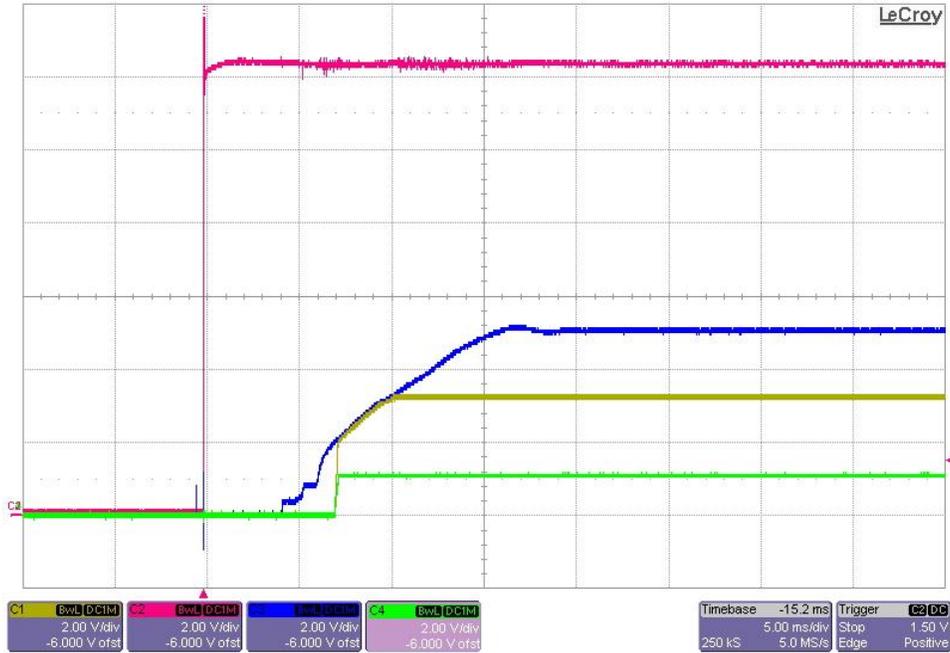
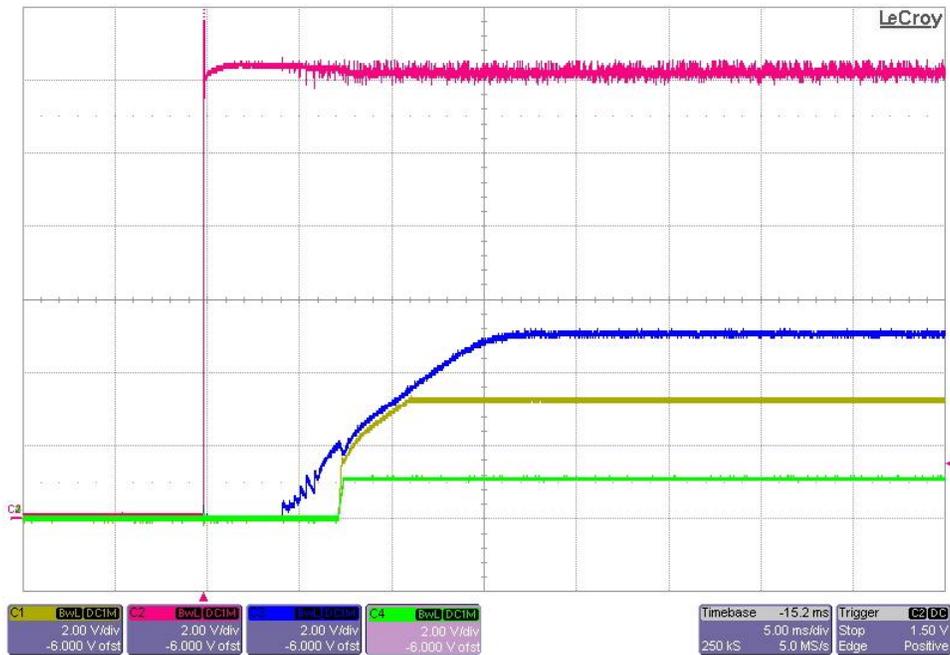


1 Startup

The photo below shows the output voltage startup waveforms after the application of 12V in. The 5V, 3.3V and 1.1V outputs were loaded to 0A. (2V/DIV, 5mS/DIV)

