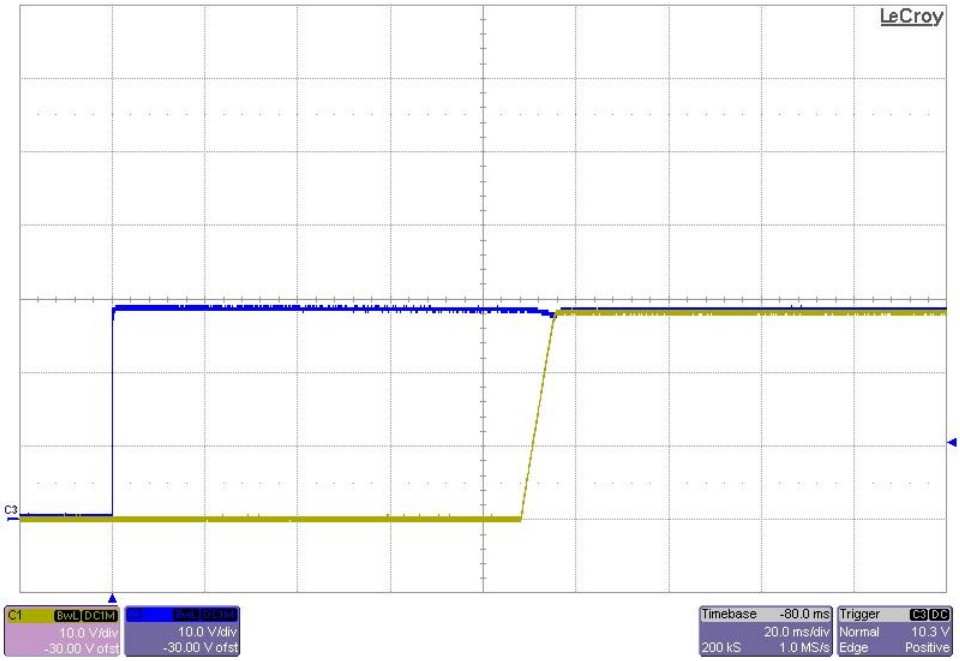
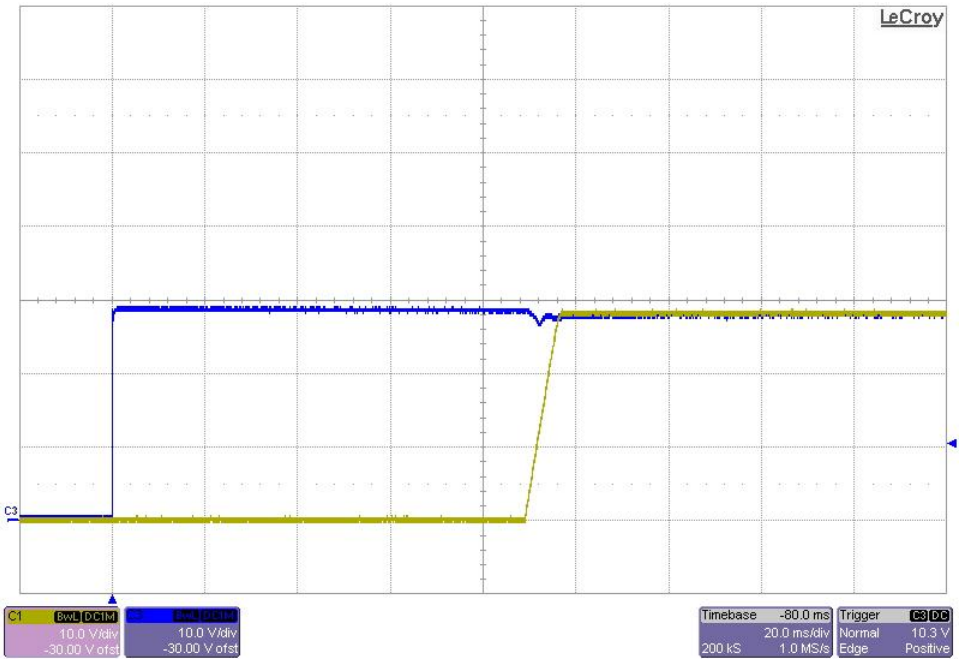
1 Startup

The photo below shows the output voltage startup waveform after the application of 28V in. The 28.3V output was loaded to 0A. (10V/DIV, 20mS/DIV)

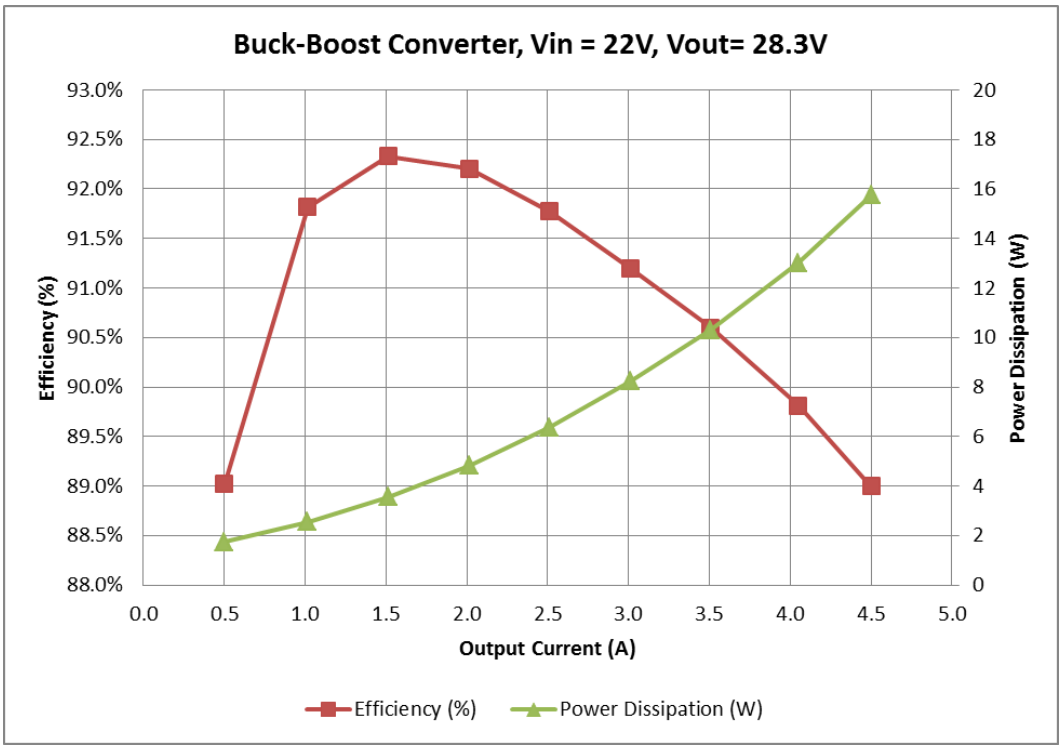


The photo below shows the output voltage startup waveform after the application of 28V in. The 28.3V output was loaded to 4.5A. (10V/DIV, 20mS/DIV)

