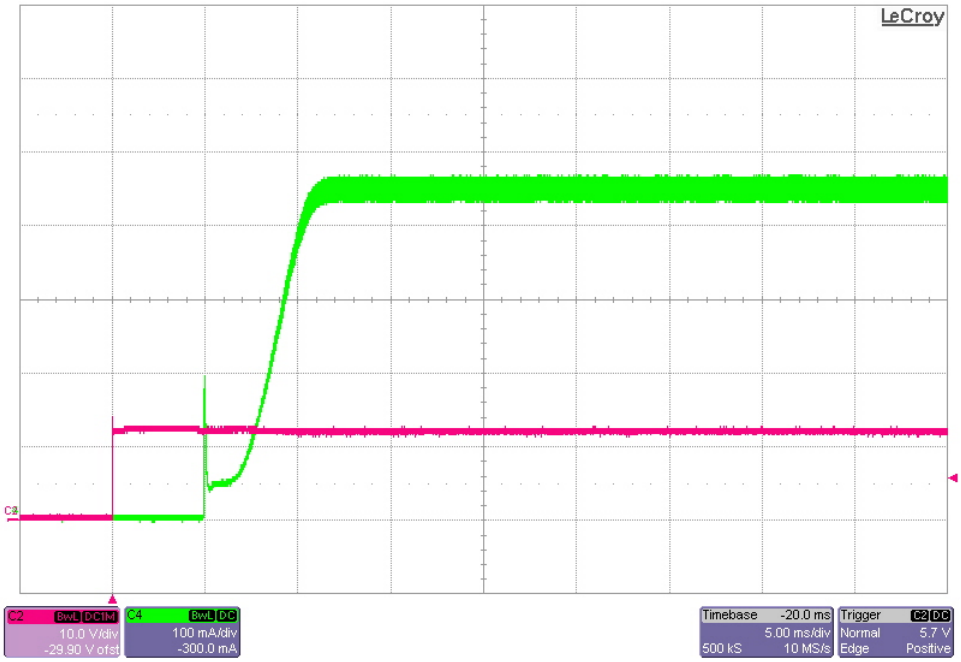
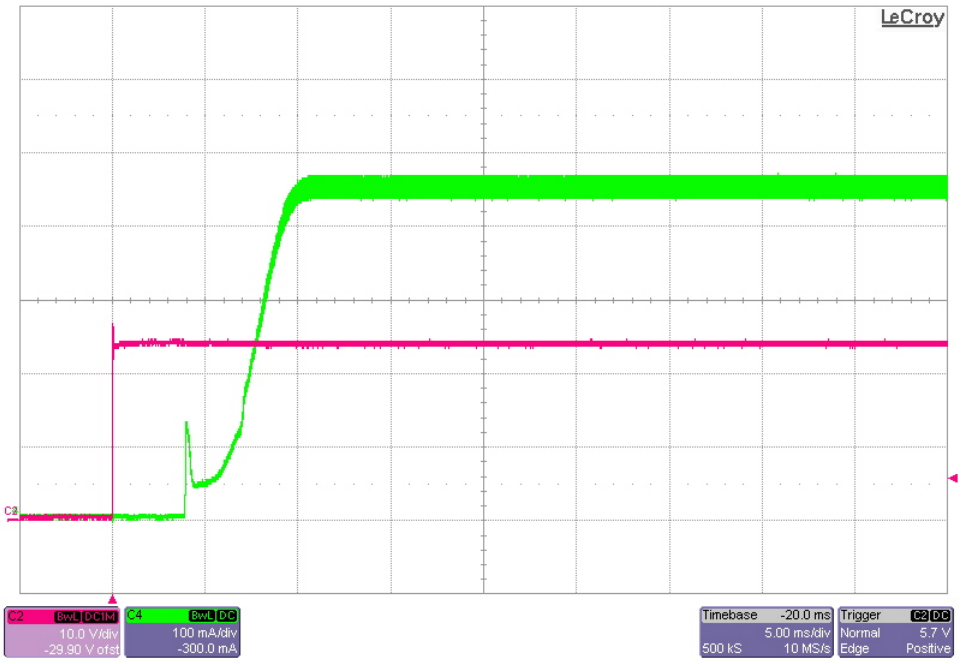
1 Startup

