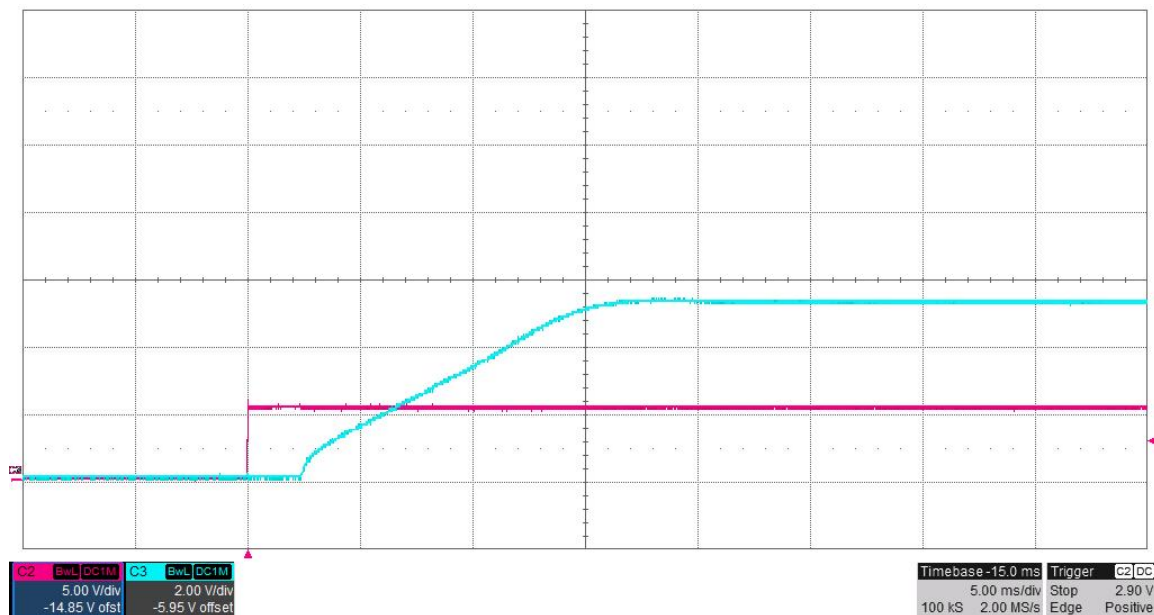
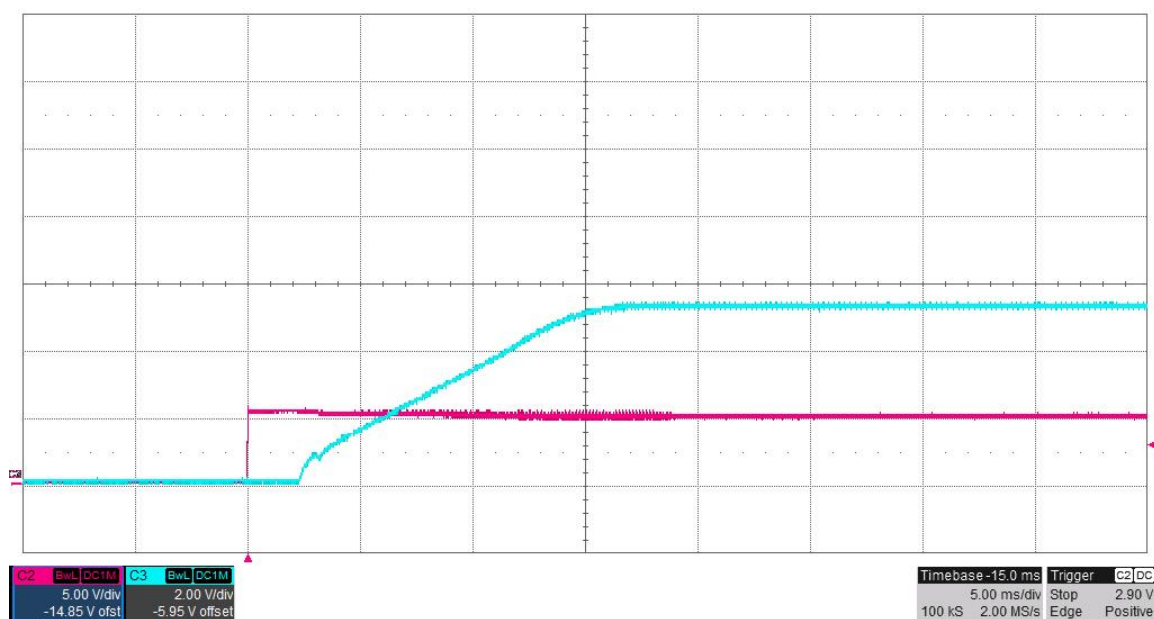


1 Startup

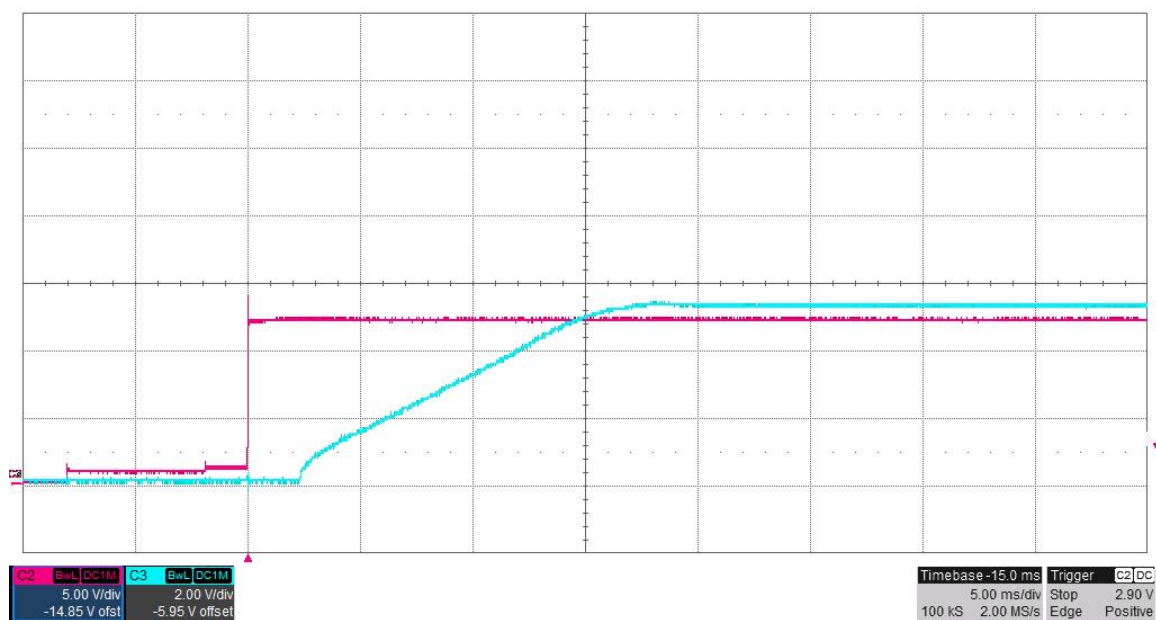
The photo below shows the output voltage startup waveforms after the application of 5V in. The 5.2V output was loaded to 0A. (V_{in} is 5V/DIV, V_{out} is 2V/DIV, 5ms/DIV)



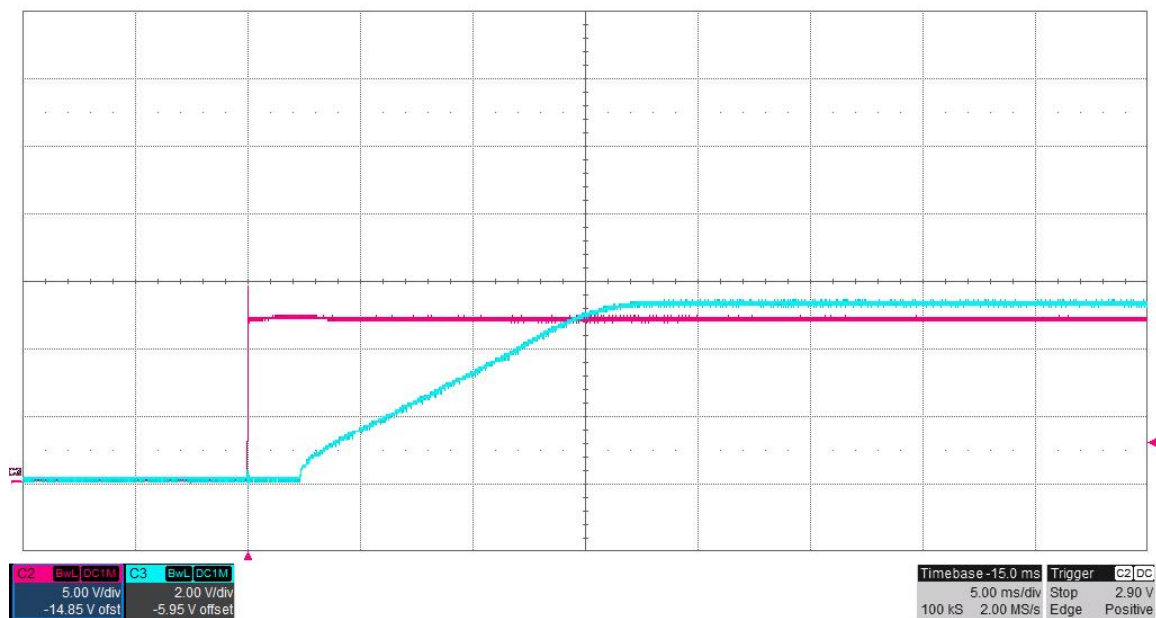
The photo below shows the output voltage startup waveforms after the application of 5V in. The 5.2V output was loaded to 2A. (V_{in} is 5V/DIV, V_{out} is 2V/DIV, 5ms/DIV)