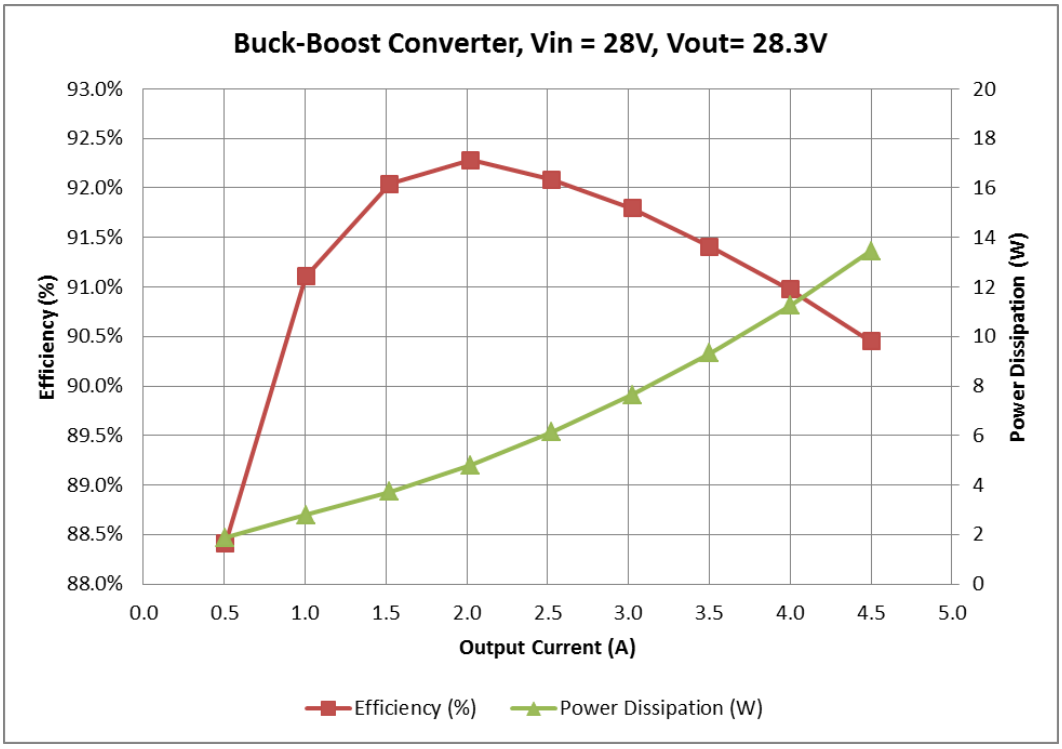


2 Efficiency

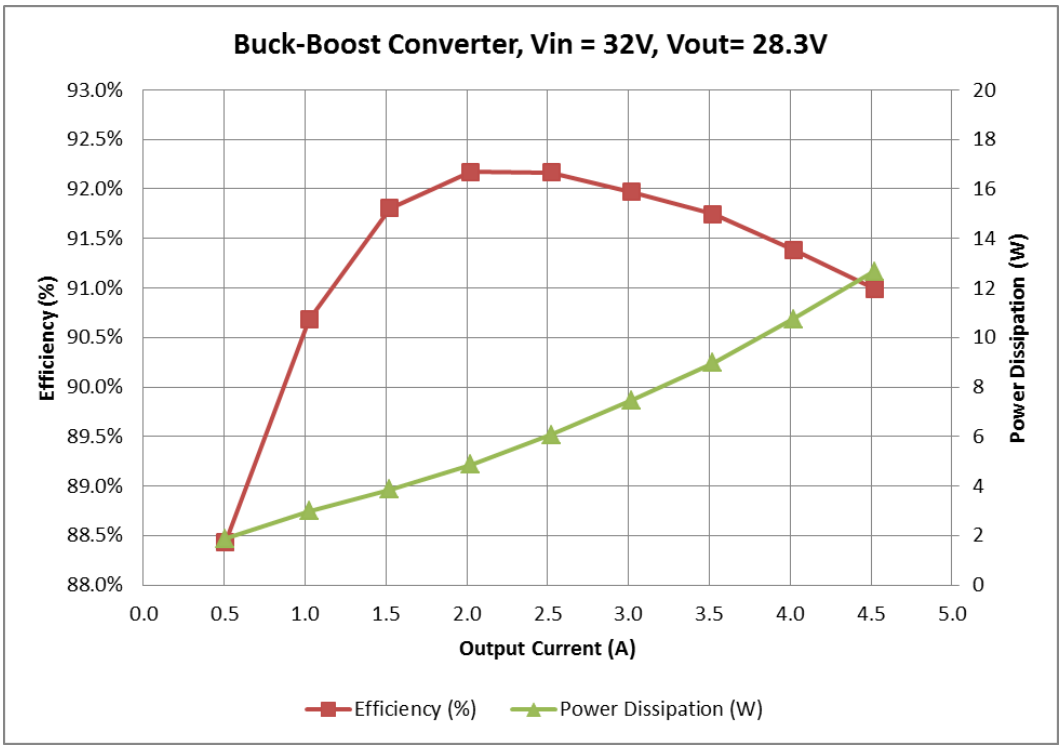
The buck-boost converter efficiency is shown below for Vin = 22V and Vout = 28.3V (Vtrim = 1.25V).



The buck-boost converter efficiency is shown below for Vin = 28V and Vout = 28.3V (Vtrim = 1.25V).

