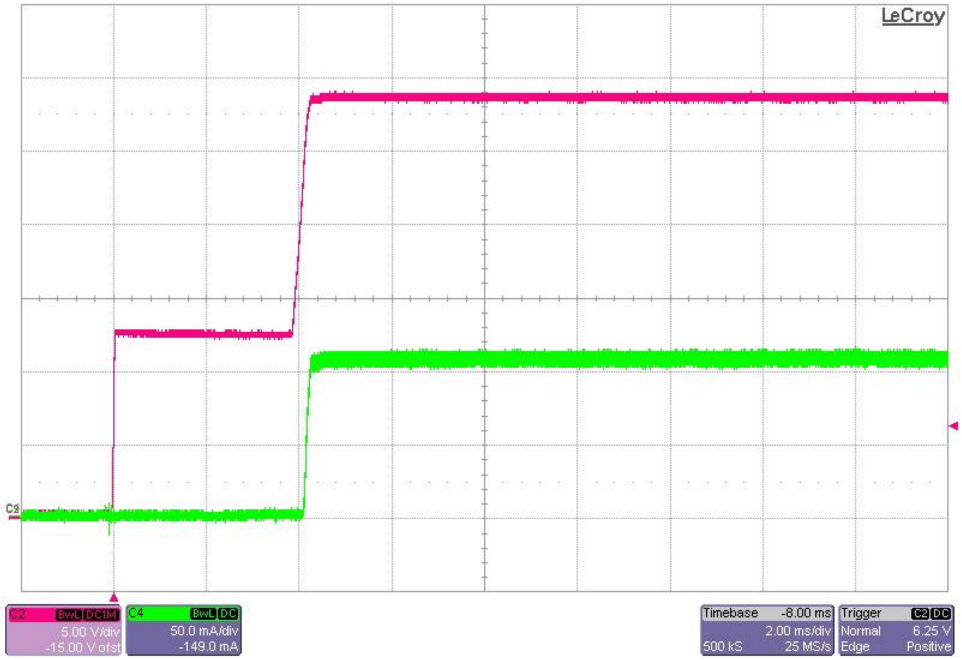
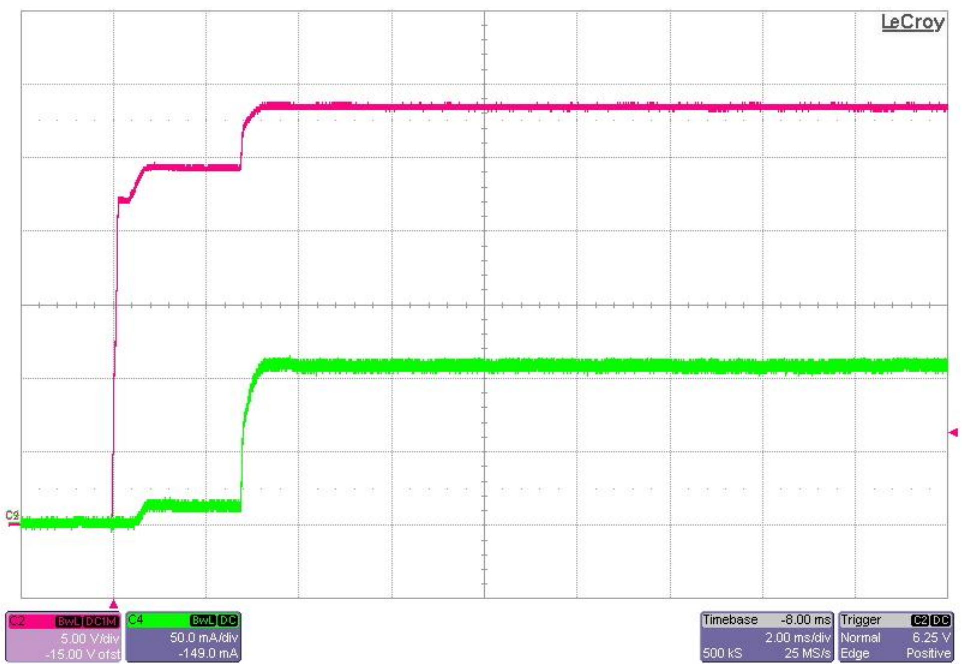
1 Startup