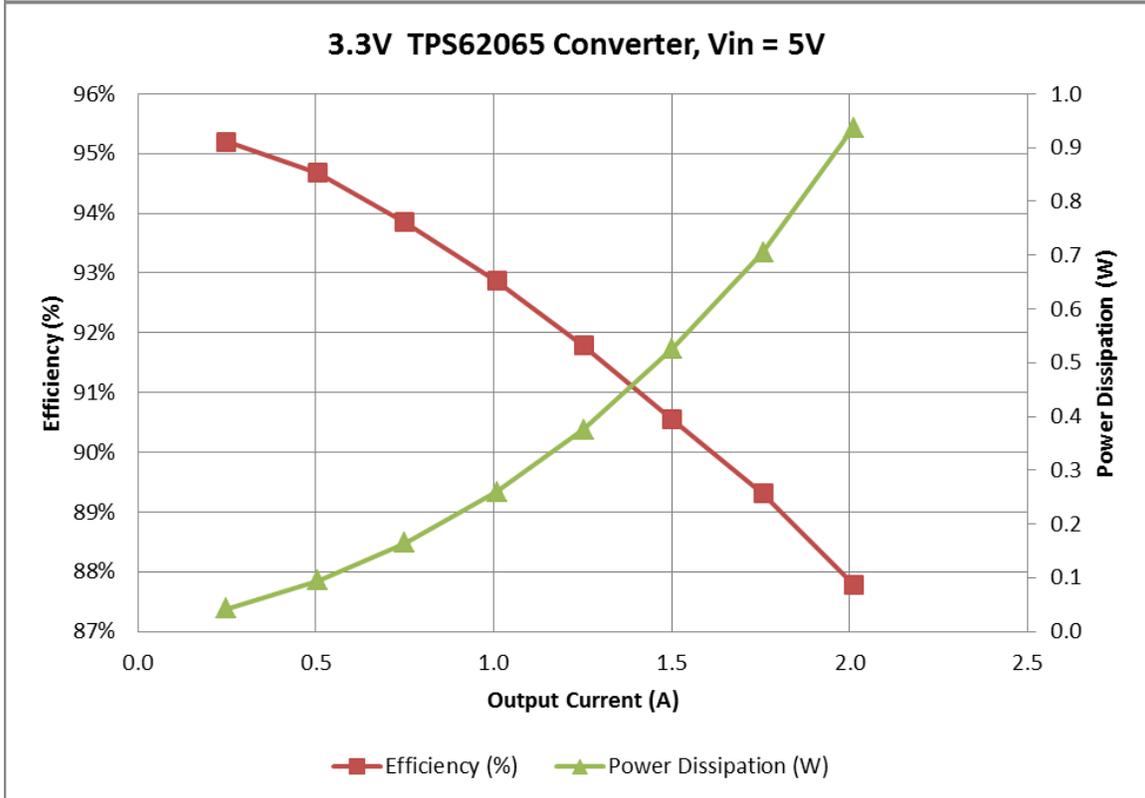
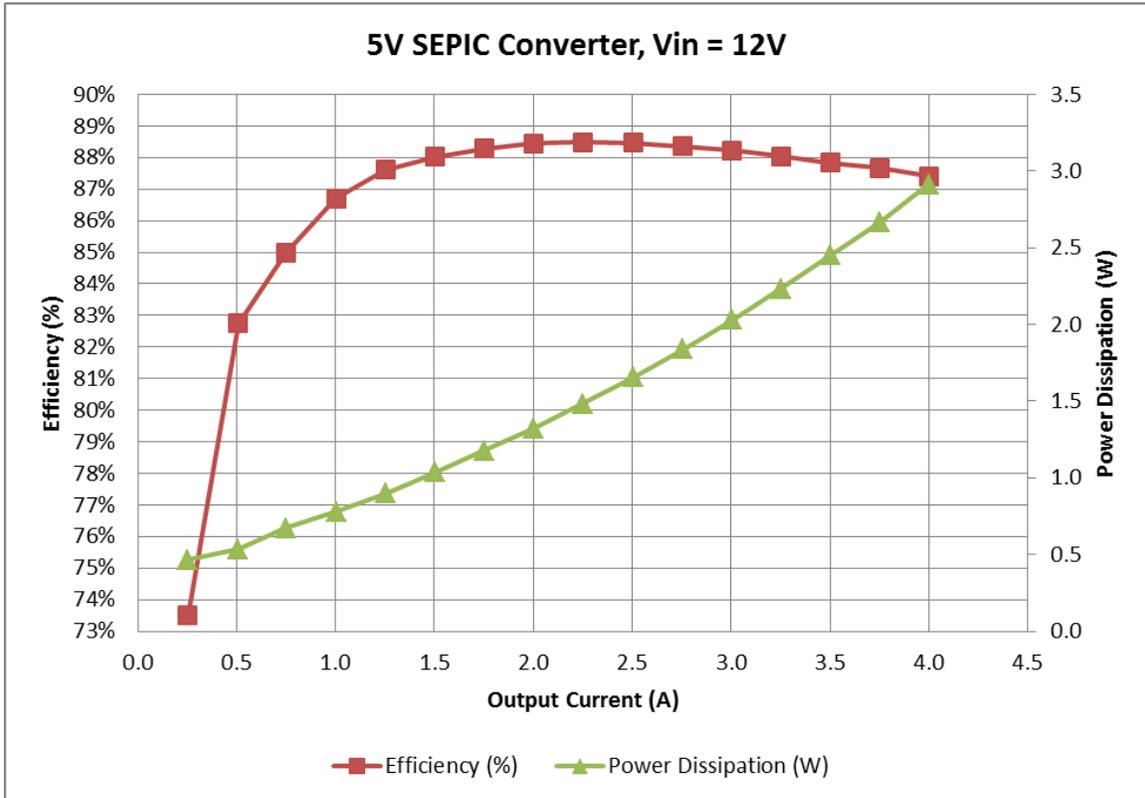


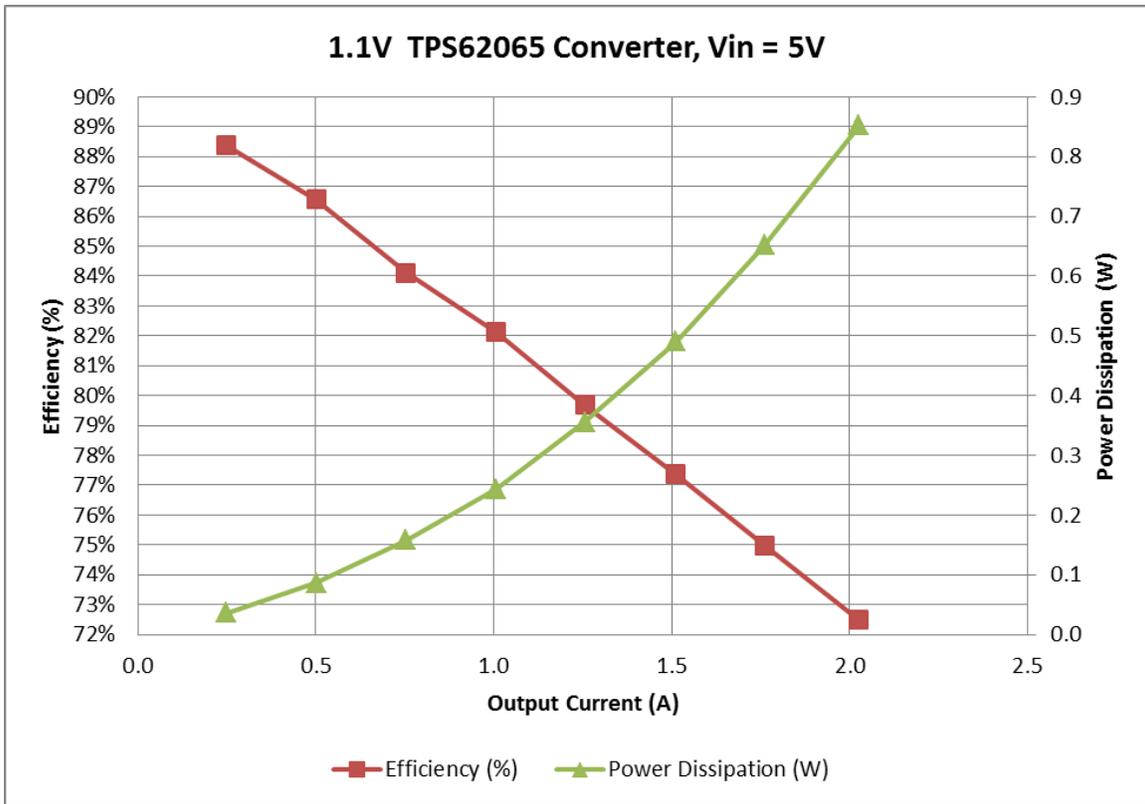
The photo below shows the output voltage startup waveforms after the application of 12V in. The 5V, 3.3V and 1.1V outputs were loaded to 1A each. (2V/DIV, 5mS/DIV)