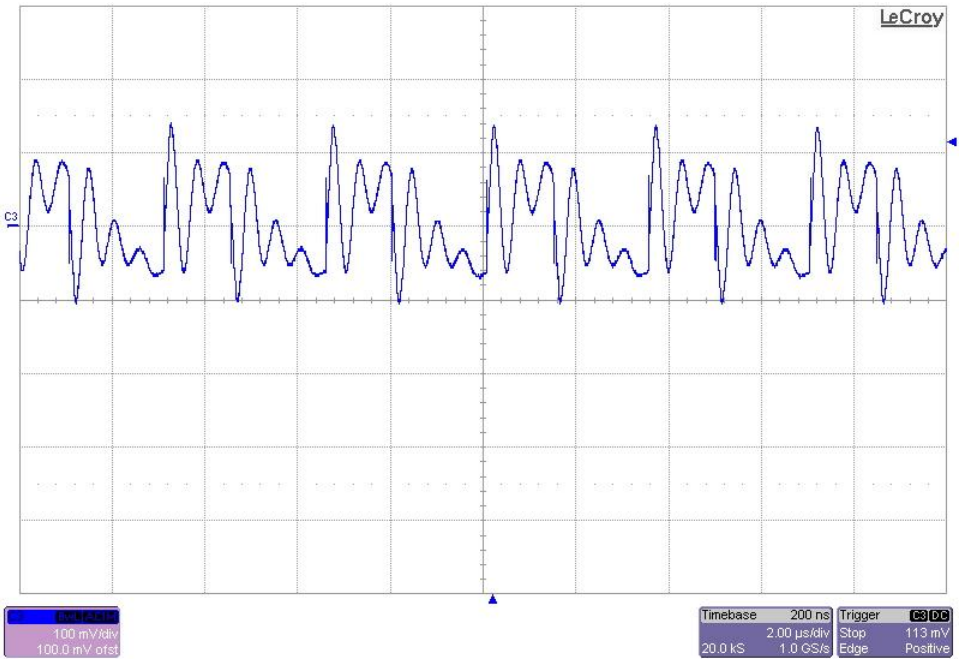


The buck-boost converter efficiency is shown below for Vin = 32V and Vout = 28.3V (Vtrim = 1.25V).

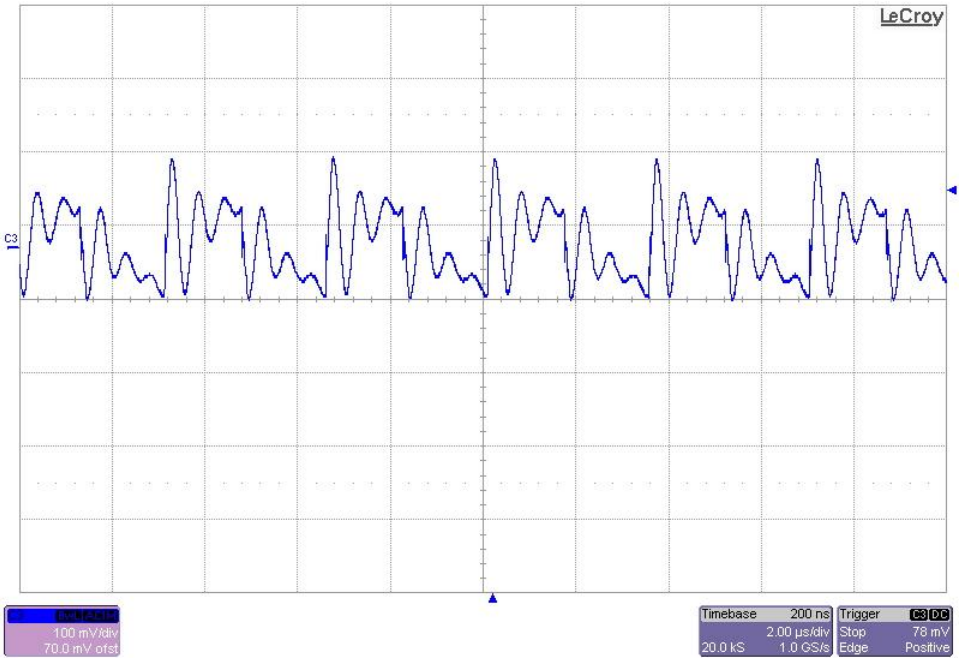


3 Output Ripple Voltage

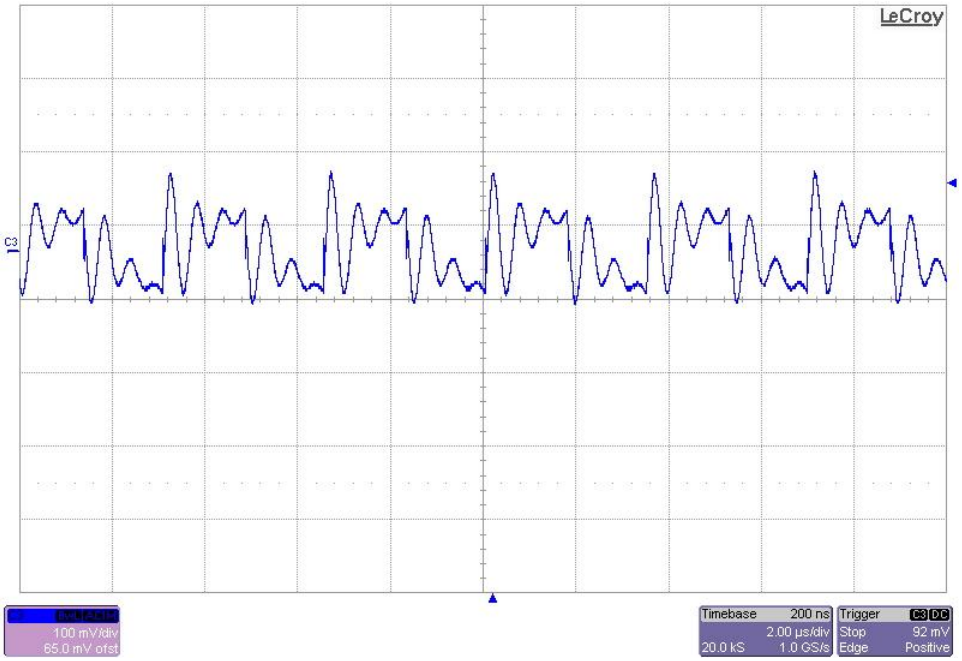
The 28.3V output ripple voltage (AC coupled) is shown in the figure below. The image was taken with the output loaded to 4.5A. The input voltage is set to 22V. (100mV/DIV, 2uS/DIV)