The photo below shows the LED current and output voltage startup waveforms after the application of 12Vdc in. (Vout is 5V/DIV, Iout is 50mA/DIV, 2mS/DIV)

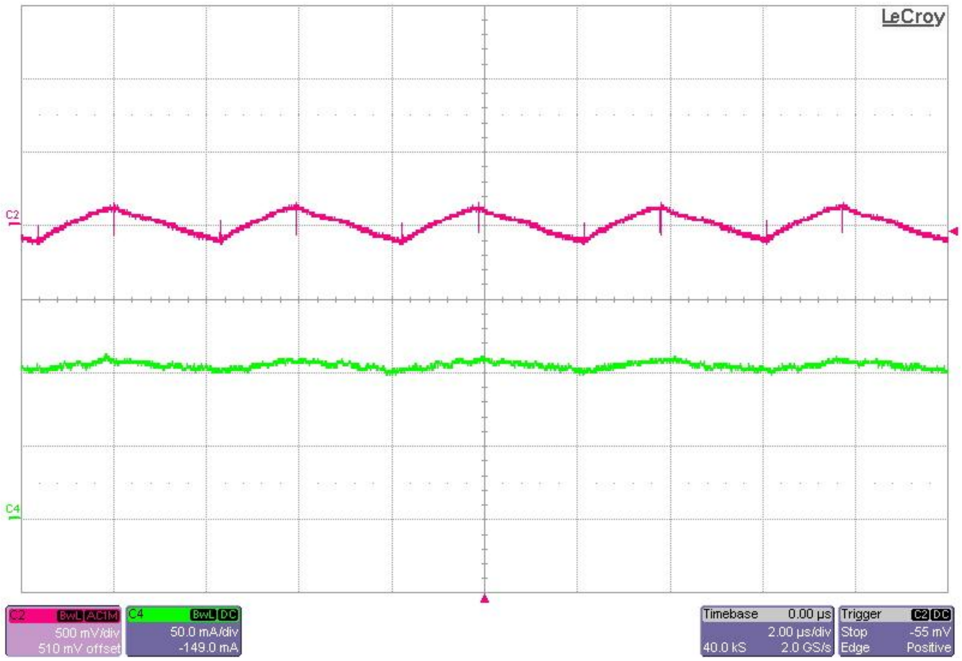


The photo below shows the LED current and output voltage startup waveforms after the application of 24Vdc in. (Vout is 5V/DIV, Iout is 50mA/DIV, 2mS/DIV)