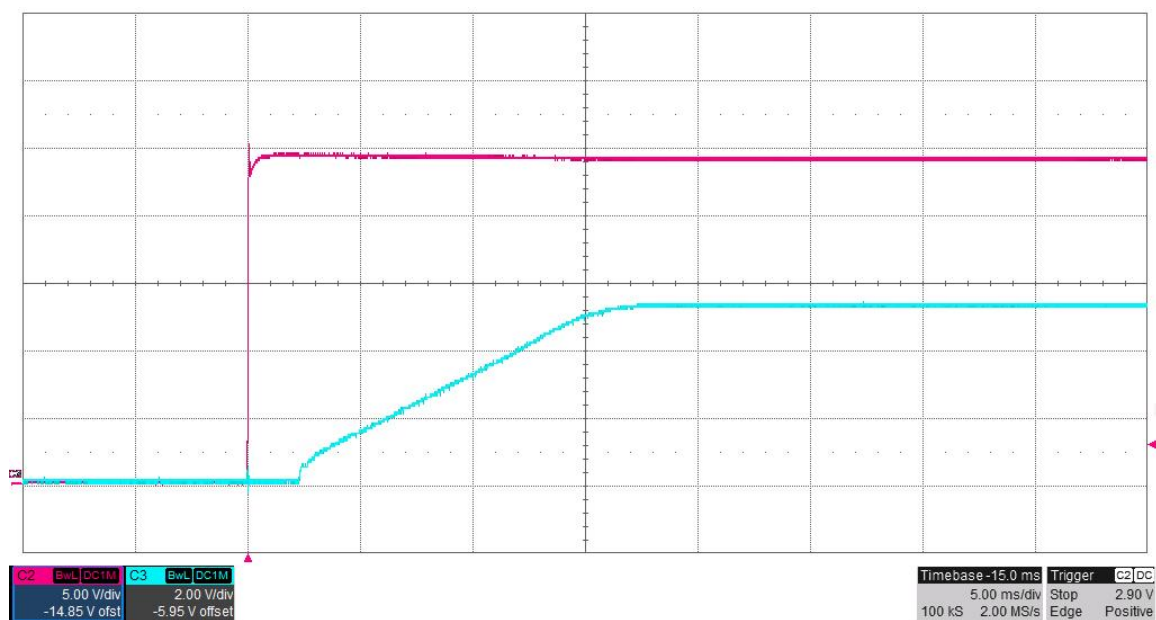
The photo below shows the output voltage startup waveforms after the application of 12V in. The 5.2V output was loaded to 0A. (Vin is 5V/DIV, Vout is 2V/DIV, 5mS/DIV)



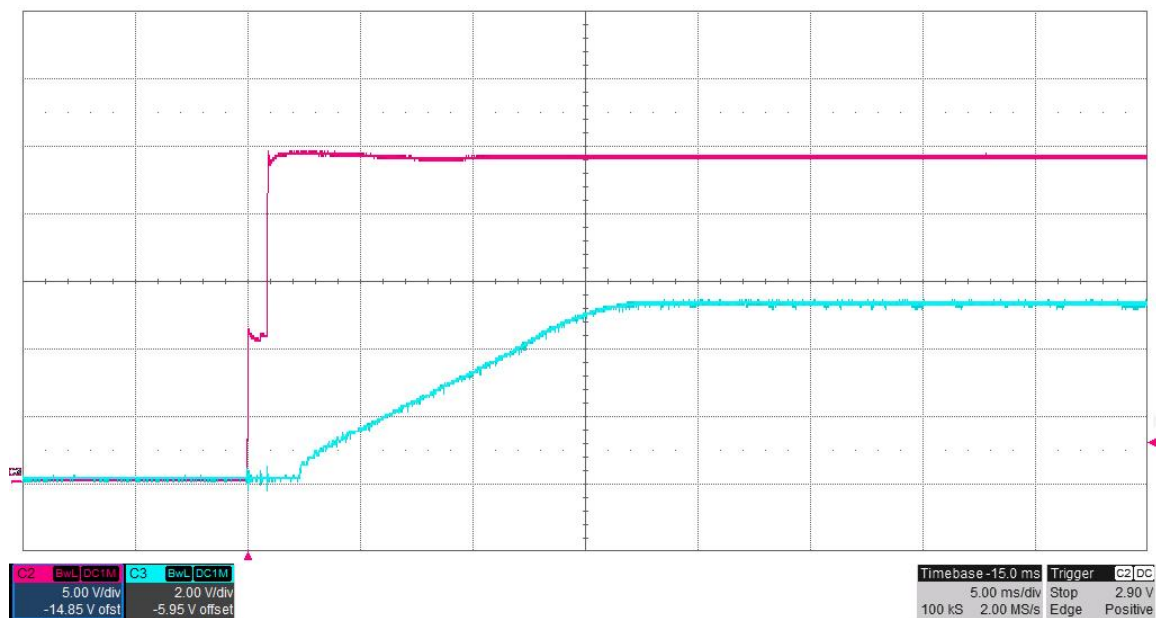
The photo below shows the output voltage startup waveforms after the application of 12V in. The 5.2V output was loaded to 2A. (Vin is 5V/DIV, Vout is 2V/DIV, 5mS/DIV)



The photo below shows the output voltage startup waveforms after the application of 24V in. The 5.2V output was loaded to 0A. (Vin is 5V/DIV, Vout is 2V/DIV, 5mS/DIV)

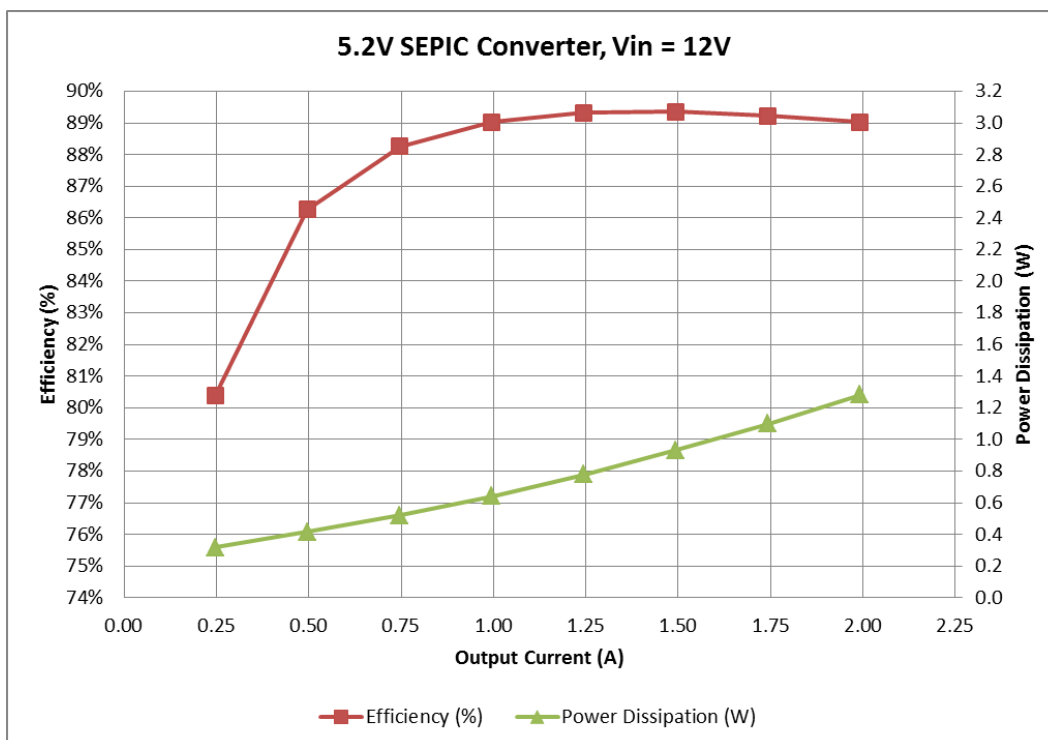
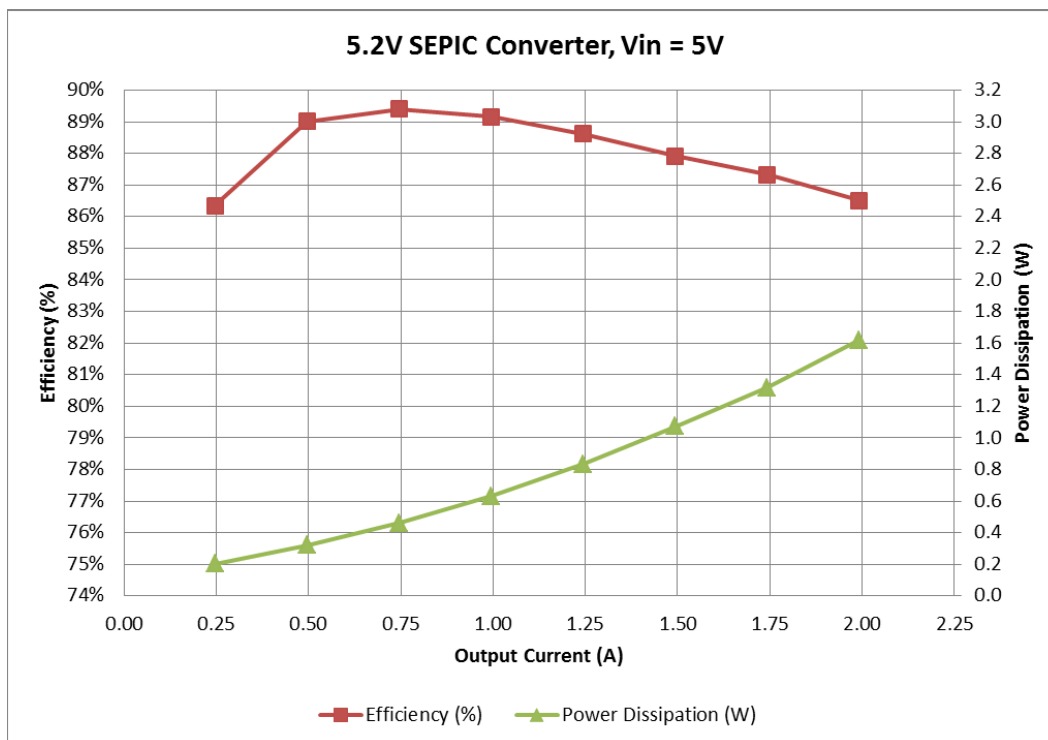