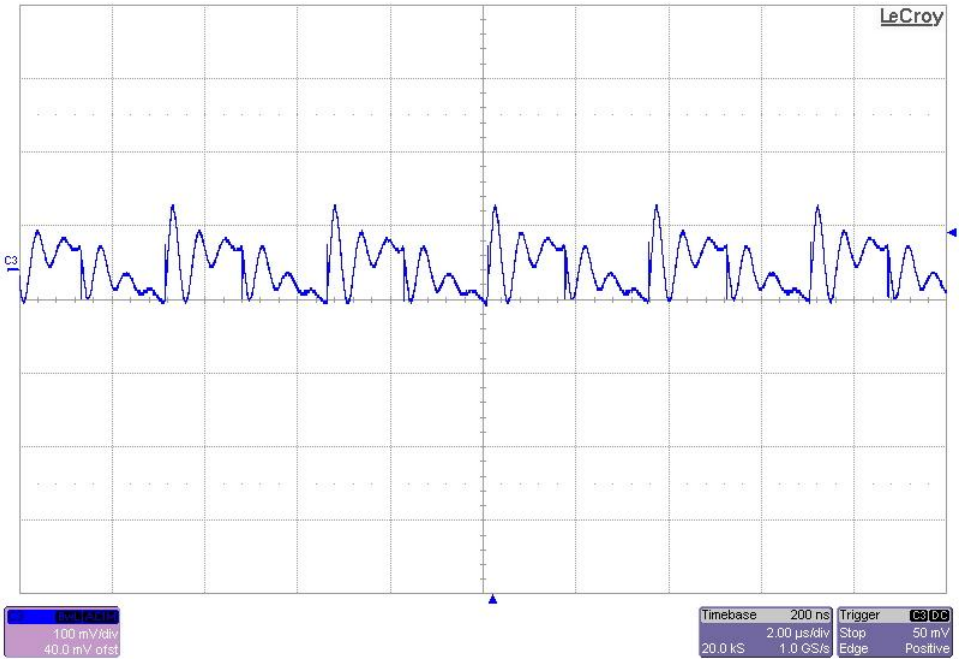
The 28.3V output ripple voltage (AC coupled) is shown in the figure below. The image was taken with the output loaded to 4.5A. The input voltage is set to 28V. (100mV/DIV, 2uS/DIV)



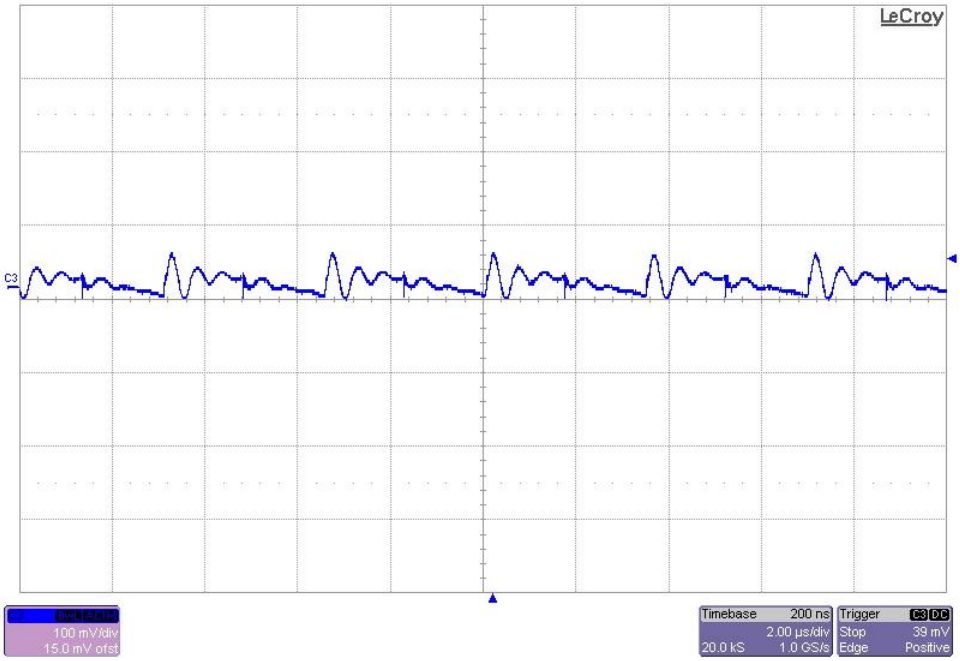
The 28.3V output ripple voltage (AC coupled) is shown in the figure below. The image was taken with the output loaded to 4.5A. The input voltage is set to 32V. (100mV/DIV, 2uS/DIV)



The 28.3V output ripple voltage (AC coupled) is shown in the figure below. The image was taken with the output loaded to 3A. The input voltage is set to 28V. (100mV/DIV, 2uS/DIV)

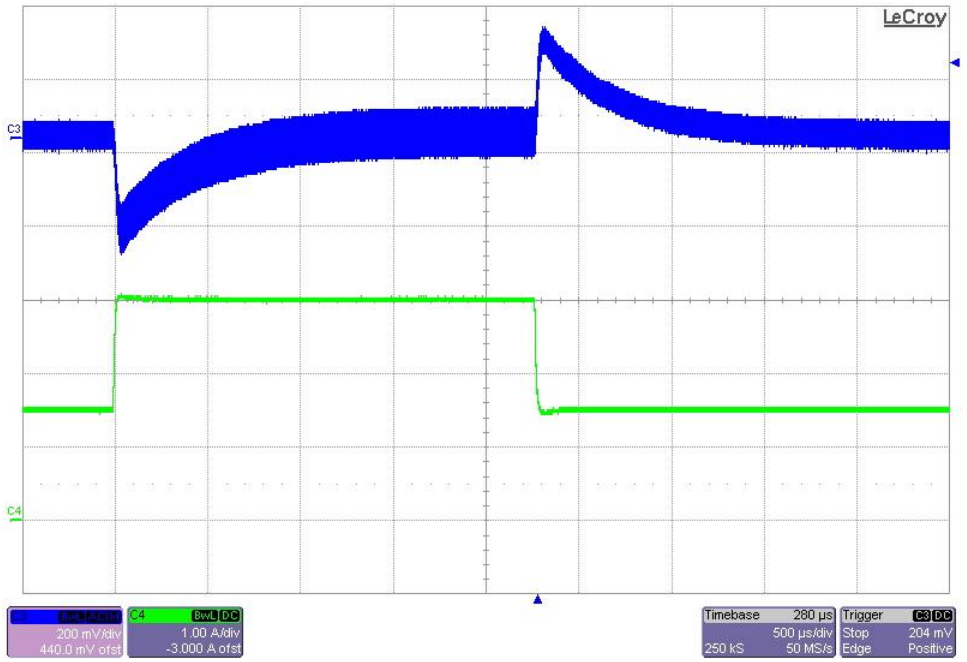


The 28.3V output ripple voltage (AC coupled) is shown in the figure below. The image was taken with the output loaded to 1A. The input voltage is set to 28V. (100mV/DIV, 2uS/DIV)