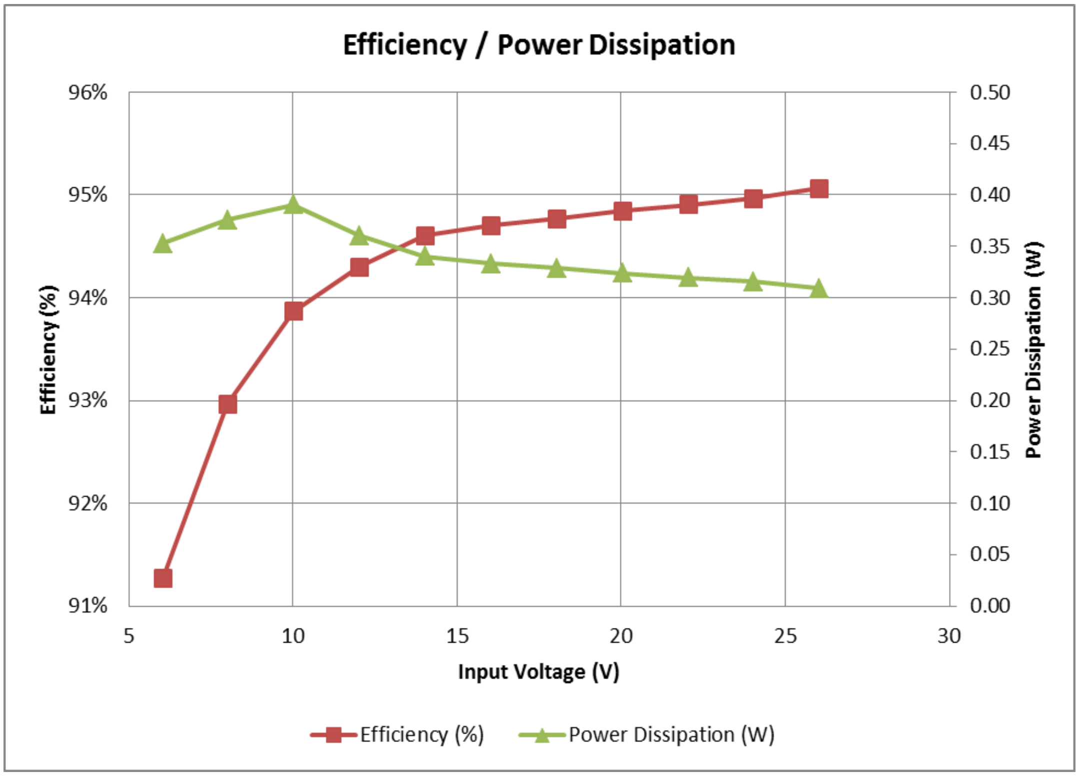
2 Output Ripple Voltage and Current

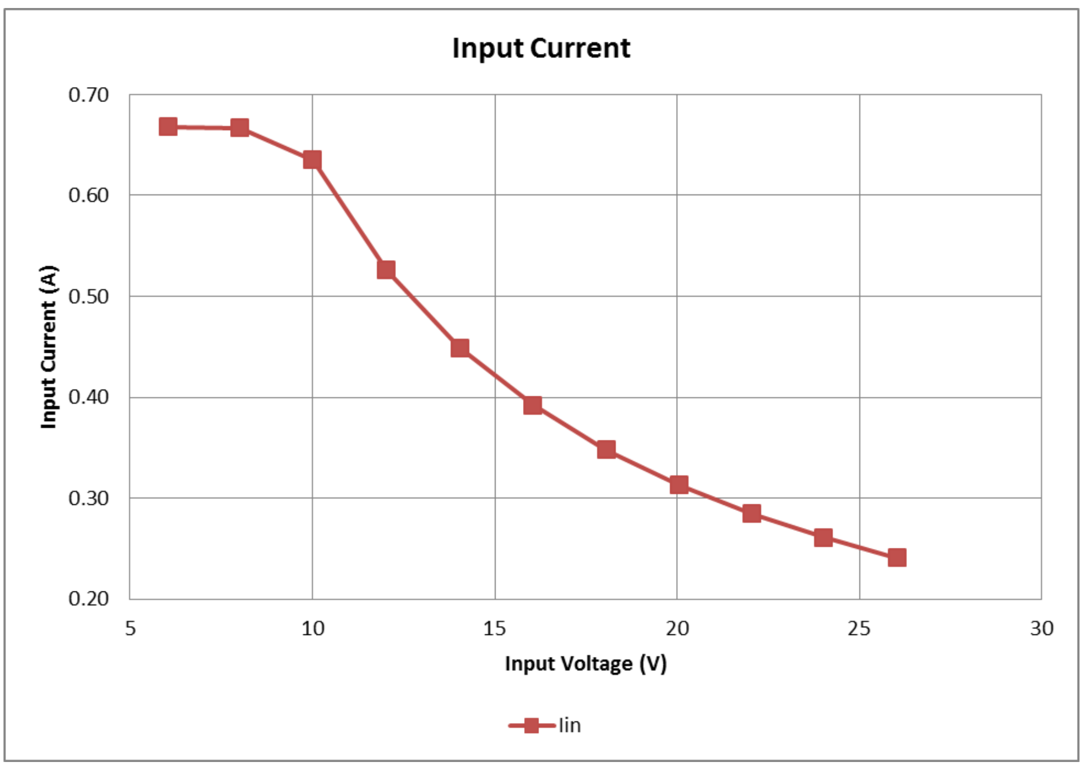
The LED ripple voltage (AC coupled) and ripple current are shown in the figure below. The input voltage was set to 12Vin. (500mV/DIV, 50mA/DIV, 2uS/DIV)