2 Efficiency

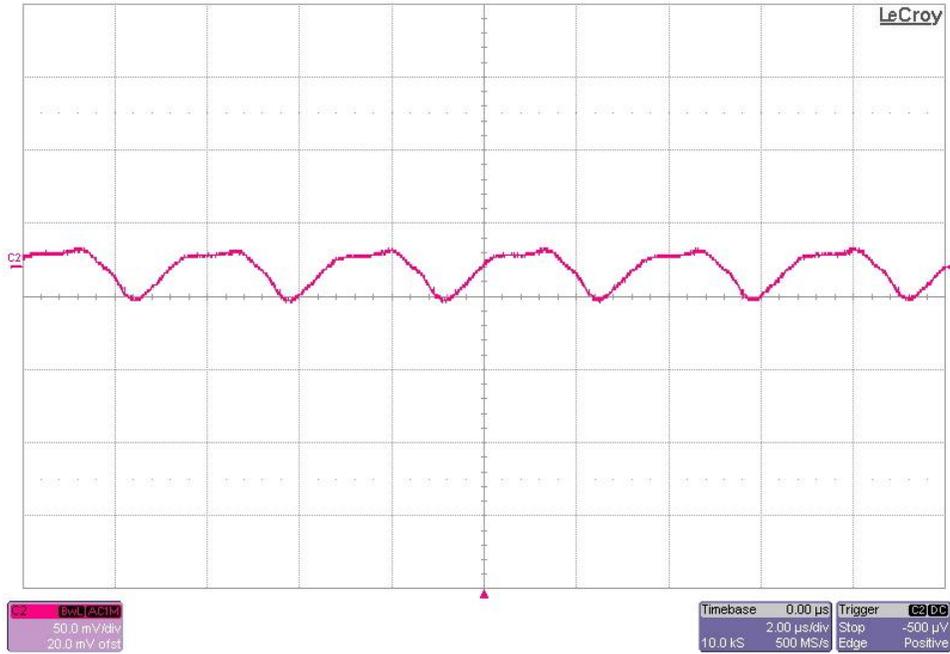
The converter efficiency is shown in the figure below. Each converter was powered up independently.



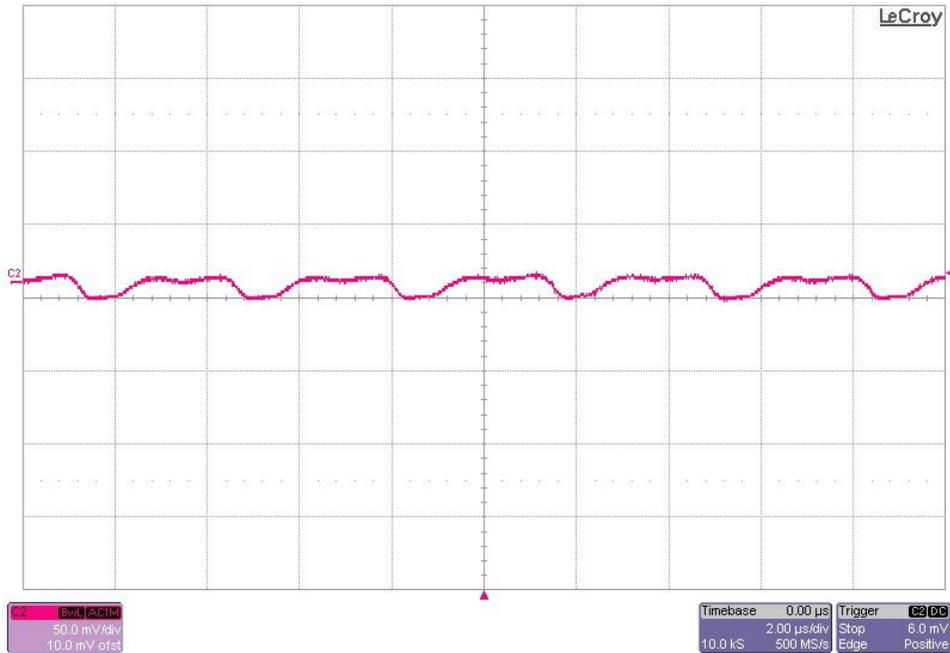


3 Output Ripple Voltage

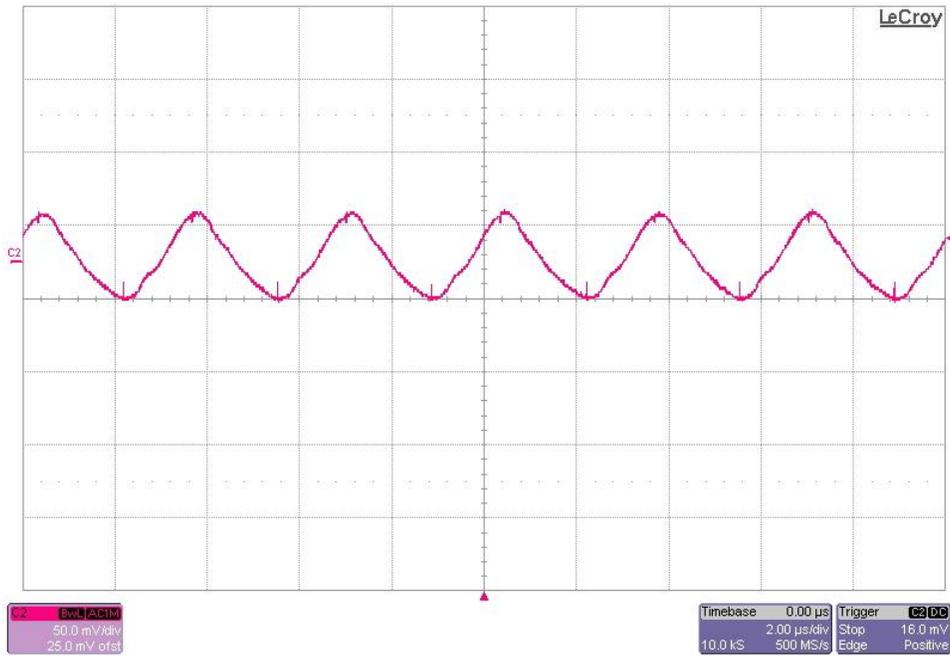
The 5V output ripple voltage is shown in the figure below. The image was taken with the output loaded to 3.25A. The input voltage is set to 12V. (50mV/DIV, 2uS/DIV)



