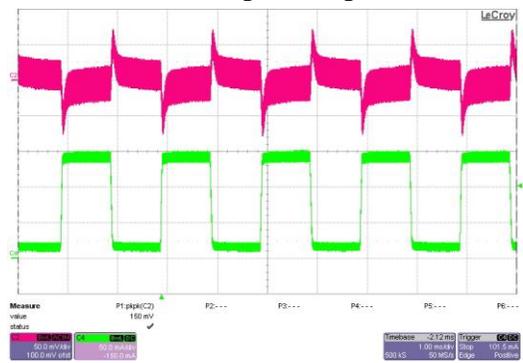


5V load step, 15mA to 145mA:

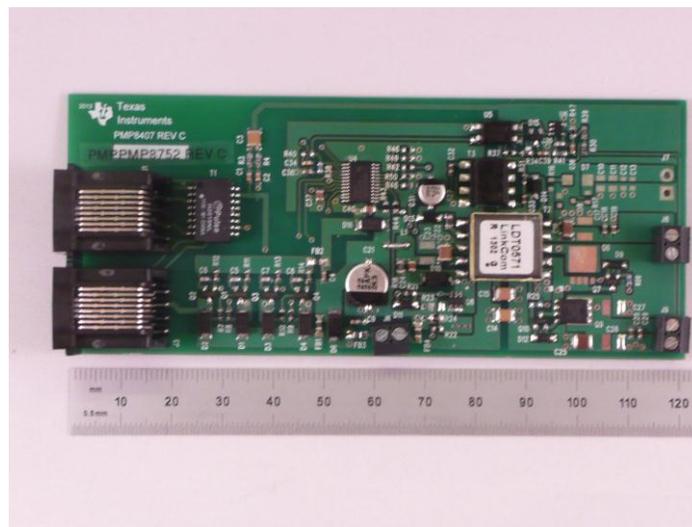
3.3V Response; 50mV/div, 1msec/div
Measured 102mV peak to peak:



5V Response; 50mV/div, 1msec/div
Measured 150mV peak to peak:



Photo



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