3 Efficiency

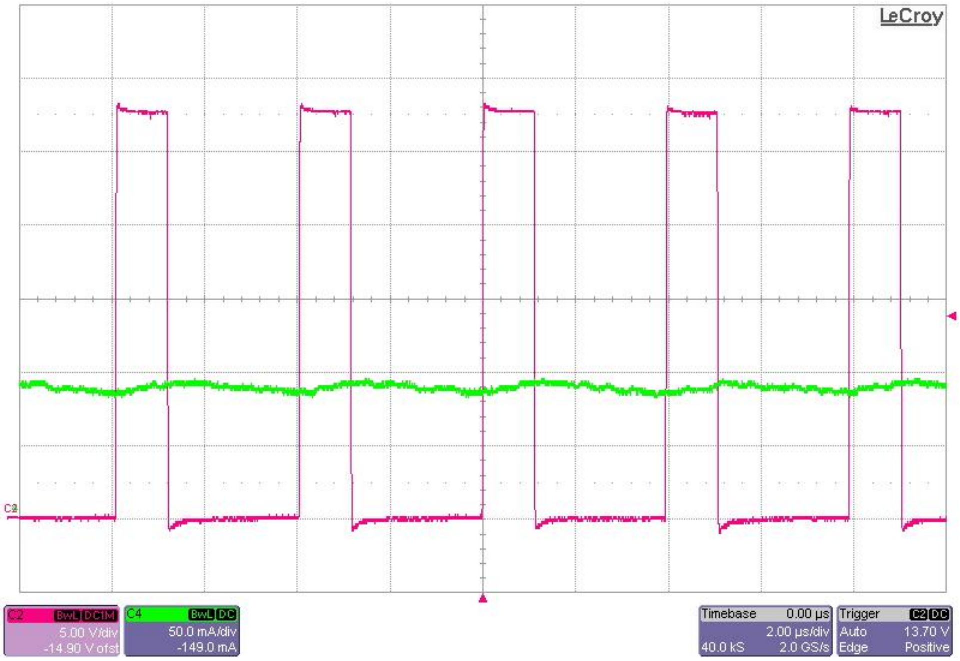
The converter efficiency is shown in the figure below. Efficiency shown is for two strings of LEDs in a current mirror configuration, with Power out measured as Vout*(Iout1 + Iout2). For input voltages less than 10V, the LED current decreases as the input current is regulationed.