The 5V output ripple voltage is shown in the figure below. The image was taken with the output loaded to 3.25A. The input voltage is set to 42V. (50mV/DIV, 2uS/DIV)



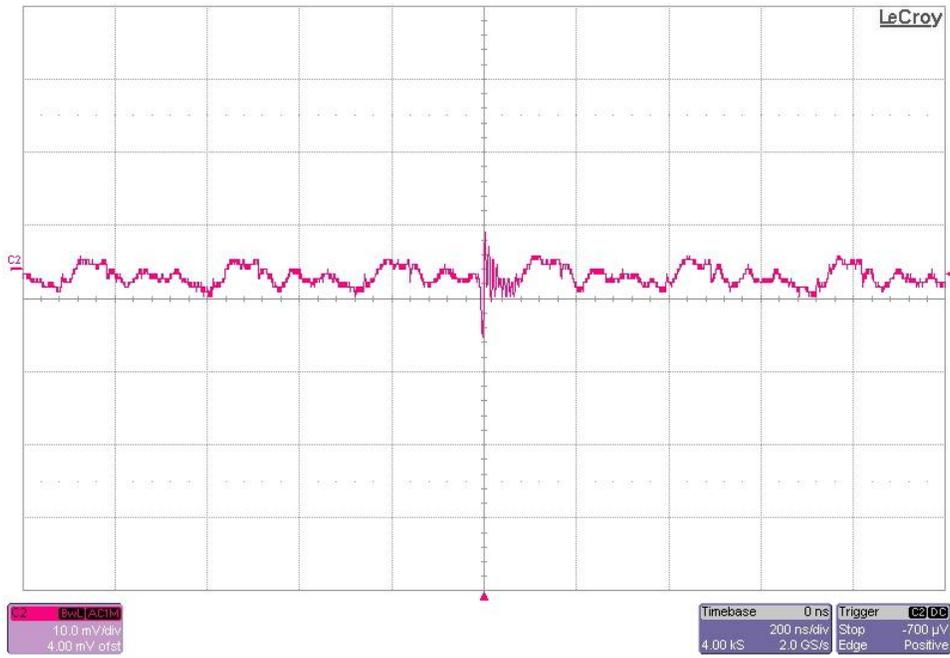
The 5V output ripple voltage is shown in the figure below. The image was taken with the output loaded to 3.25A. The input voltage is set to 4.5V. (50mV/DIV, 2uS/DIV)



The 3.3V output ripple voltage is shown in the figure below. The image was taken with the output loaded to 2A. The input voltage is set to 5V. (10mV/DIV, 200nS/DIV)

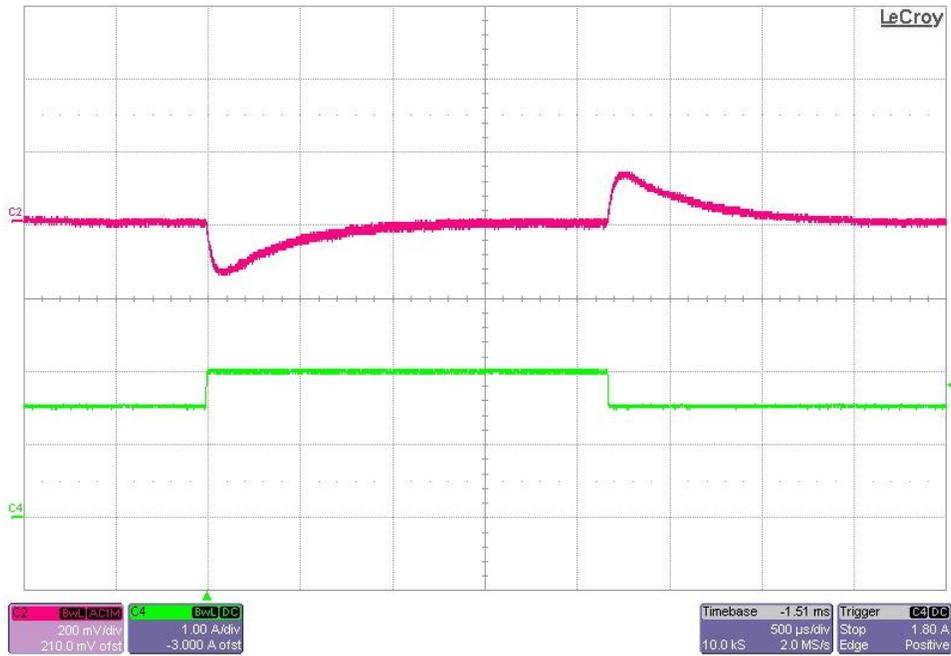


The 1.1V output ripple voltage is shown in the figure below. The image was taken with the output loaded to 2A. The input voltage is set to 5V. (10mV/DIV, 200nS/DIV)