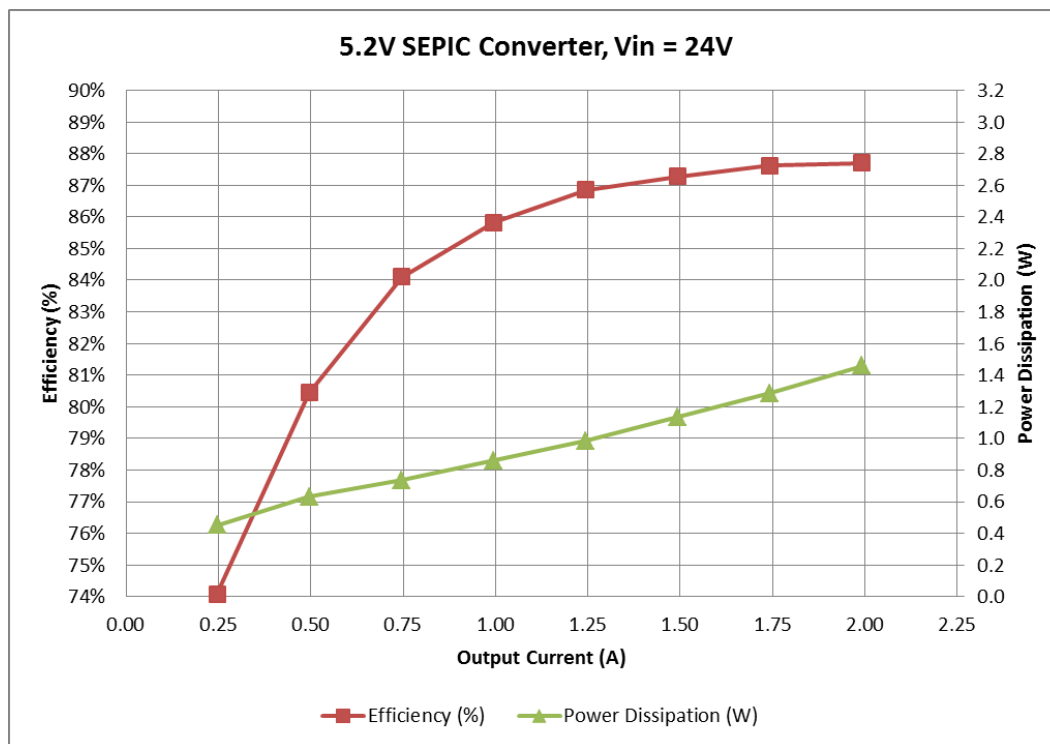
The photo below shows the output voltage startup waveforms after the application of 24V in. The 5.2V output was loaded to 2A. (Vin is 5V/DIV, Vout is 2V/DIV, 5mS/DIV)



2 Efficiency

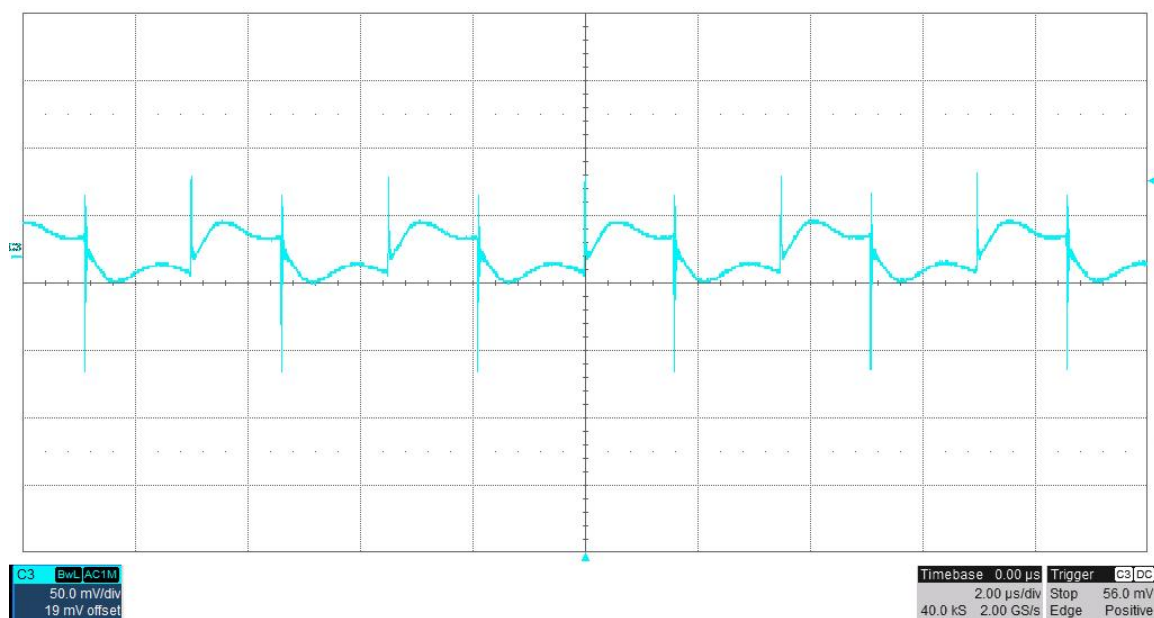
The converter efficiency is shown in the figures below for input voltages of 5V, 12V and 24V.