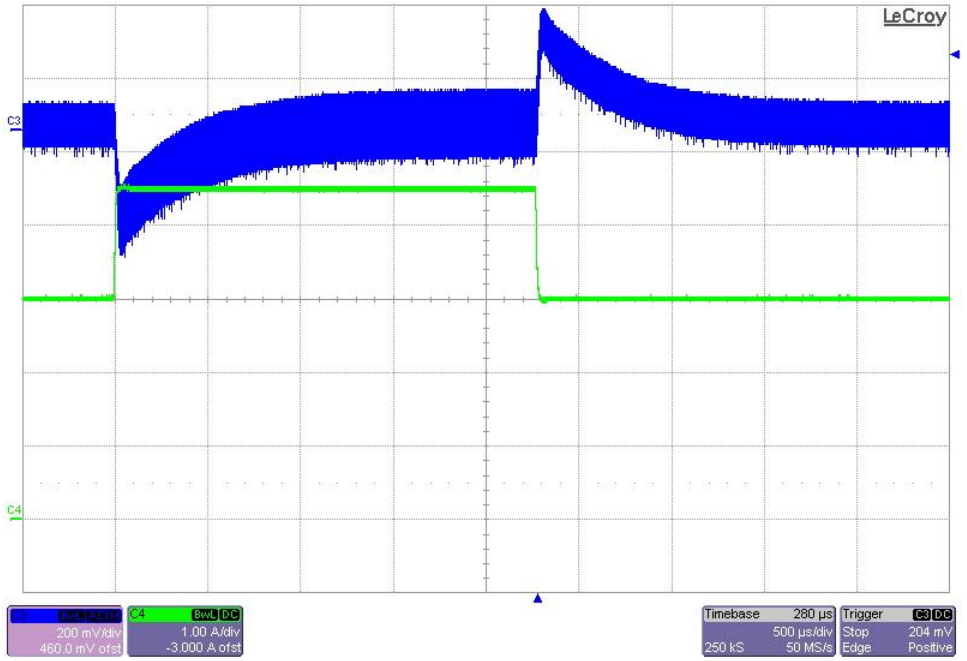


4 Load Transients

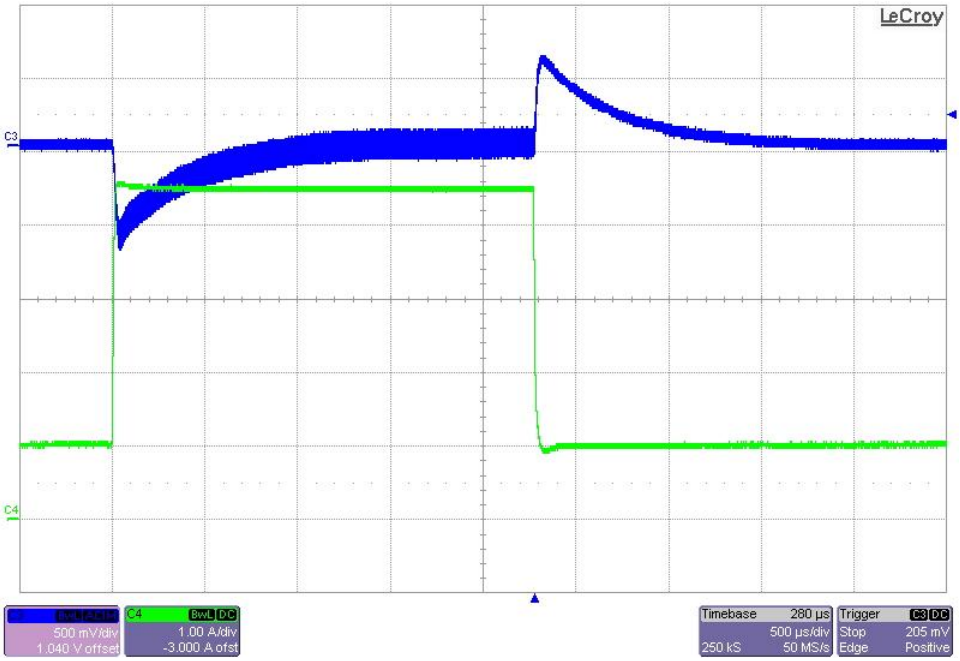
The photo below shows the 28.3V output voltage (ac coupled) when the load current is stepped between 1.5A and 3A. Vin = 28V. (200mV/DIV, 1A/DIV, 500uS/DIV)



The photo below shows the 28.3V output voltage (ac coupled) when the load current is stepped between 3A and 4.5A. Vin = 28V. (200mV/DIV, 1A/DIV, 500uS/DIV)