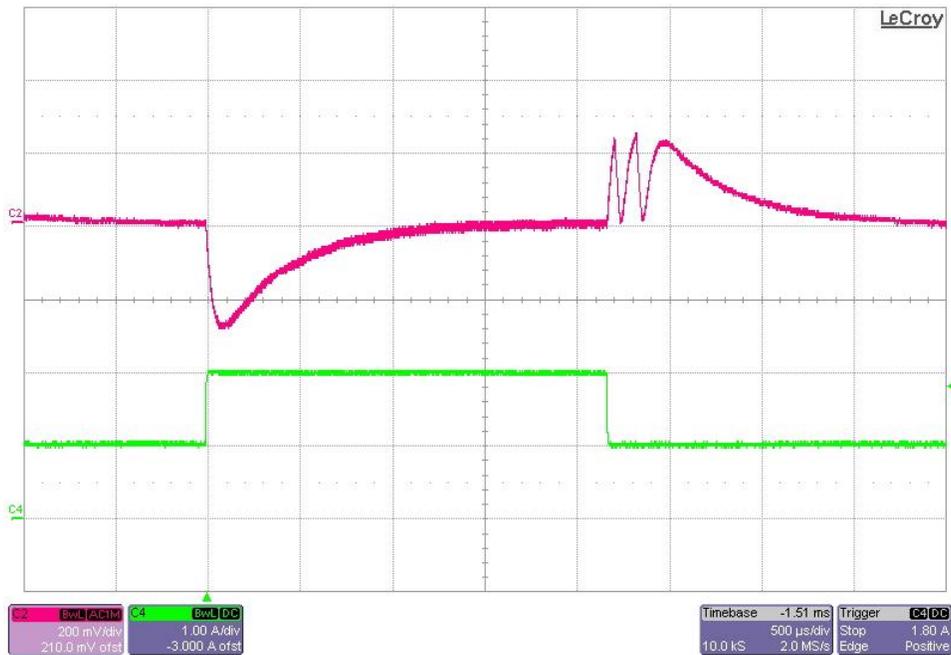


4 Load Transients

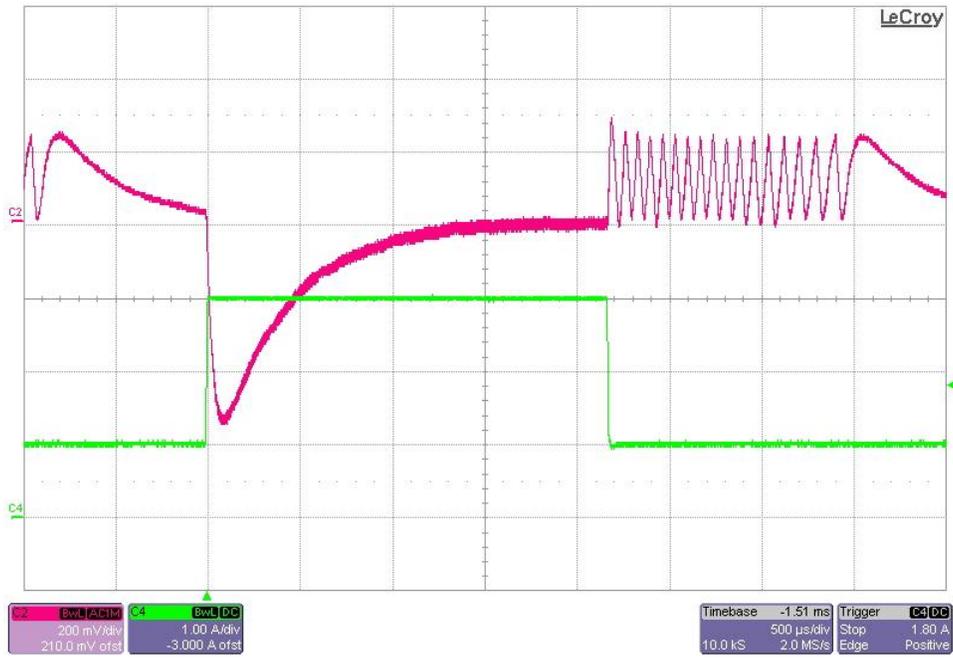
The photo below shows the output voltage (ac coupled) when the load current is stepped between 1.5A and 2A. $V_{in} = 12V$. (200mV/DIV, 1A/DIV, 500uS/DIV)



The photo below shows the output voltage (ac coupled) when the load current is stepped between 1A and 2A. $V_{in} = 12V$. (200mV/DIV, 1A/DIV, 500uS/DIV)

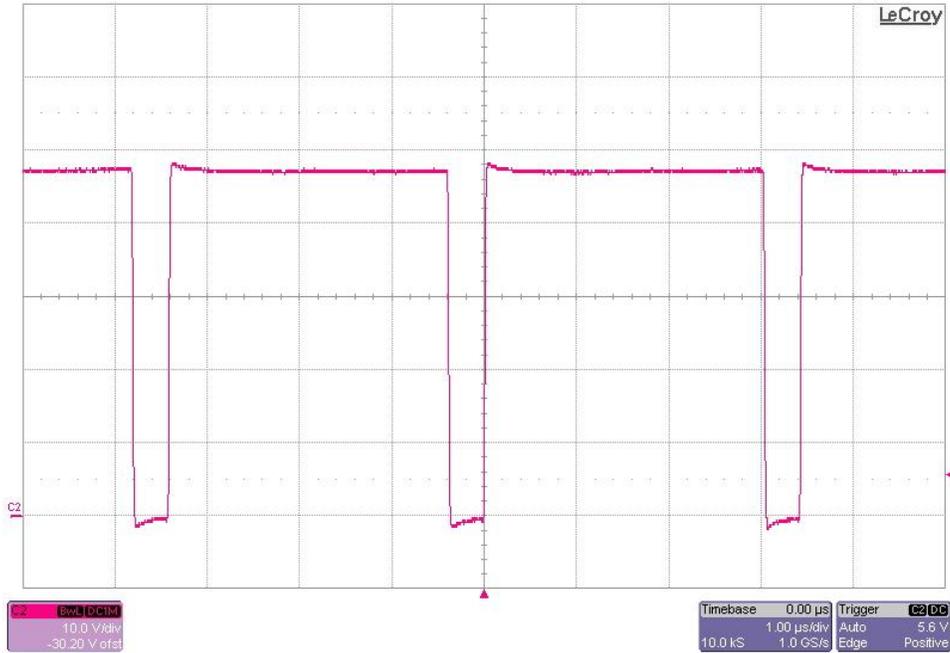


The photo below shows the output voltage (ac coupled) when the load current is stepped between 1A and 3A. $V_{in} = 12V$. (200mV/DIV, 1A/DIV, 500uS/DIV)