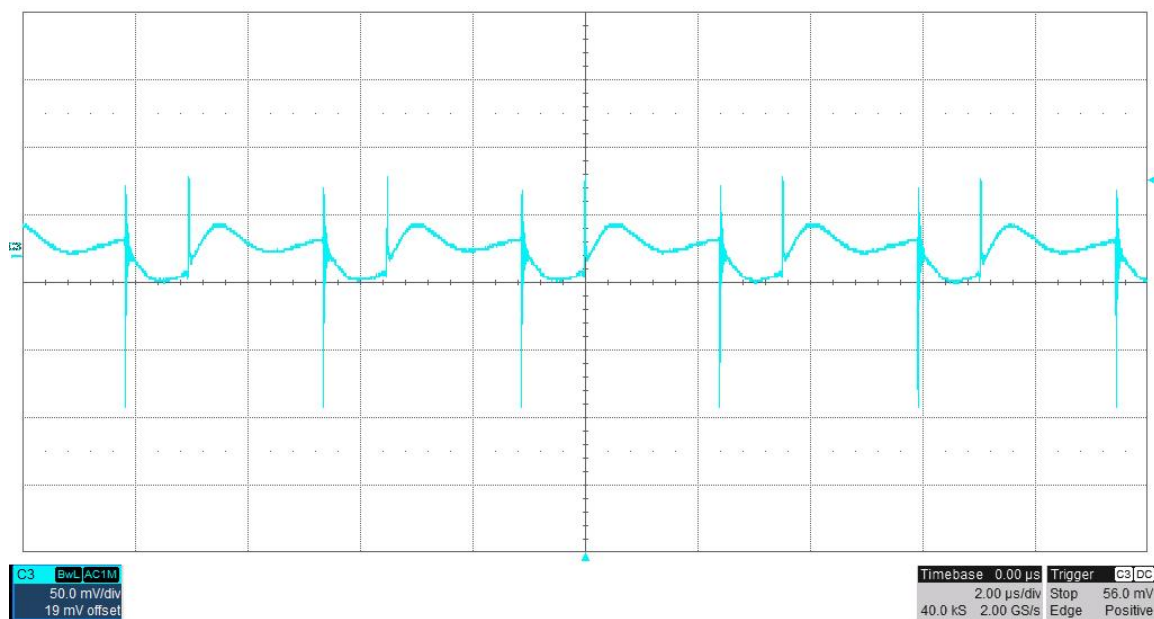


3 Output Ripple Voltage

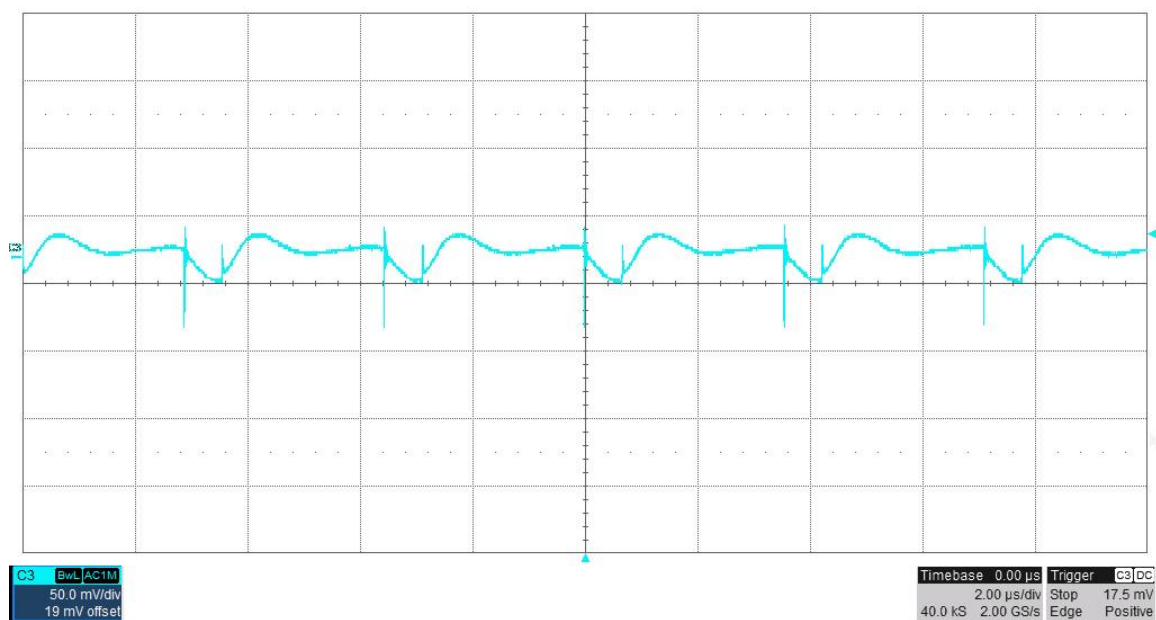
The 5.2V output ripple voltage is shown in the figure below. The image was taken with the output loaded to 2A. The input voltage is set to 5V. (50mV/DIV, 2uS/DIV)



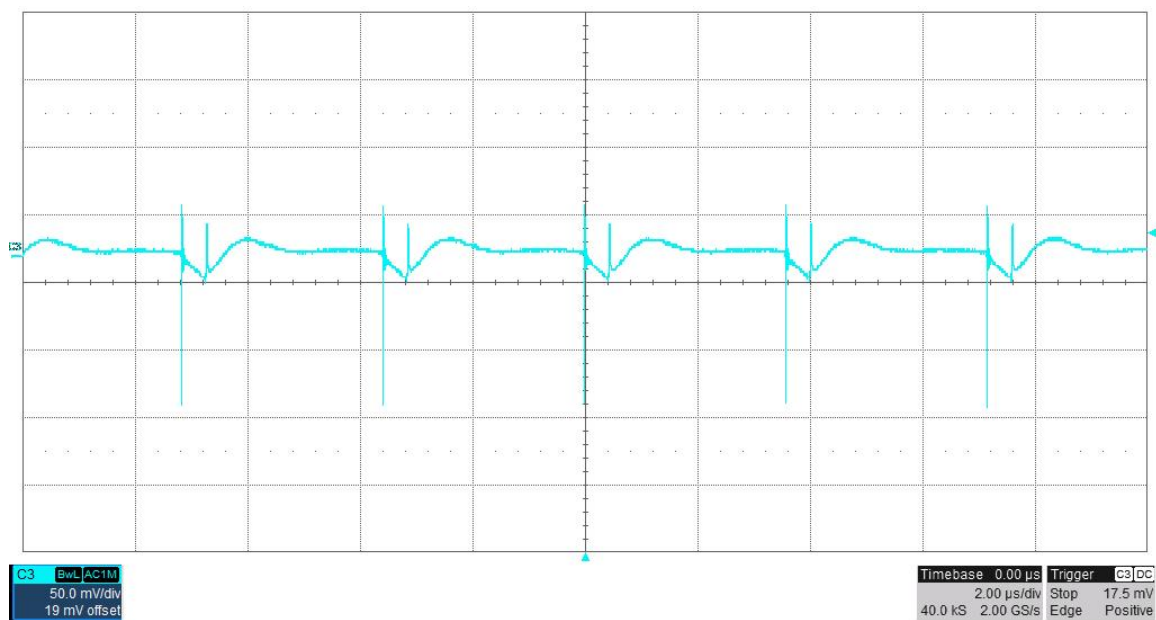
The 5.2V output ripple voltage is shown in the figure below. The image was taken with the output loaded to 2A. The input voltage is set to 12V. (50mV/DIV, 2uS/DIV)



The 5.2V 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 24V. (50mV/DIV, 2uS/DIV)

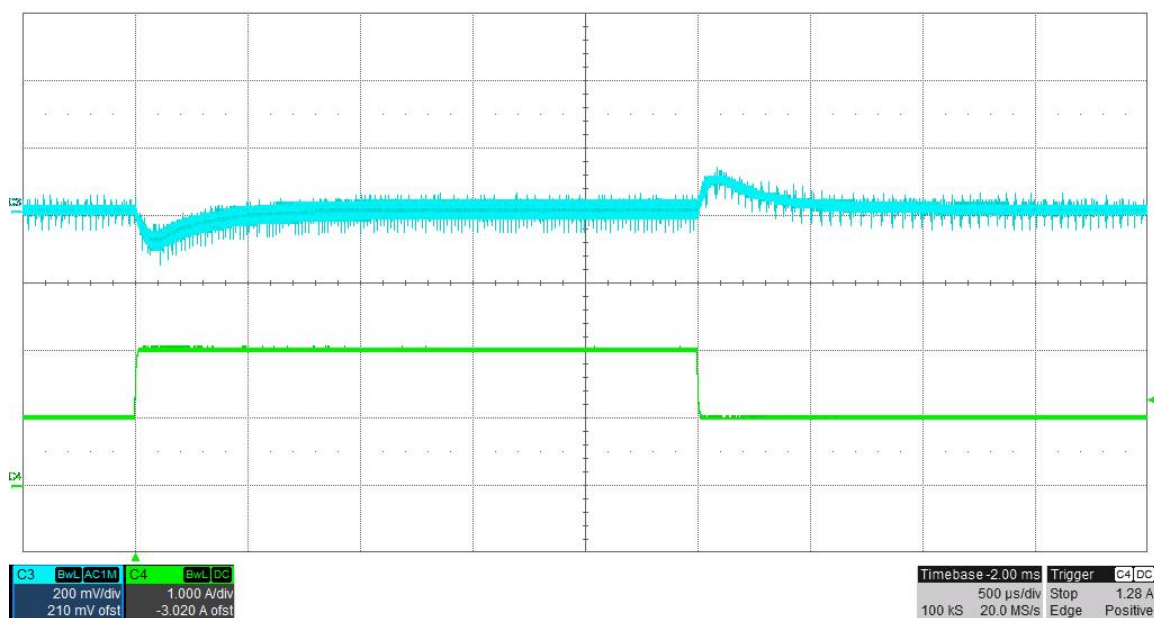


The 5.2V output ripple voltage is shown in the figure below. The image was taken with the output loaded to 2A. The input voltage is set to 40V. (50mV/DIV, 2uS/DIV)