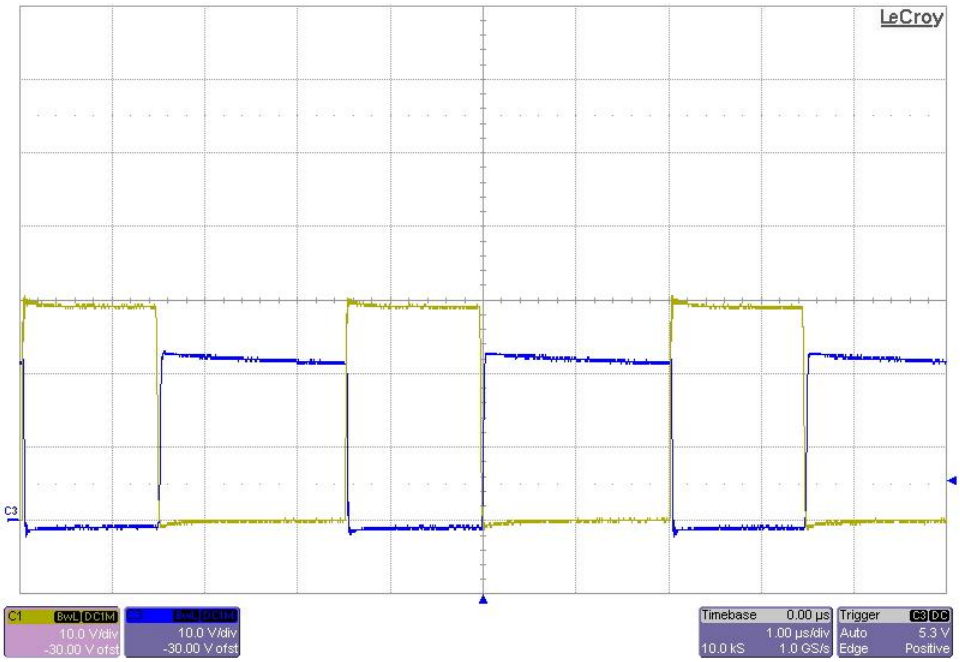


The photo below shows the 28.3V output voltage (ac coupled) when the load current is stepped between 1A and 4.5A. Vin = 28V. (500mV/DIV, 1A/DIV, 500uS/DIV)

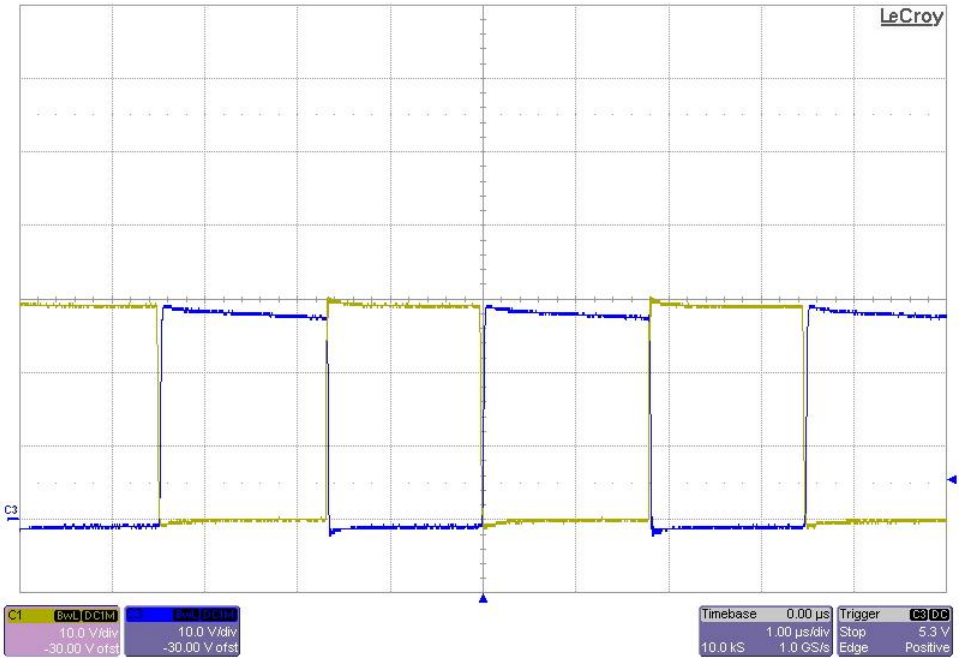


5 Switch Node Waveforms

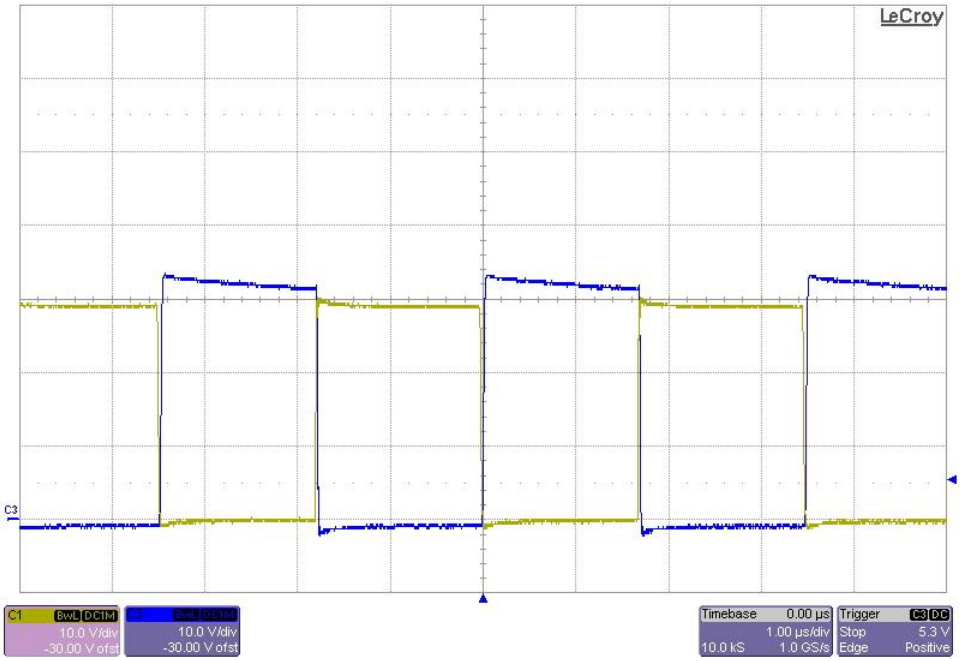
The photo below shows the Q1 FET switching voltage (TP3, blue) and the Q2 FET switching node (TP4, yellow). The input voltage is 22V and the output is loaded to 4.5A. (10V/DIV, 1uS/DIV)



The photo below shows the Q1 FET switching voltage (TP3, blue) and the Q2 FET switching node (TP4, yellow). The input voltage is 28V and the output is loaded to 4.5A. (10V/DIV, 1uS/DIV)