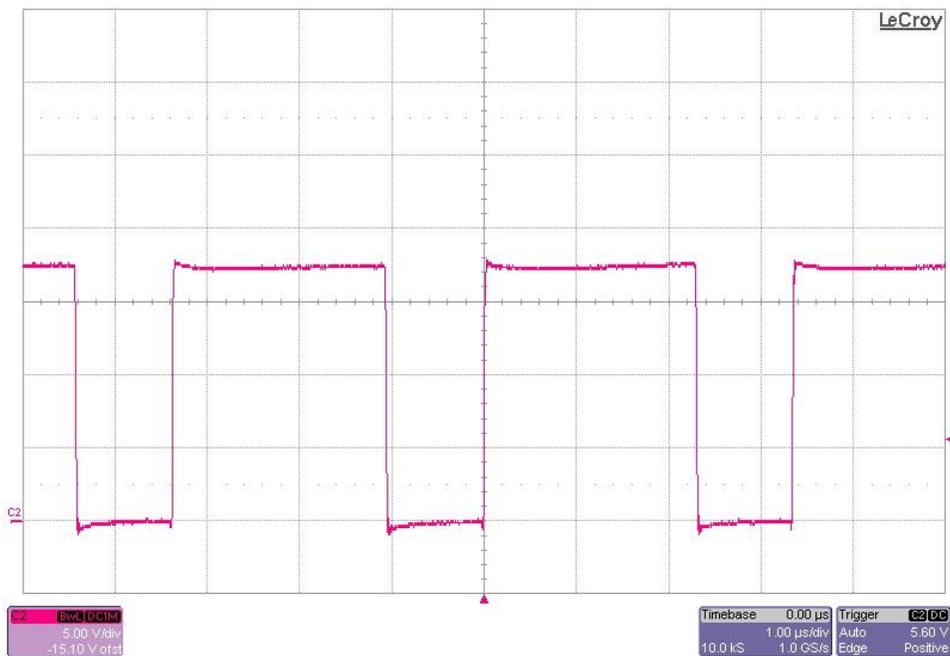


5 Switch Node Waveforms

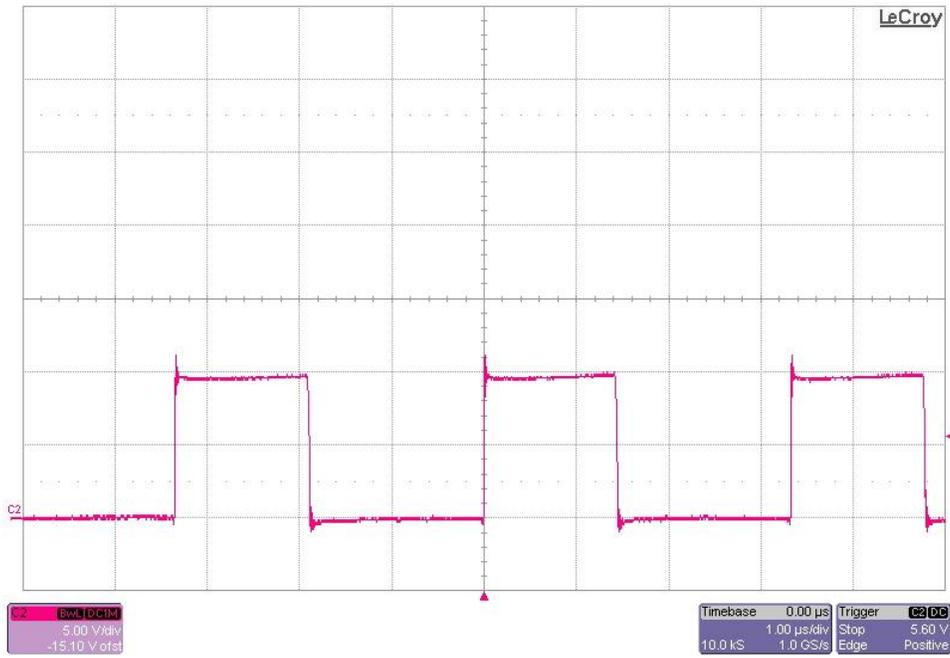
The photo below shows the 5V SEPIC switch node. The input voltage is 42V and the output is loaded to 3.25A. (10V/DIV, 1uS/DIV)



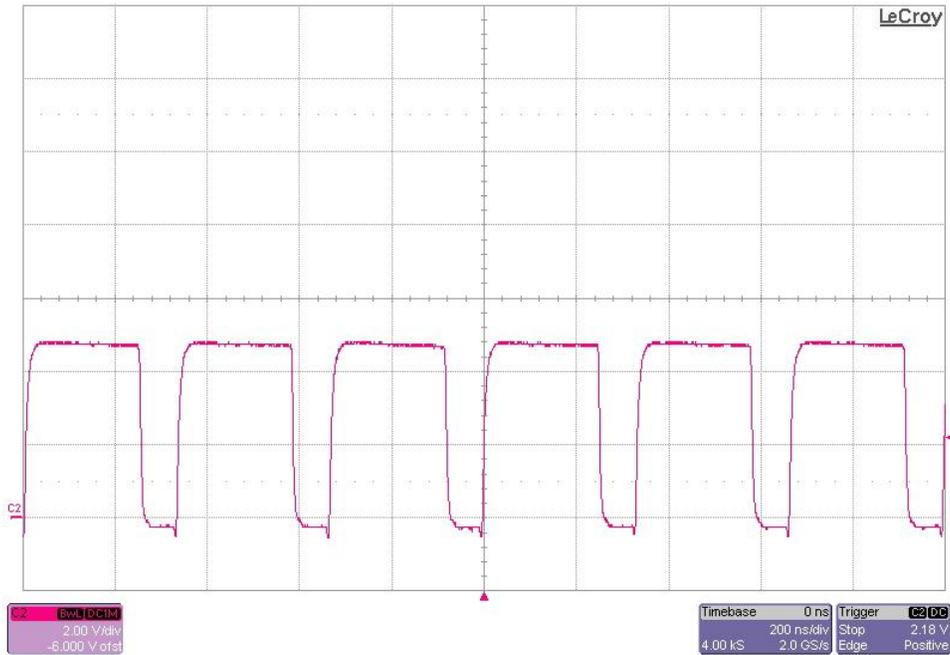
The photo below shows the 5V SEPIC switch node. The input voltage is 12V and the output is loaded to 3.25A. (5V/DIV, 1uS/DIV)