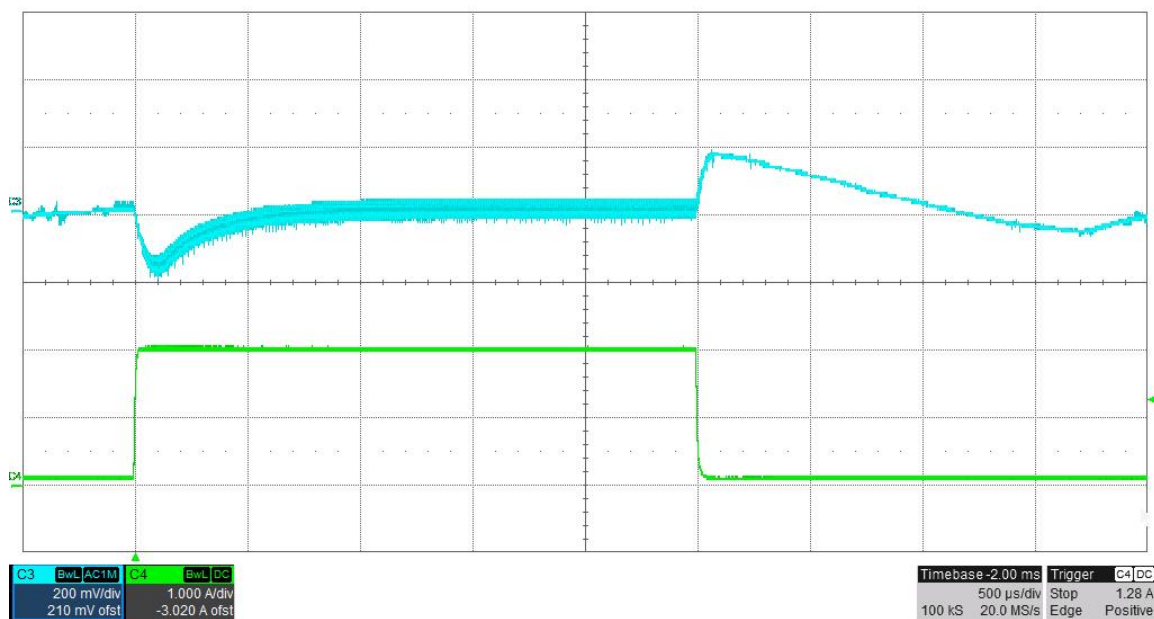


4 Load Transients

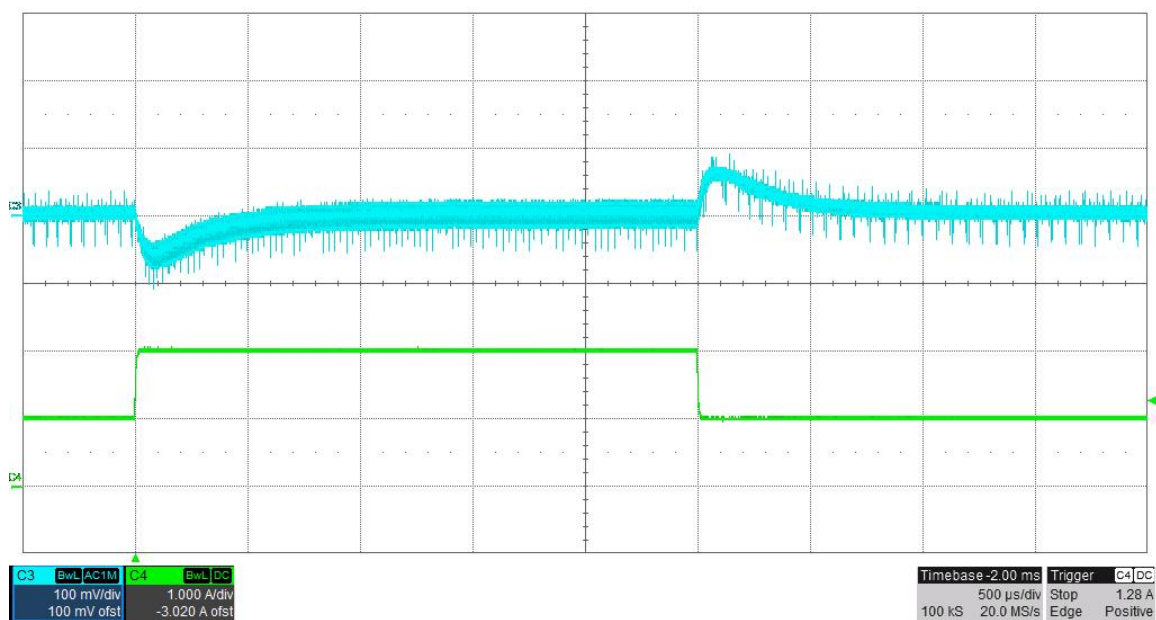
The waveform below shows the output voltage (ac coupled) when the load current is stepped between 1A and 2A. $V_{in} = 5V$. (200mV/DIV, 1A/DIV, 500uS/DIV)



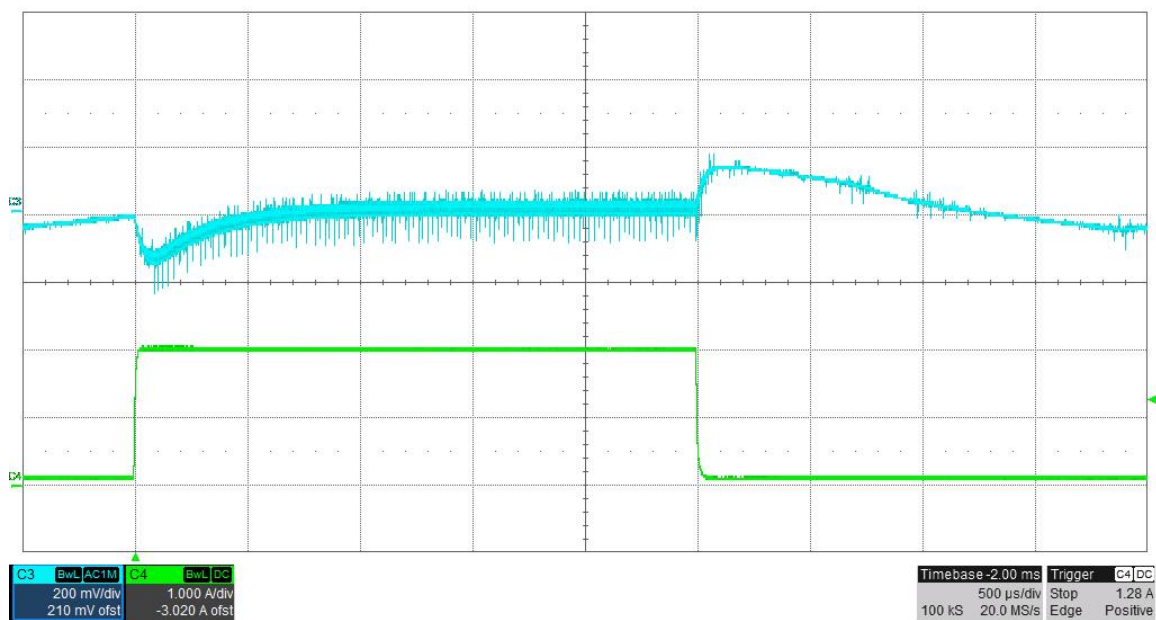
The waveform below shows the output voltage (ac coupled) when the load current is stepped between 0.1A and 2A. $V_{in} = 5V$. (200mV/DIV, 1A/DIV, 500uS/DIV)



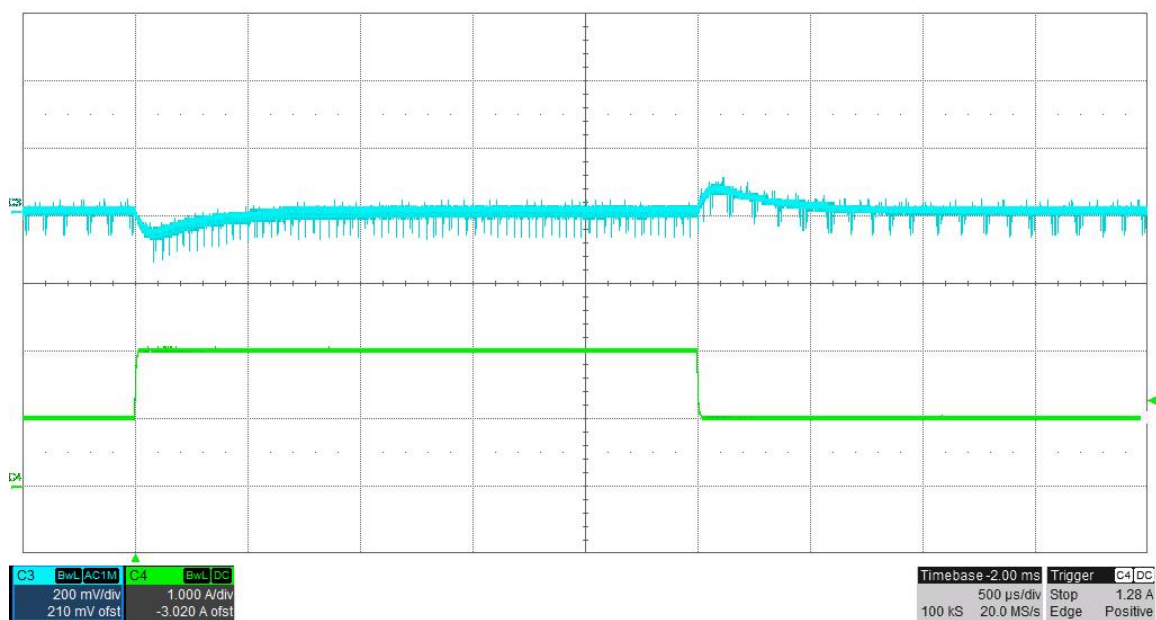
The waveform below shows the output voltage (ac coupled) when the load current is stepped between 1A and 2A. $V_{in} = 12V$. (100mV/DIV, 1A/DIV, 500uS/DIV)



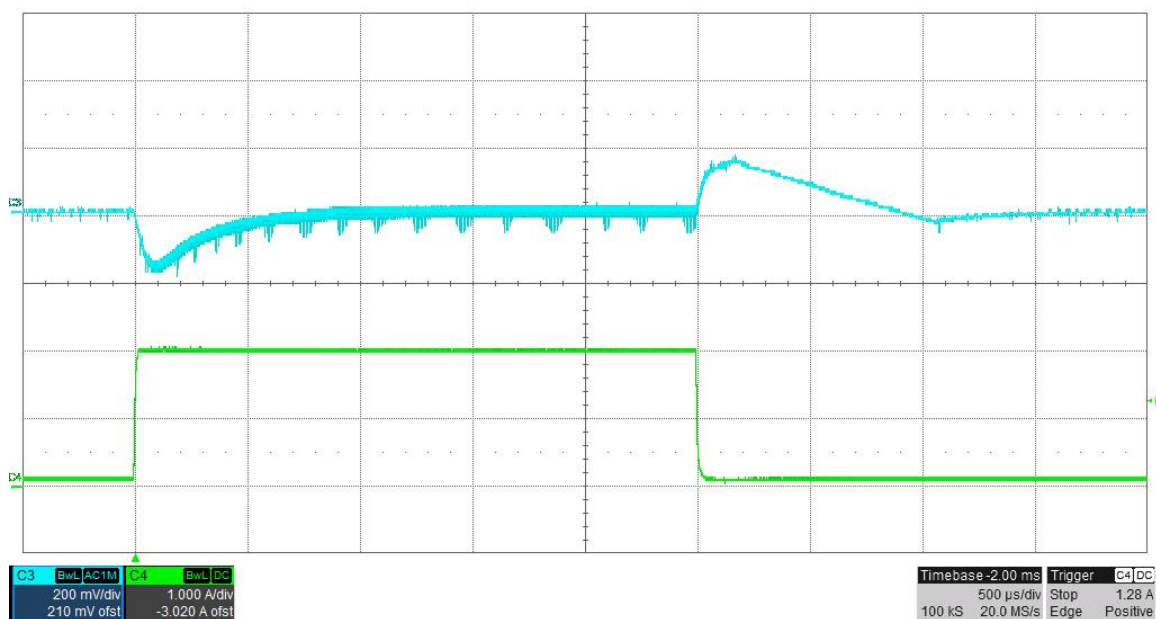
The waveform below shows the output voltage (ac coupled) when the load current is stepped between 0.1A and 2A. $V_{in} = 12V$. (200mV/DIV, 1A/DIV, 500uS/DIV)