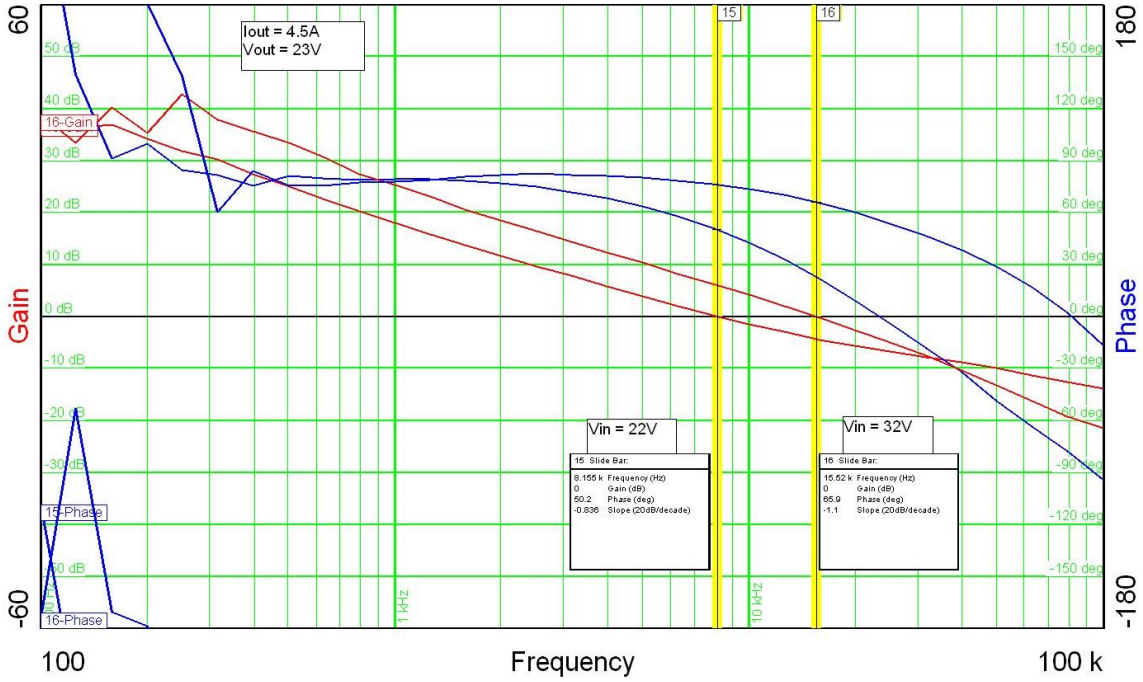
The photo below shows the Q1 FET switching voltage (TP3, blue) and the Q2 FET switching node (TP4, yellow). The input voltage is 32V and the output is loaded to 4.5A. (10V/DIV, 1uS/DIV)



6 Loop Gain

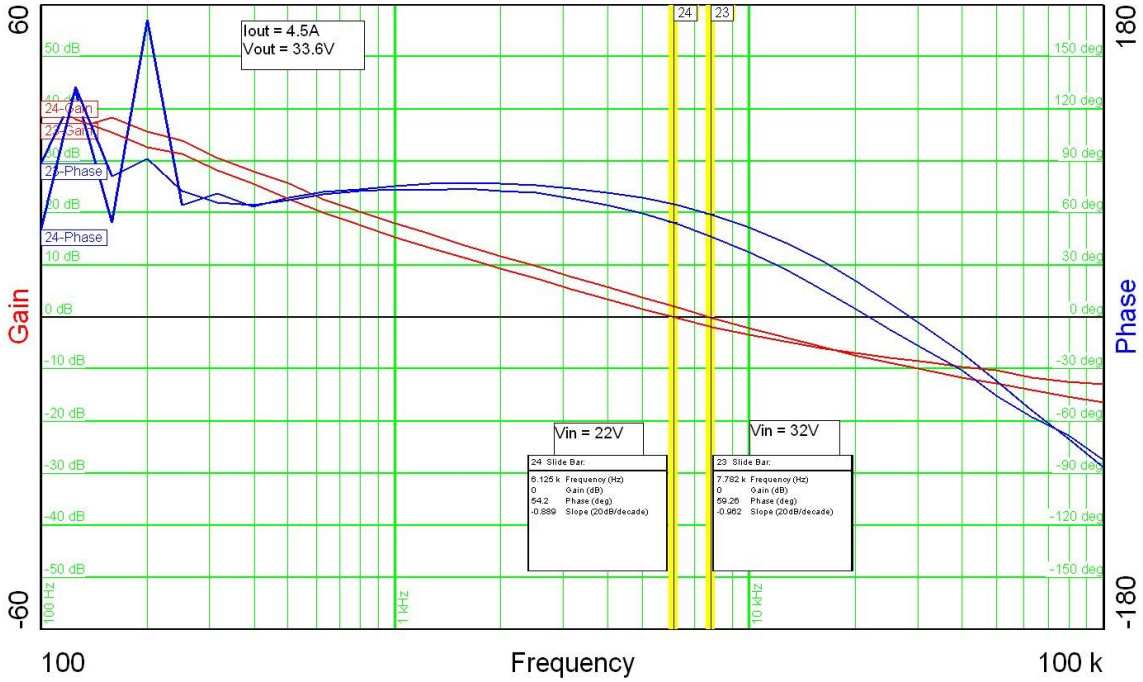
The plot below shows the loop gain with the input voltage set to 22V and 32V. The output voltage was set to 23V @ 4.5A (Vtrim = 1.57V).

Loop Gain (Vin = 32V)	BW: 15.5KHz	PM: 66 degrees
Loop Gain (Vin = 22V)	BW: 8.16KHz	PM: 50 degrees



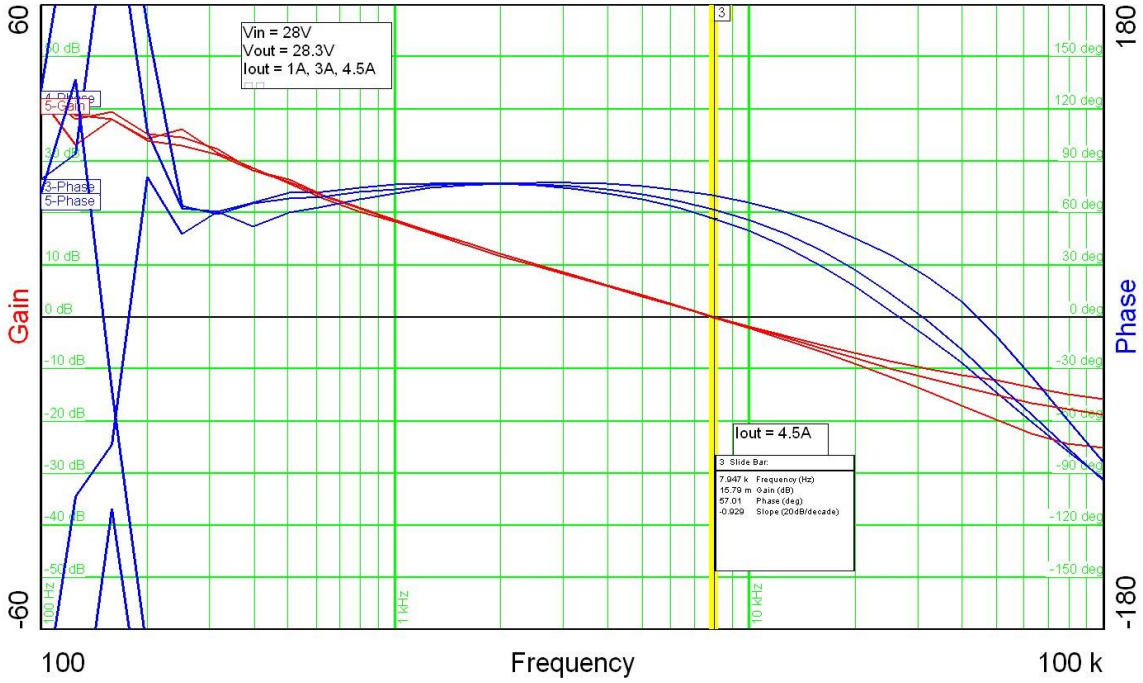
The plot below shows the loop gain with the input voltage set to 22V and 32V. The output voltage was set to 33.6V @ 4.5A (Vtrim = 0.93V).