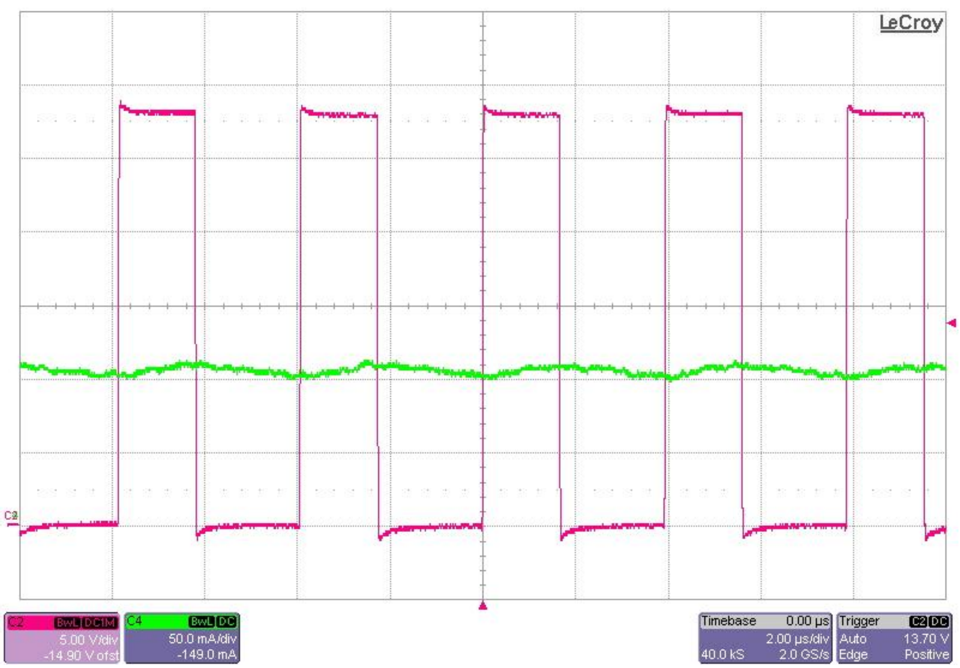


4 Switching Waveforms

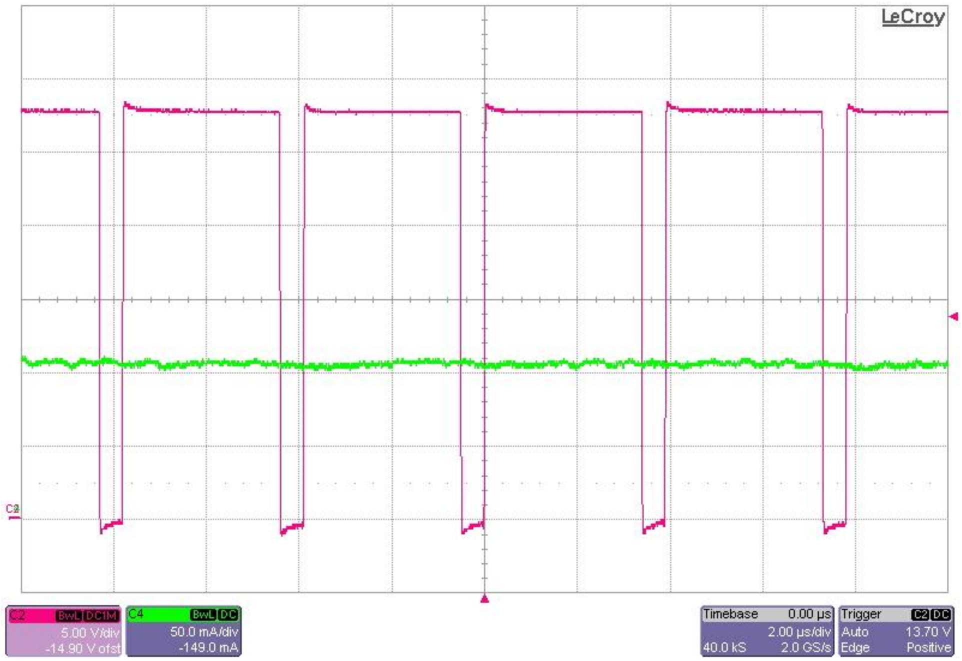
The photo below shows the N-ch FET (Q3) drain waveform and the LED current. The input voltage is set to 8Vin. (5V/DIV, 50mA/DIV, 2uS/DIV)



The photo below shows the N-ch FET (Q3) drain waveform and the LED current. The input voltage is set to 12Vin. (5V/DIV, 50mA/DIV, 2uS/DIV)



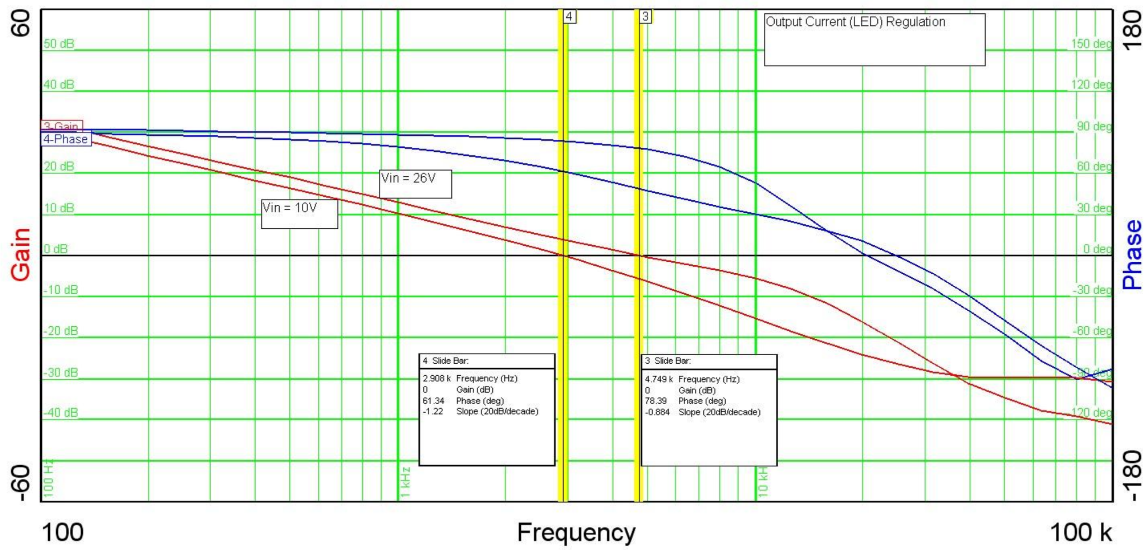
The photo below shows the N-ch FET (Q3) drain waveform and the LED current. The input voltage is set to 24Vin. (5V/DIV, 50mA/DIV, 2uS/DIV)