The waveform below shows the output voltage (ac coupled) when the load current is stepped between 1A and 2A. $V_{in} = 40V$. (200mV/DIV, 1A/DIV, 500uS/DIV)

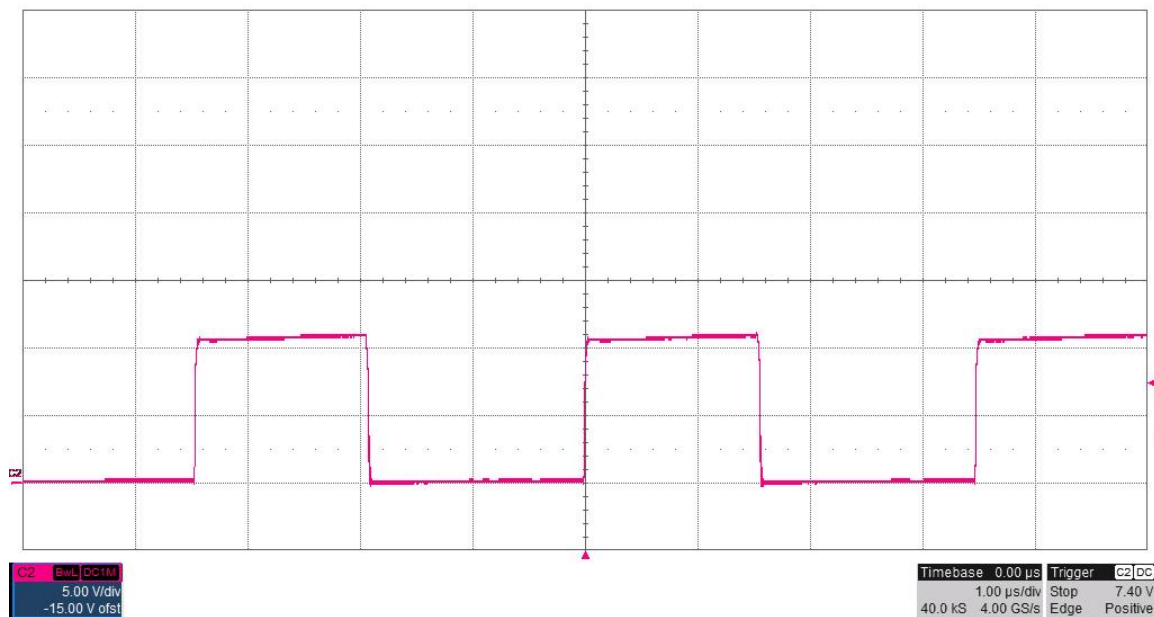


The waveform below shows the output voltage (ac coupled) when the load current is stepped between 0.1A and 2A. $V_{in} = 40V$. (200mV/DIV, 1A/DIV, 500uS/DIV)

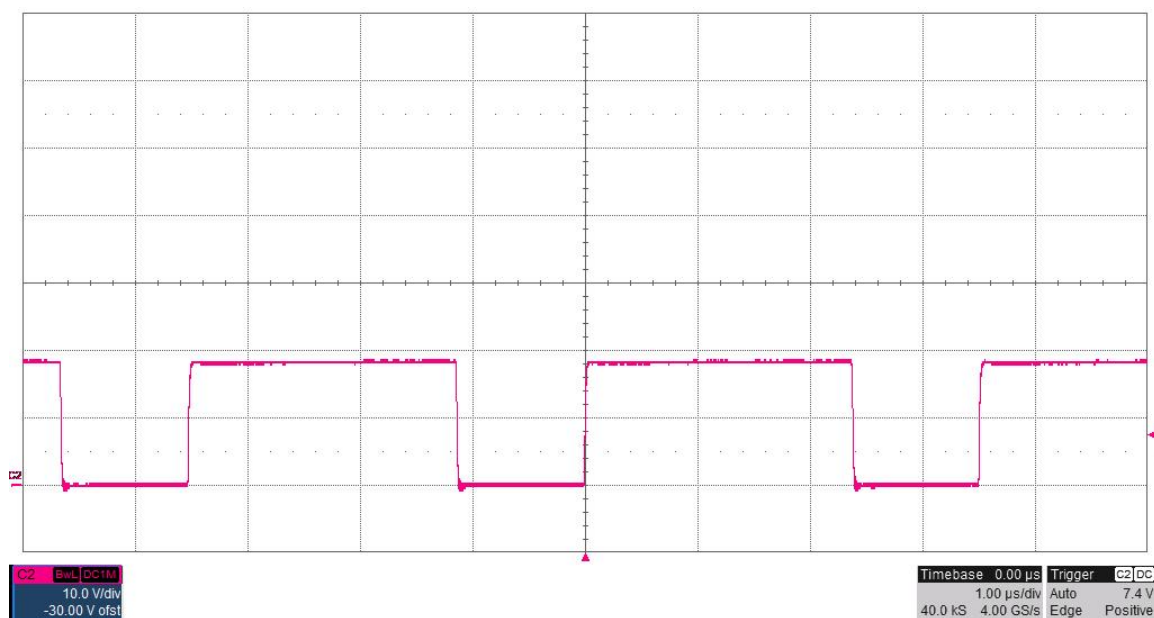


5 Switch Node Waveforms

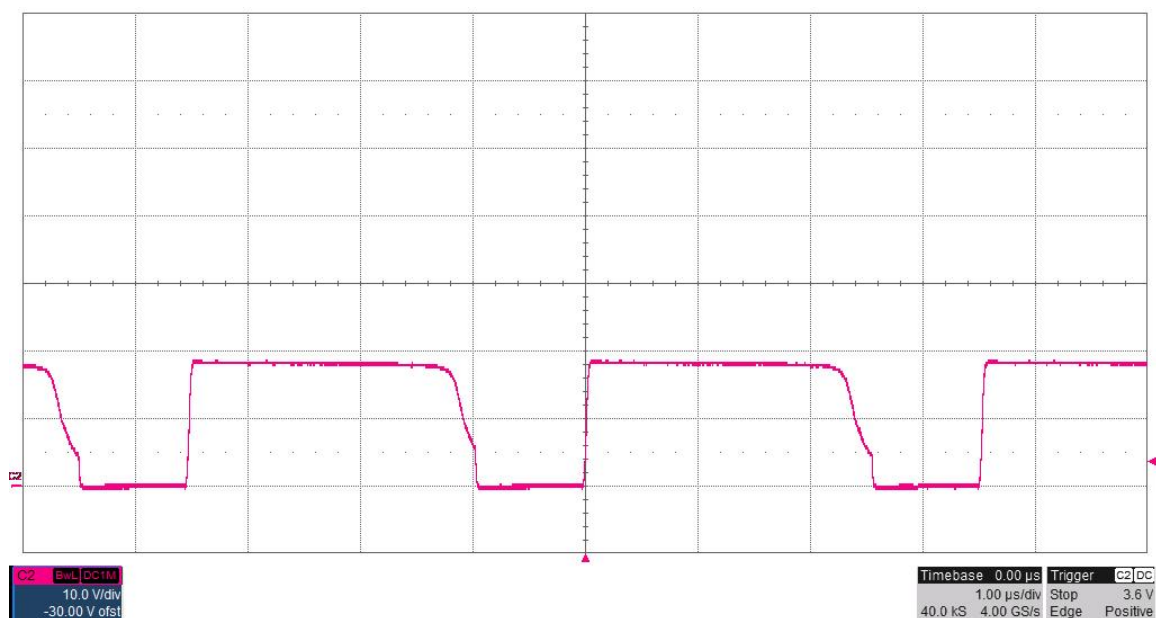
The photo below shows the 5.2V SEPIC switch node (TP1). The input voltage is 4.75V and the output is loaded to 2A. (5V/DIV, 1uS/DIV)