Loop Gain (Vin = 32V)	BW: 7.78KHz	PM: 59 degrees
Loop Gain (Vin = 22V)	BW: 6.13KHz	PM: 54 degrees



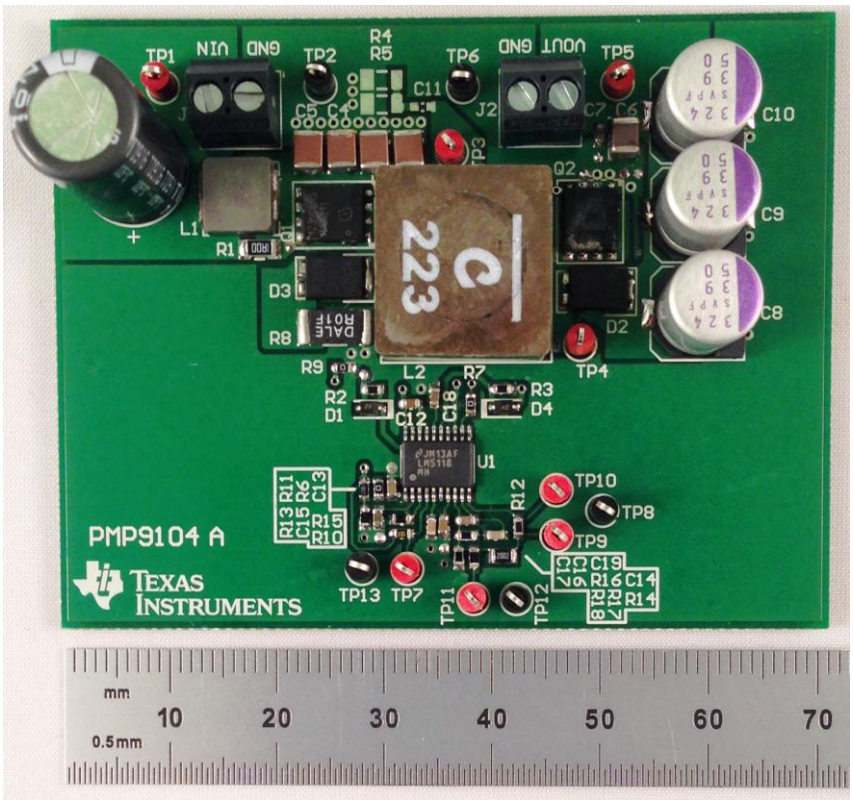
The plot below shows the loop gain with the input voltage set to 28V. The output voltage was set to 28.3V @ 1A, 3A, and 4.5A (Vtrim = 1.25V).

Loop Gain (1A)	BW: 7.95KHz	PM: 70 degrees
Loop Gain (3A)	BW: 7.95KHz	PM: 61 degrees
Loop Gain (4.5A)	BW: 7.95KHz	PM: 57 degrees



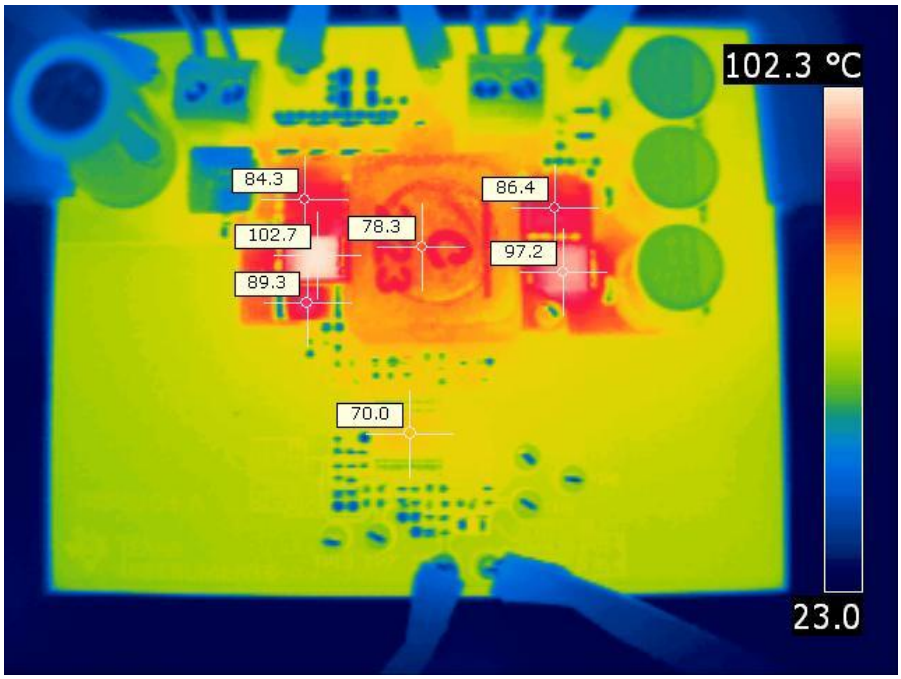
7 Photo

The photo below shows the PMP9104 REVB assy.



8 Thermal Image

A thermal image is shown below operating at 28V input and 28.3V@3A output (room temp, no airflow).



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