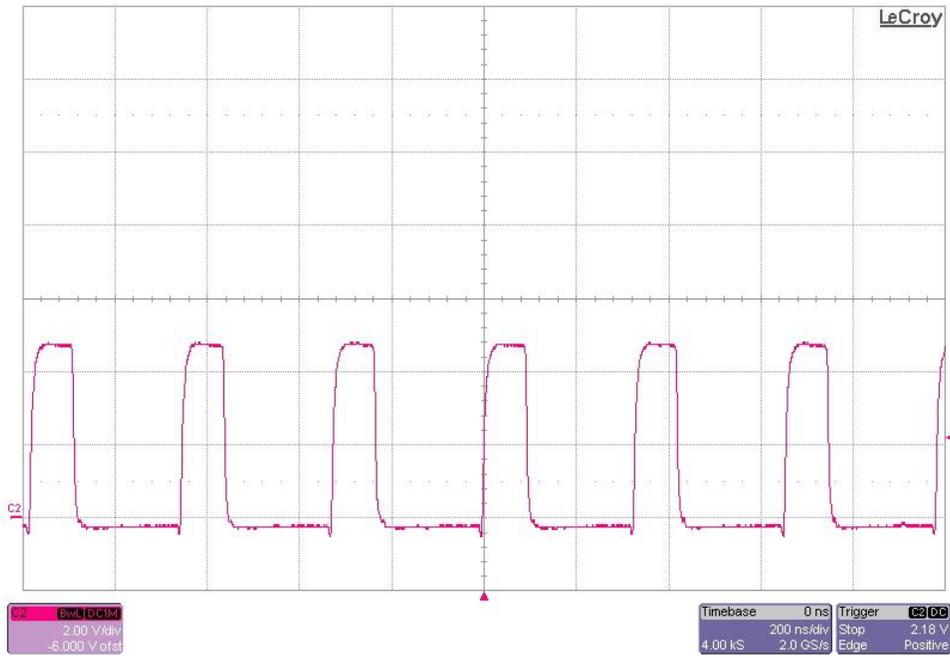
The photo below shows the 5V SEPIC switch node. The input voltage is 4.5V and the output is loaded to 3.25A. (5V/DIV, 1uS/DIV)



The photo below shows the 3.3V switch node. The input voltage is 5V and the output is loaded to 2A. (2V/DIV, 200nS/DIV)



The photo below shows the 1.1V switch node. The input voltage is 5V and the output is loaded to 2A.
(2V/DIV, 200nS/DIV)



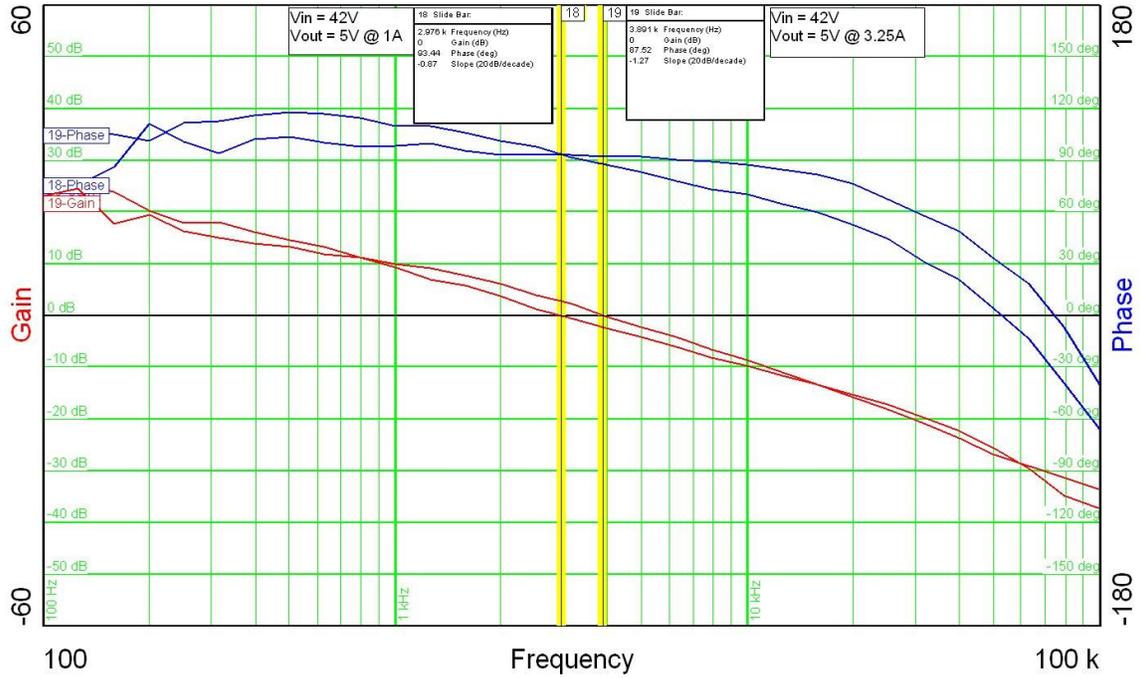
6 Control Loop Gain / Stability

The plot below shows the 5V loop gain and phase margin with the output loaded to 1A and 3.25A. The input voltage was set to 42V.

Band Width = 2.98KHz,
Band Width = 3.89KHz,

Phase Margin = 93 degrees
Phase Margin = 88 degrees

(5V@1A)
(5V@3.25A)

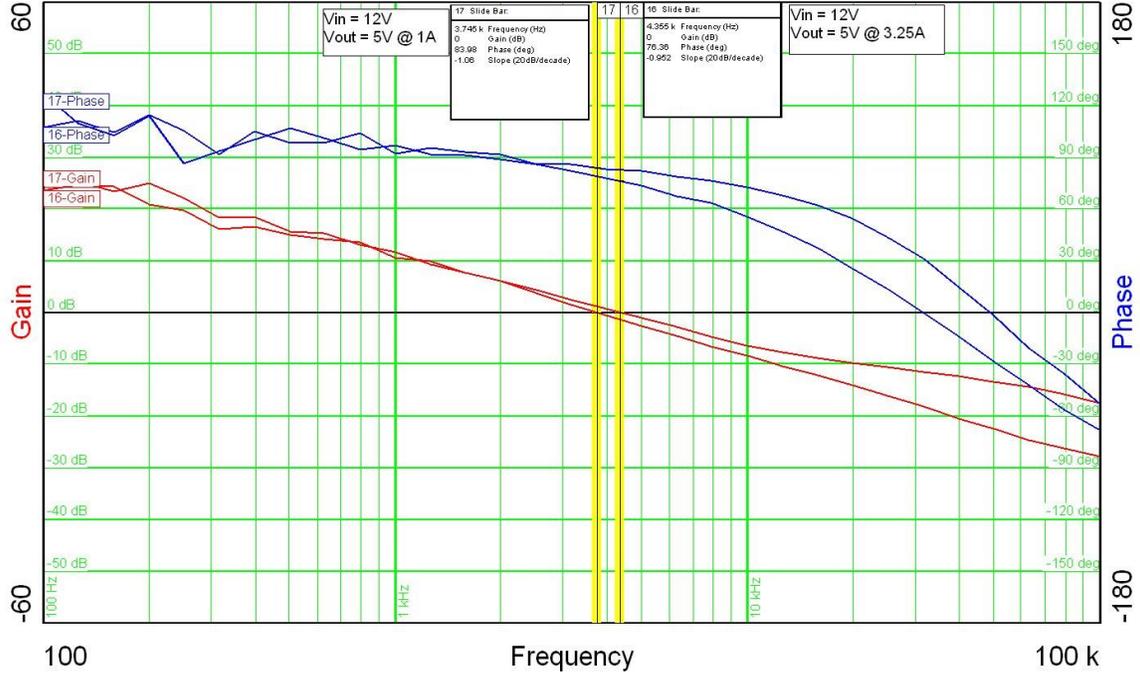


The plot below shows the 5V loop gain and phase margin with the output loaded to 1A and 3.25A. The input voltage was set to 12V.