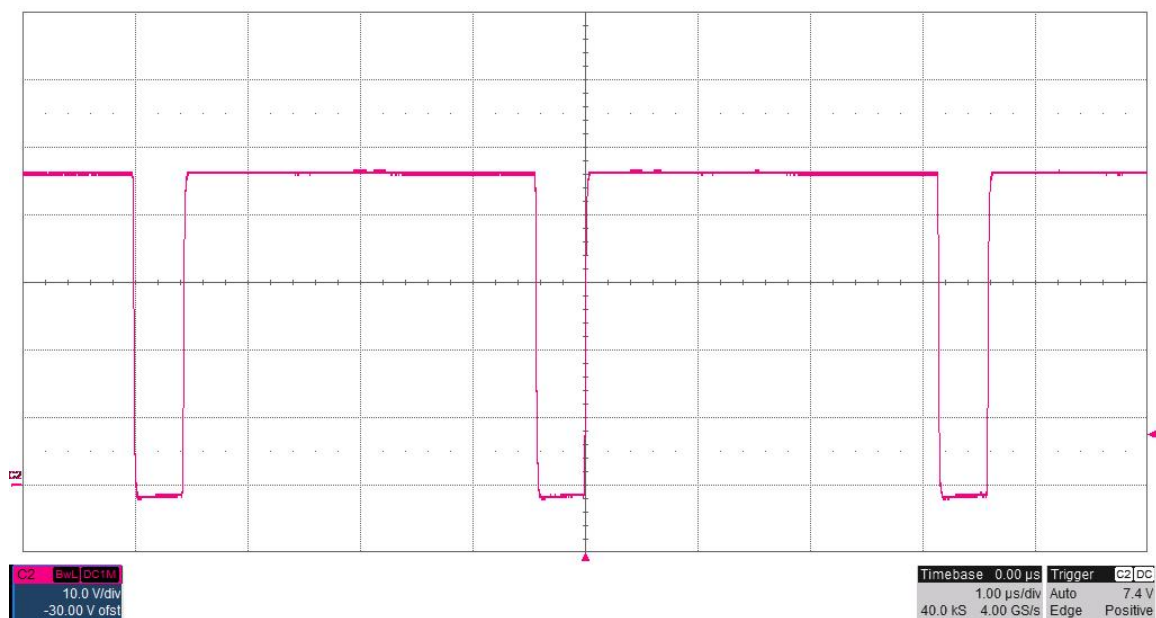
The photo below shows the 5.2V SEPIC switch node (TP1). The input voltage is 12V and the output is loaded to 2A. (10V/DIV, 1uS/DIV)



The photo below shows the 5.2V SEPIC switch node (TP1). The input voltage is 12V and the output is loaded to 0.15A. The converter is operating in discontinuous mode. (10V/DIV, 1uS/DIV)



The photo below shows the 5.2V SEPIC switch node (TP1). The input voltage is 40V and the output is loaded to 2A. (10V/DIV, 1uS/DIV)

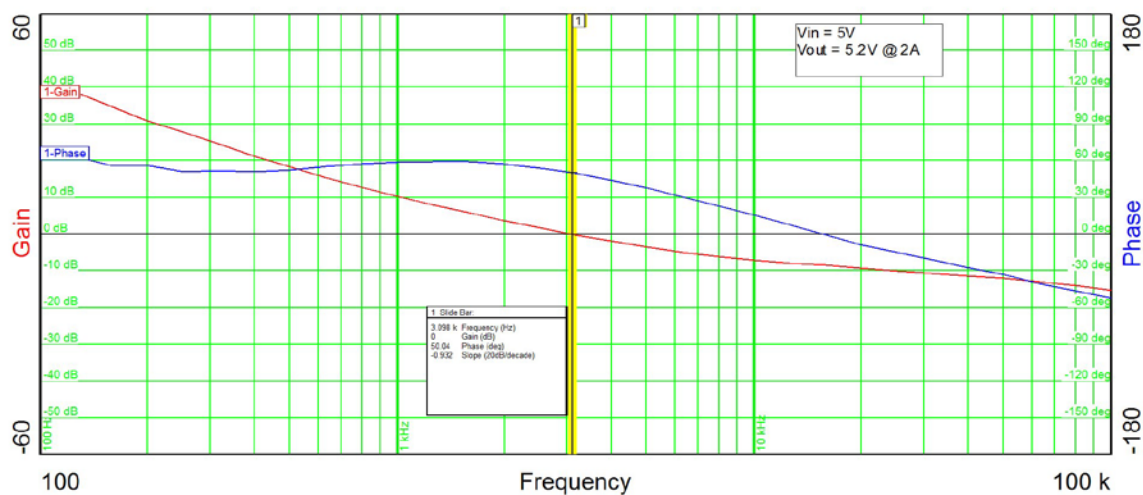


6 Control Loop Gain / Stability

The plot below shows the 5.2V loop gain and phase margin with the output loaded to 2A. The input voltage was set to 5V.

Band Width = 3.10KHz,

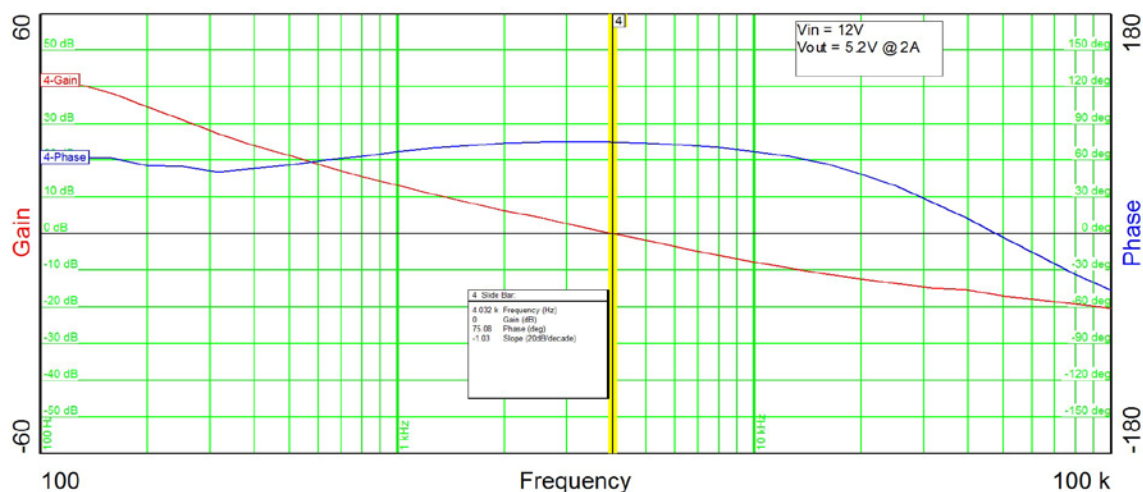
Phase Margin = 50 degrees



The plot below shows the 5.2V loop gain and phase margin with the output loaded to 2A. The input voltage was set to 12V.

Band Width = 4.03KHz,

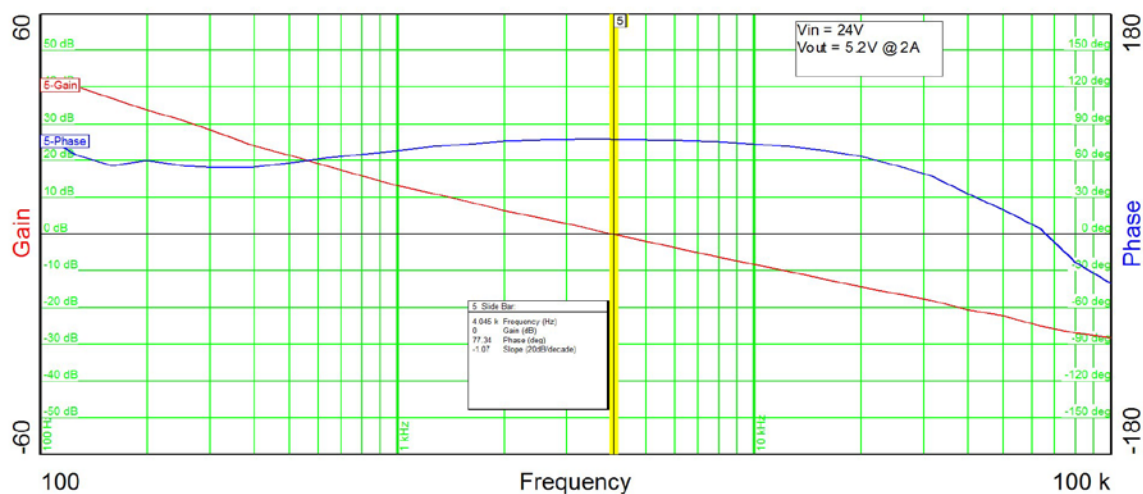
Phase Margin = 75 degrees



The plot below shows the 5.2V loop gain and phase margin with the output loaded to 2A. The input voltage was set to 24V.

Band Width = 4.05KHz,

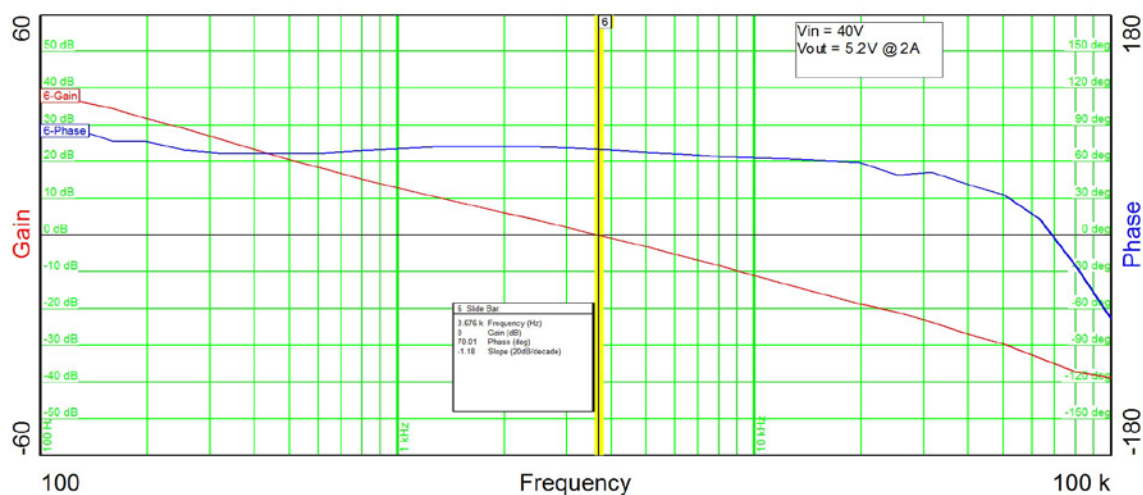
Phase Margin = 77 degrees



The plot below shows the 5.2V loop gain and phase margin with the output loaded to 2A. The input voltage was set to 40V.