5 Loop Gain

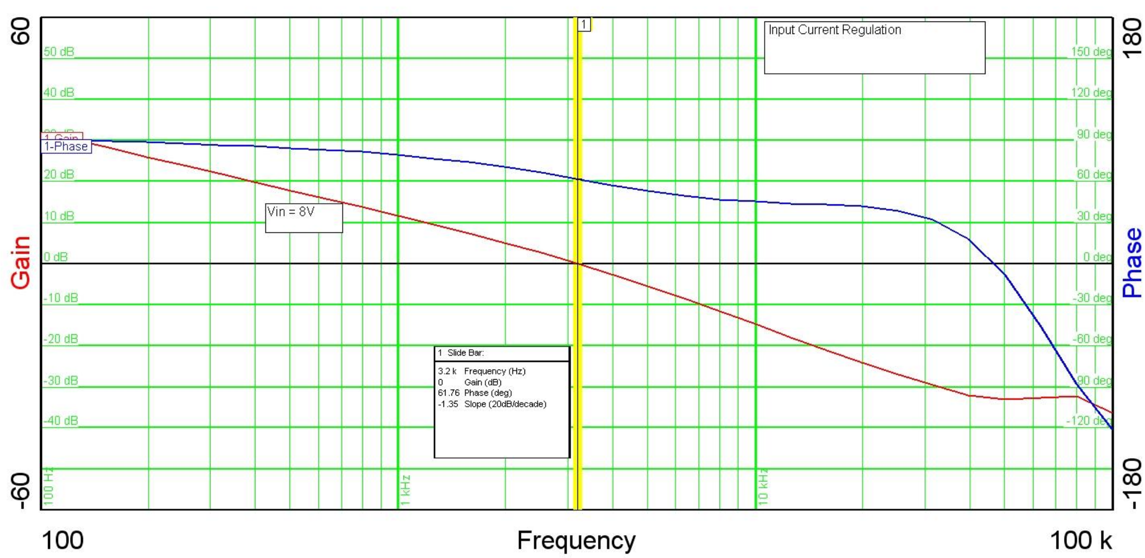
The plot below shows the loop gain when regulating the LED current at input voltages of 10V and 26V.

Loop Gain (Vin = 10V)	BW: 2.91KHz	PM: 61 degrees
Loop Gain (Vin = 26V)	BW: 4.75KHz	PM: 78 degrees



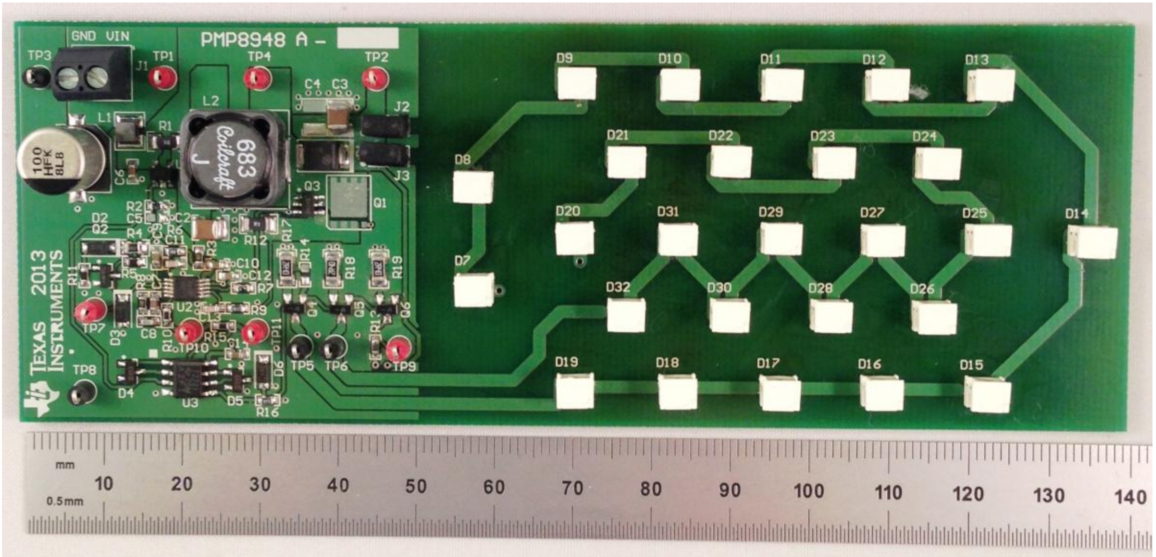
The plot below shows the loop gain when regulating the input current at an input if 8Vin.