Band Width = 3.75KHz,
Band Width = 4.36KHz,

Phase Margin = 84 degrees
Phase Margin = 76 degrees

(5V@1A)
(5V@3.25A)

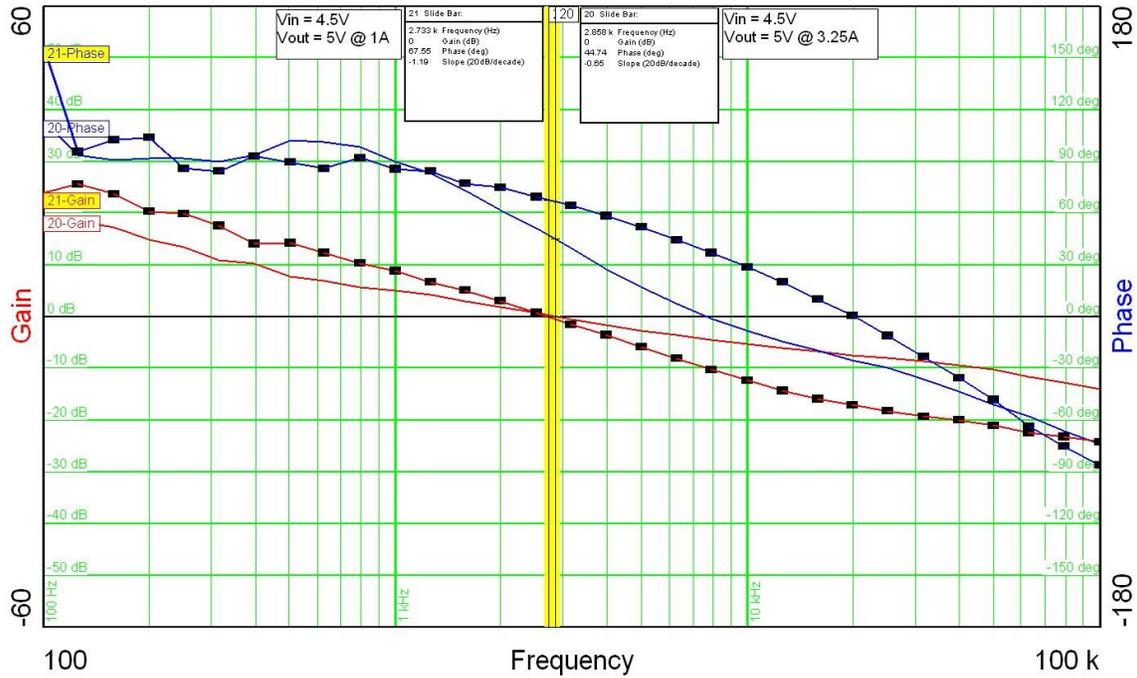


The plot below shows the 5V loop gain and phase margin with the output loaded to 1A and 3.25A. The input voltage was set to 4.5V.

Band Width = 2.73KHz,
Band Width = 2.86KHz,

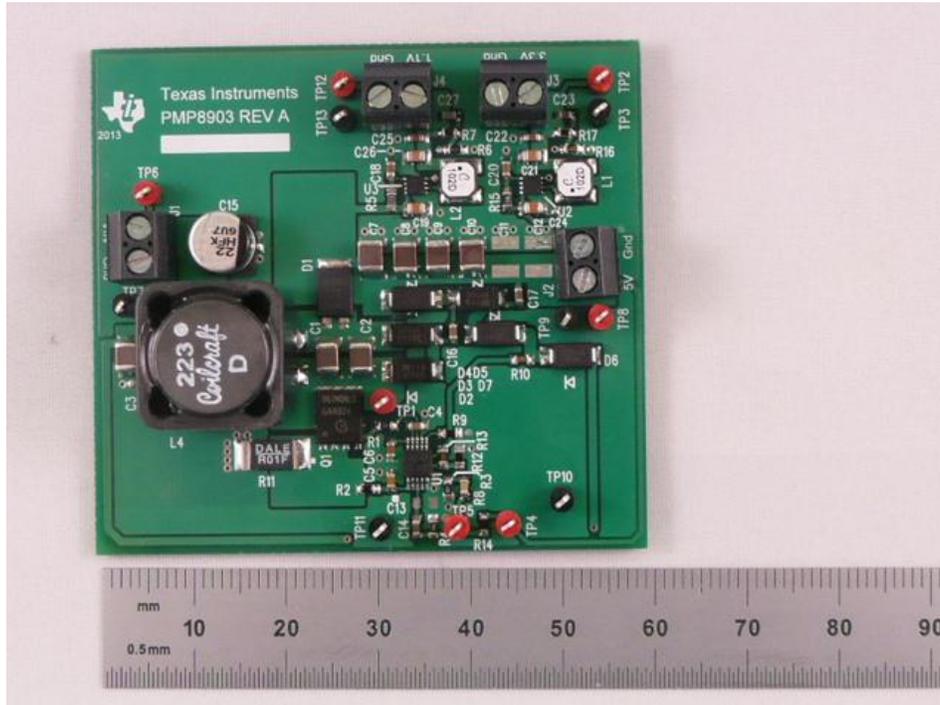
Phase Margin = 68 degrees
Phase Margin = 45 degrees

(5V@1A)
(5V@3.25A)



7 Photo

The photo below shows the PMP8903 REVB assy.



8 Thermal Image

A thermal image is shown below when operating the 5V SEPIC converter at 12V input and 3.25A output, with no airflow.



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