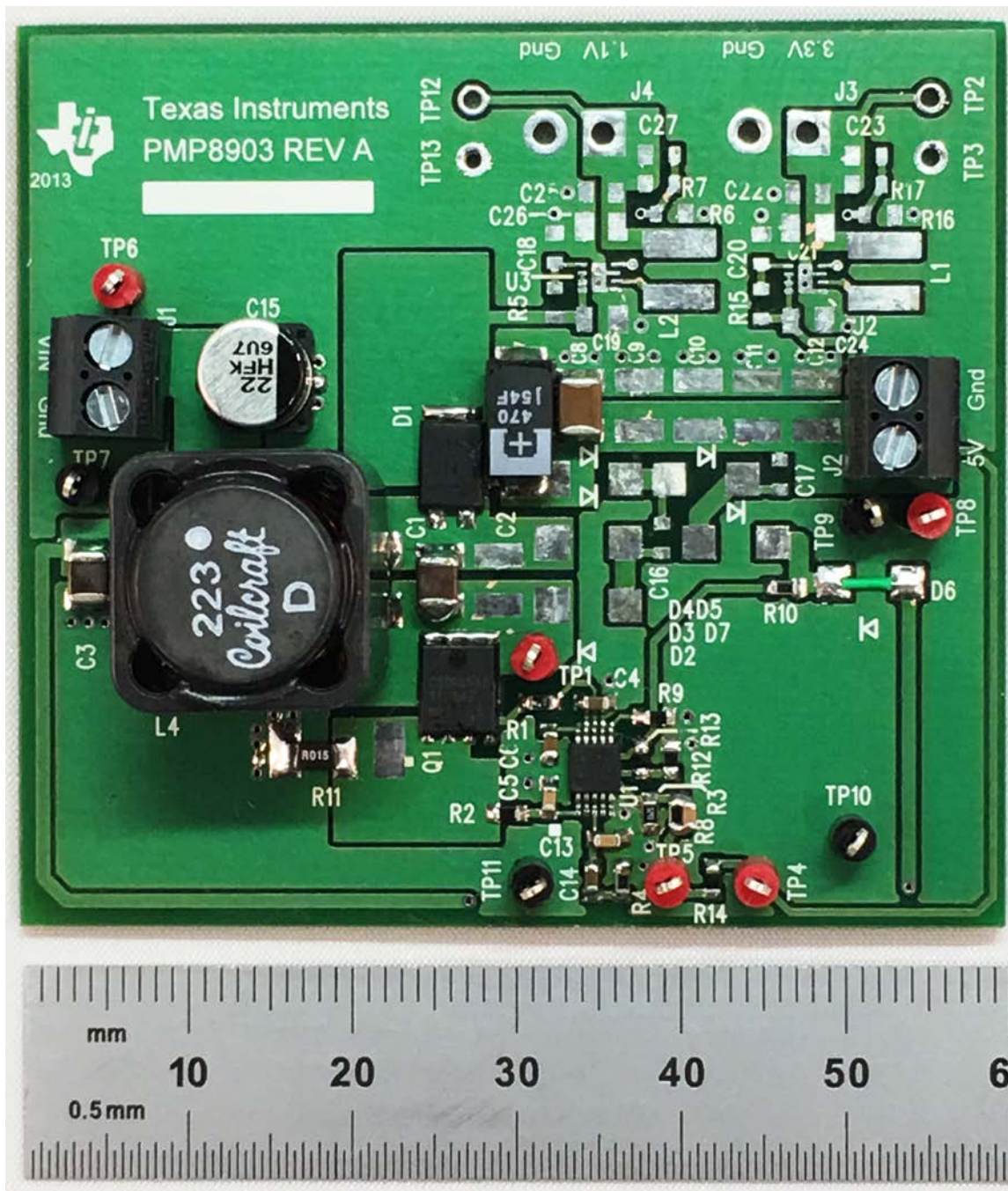
Band Width = 3.68KHz,

Phase Margin = 70 degrees



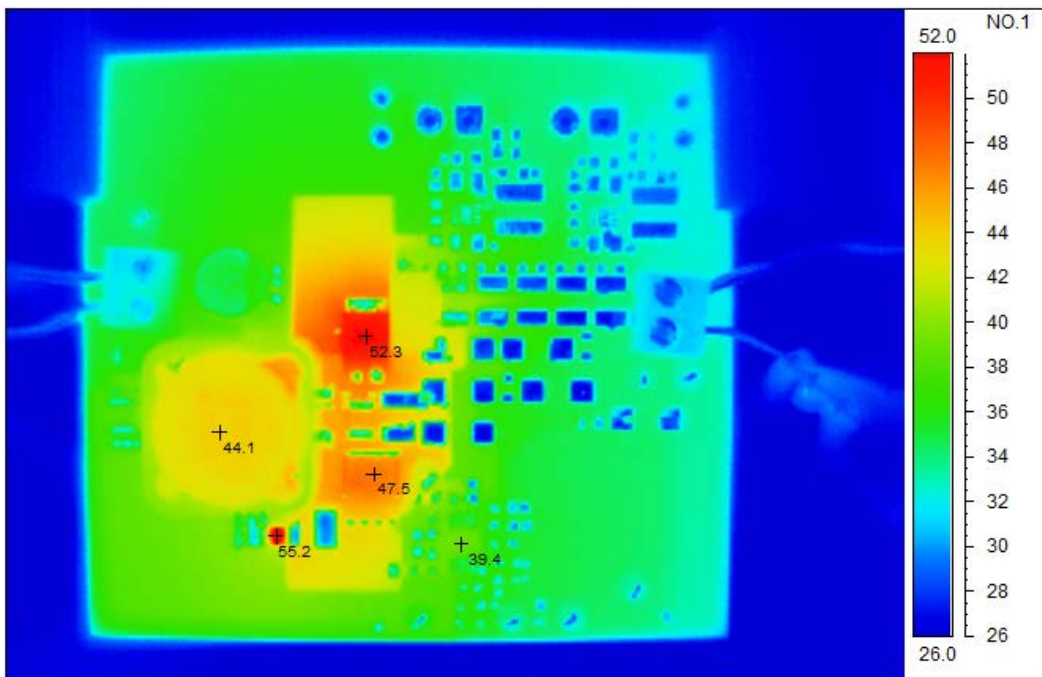
7 Photo

The photo below shows the PMP20016 REVB assembly built on the PMP8903 REVA PWB.

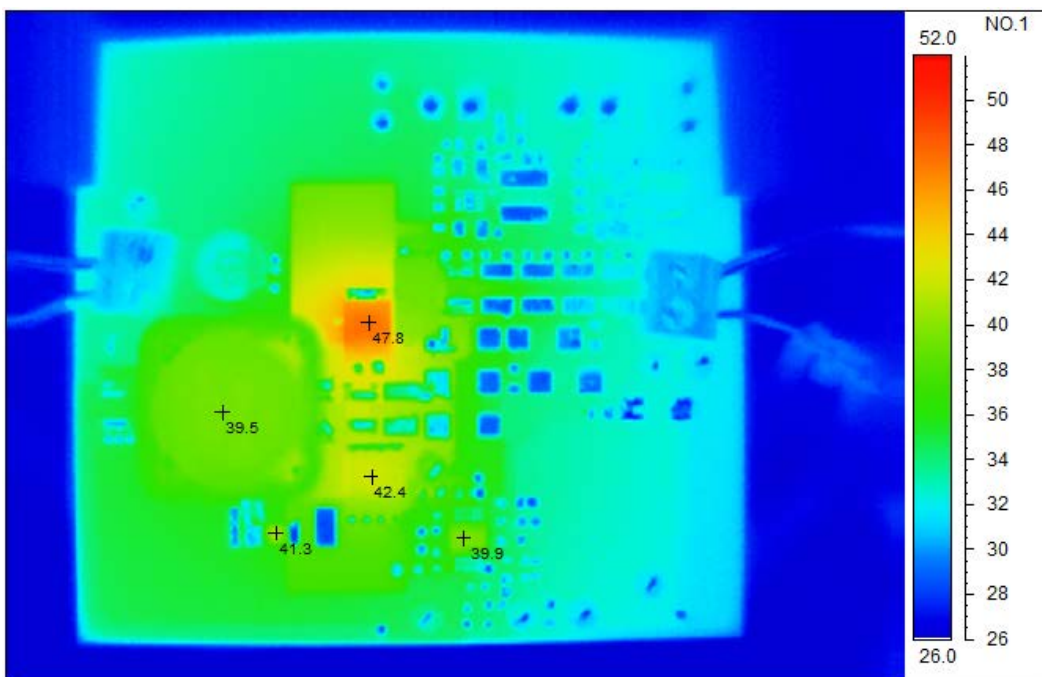


8 Thermal Image

A thermal image is shown below when operating at 5V input and 2A output, with no airflow.



A thermal image is shown below when operating at 12V input and 2A output, with no airflow.



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