Loop Gain (Vin = 8V)	BW: 3.20KHz	PM: 62 degrees



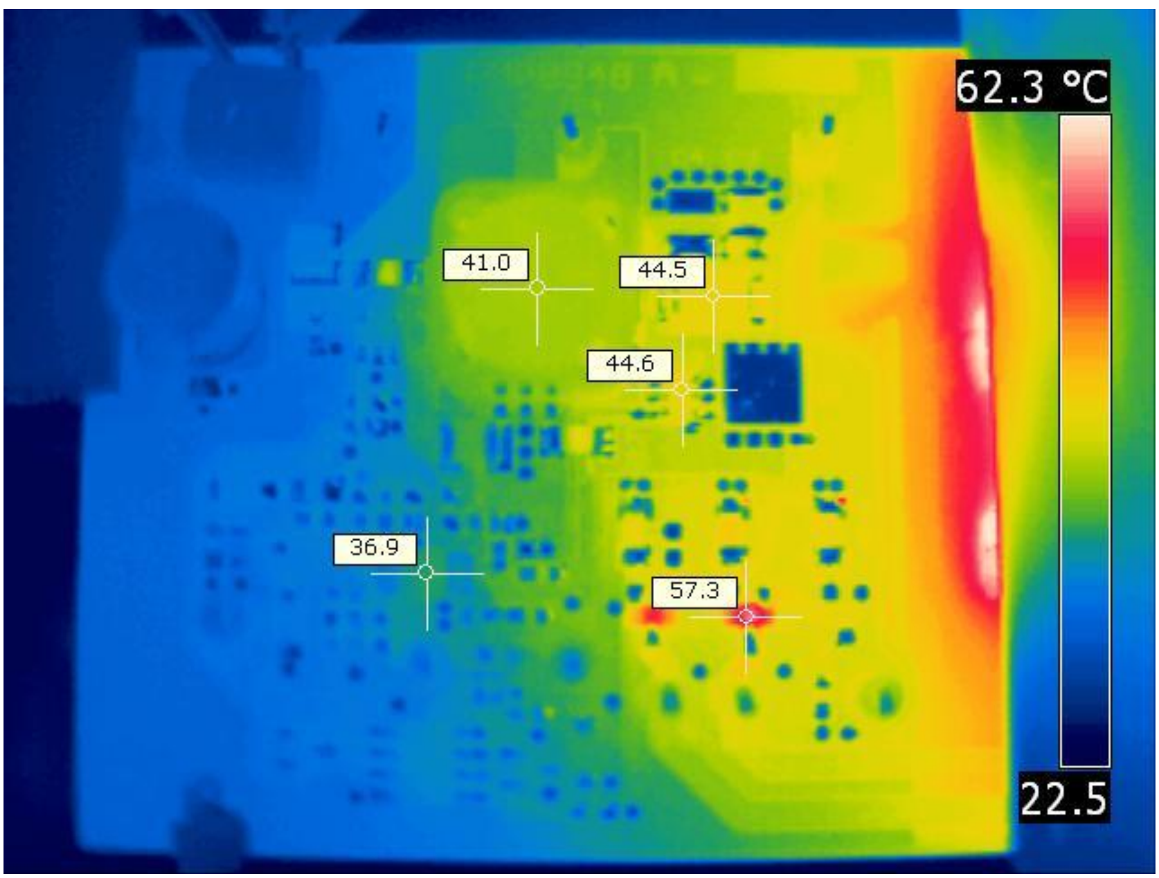
6 Photo

The photo below shows the PMP8948 REVA assembly.



7 Thermal Image

A thermal image is shown below when operating at 12Vin and no air flow.



A thermal image is shown below when operating at 12Vin and no air flow.