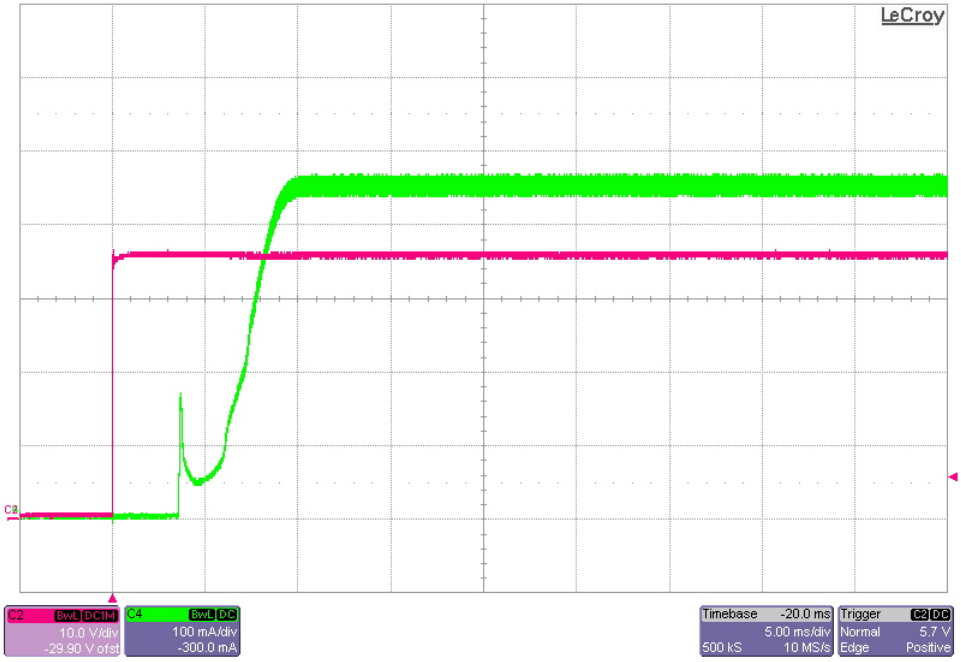
The photo below shows the output current startup waveforms after the application of 12V in. 12 LEDs were used in series and regulated to 0.46A. (10V/DIV, 100mA/DIV, 5mS/DIV)



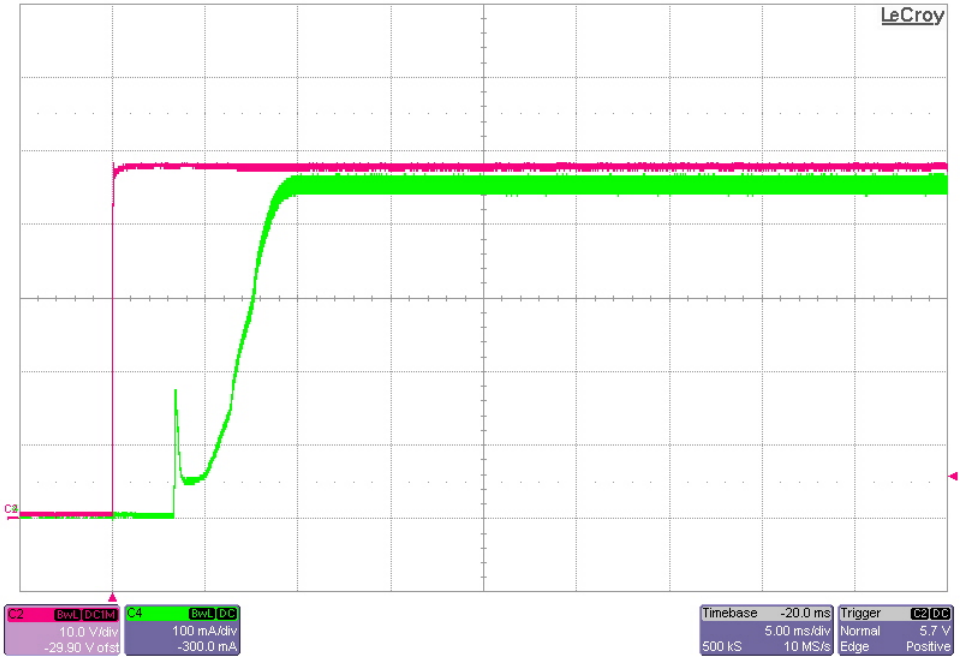
The photo below shows the output current startup waveforms after the application of 24V in. 12 LEDs were used in series and regulated to 0.46A. (10V/DIV, 100mA/DIV, 5mS/DIV)



The photo below shows the output current startup waveforms after the application of 36V in. 12 LEDs were used in series and regulated to 0.46A. (10V/DIV, 100mA/DIV, 5mS/DIV)

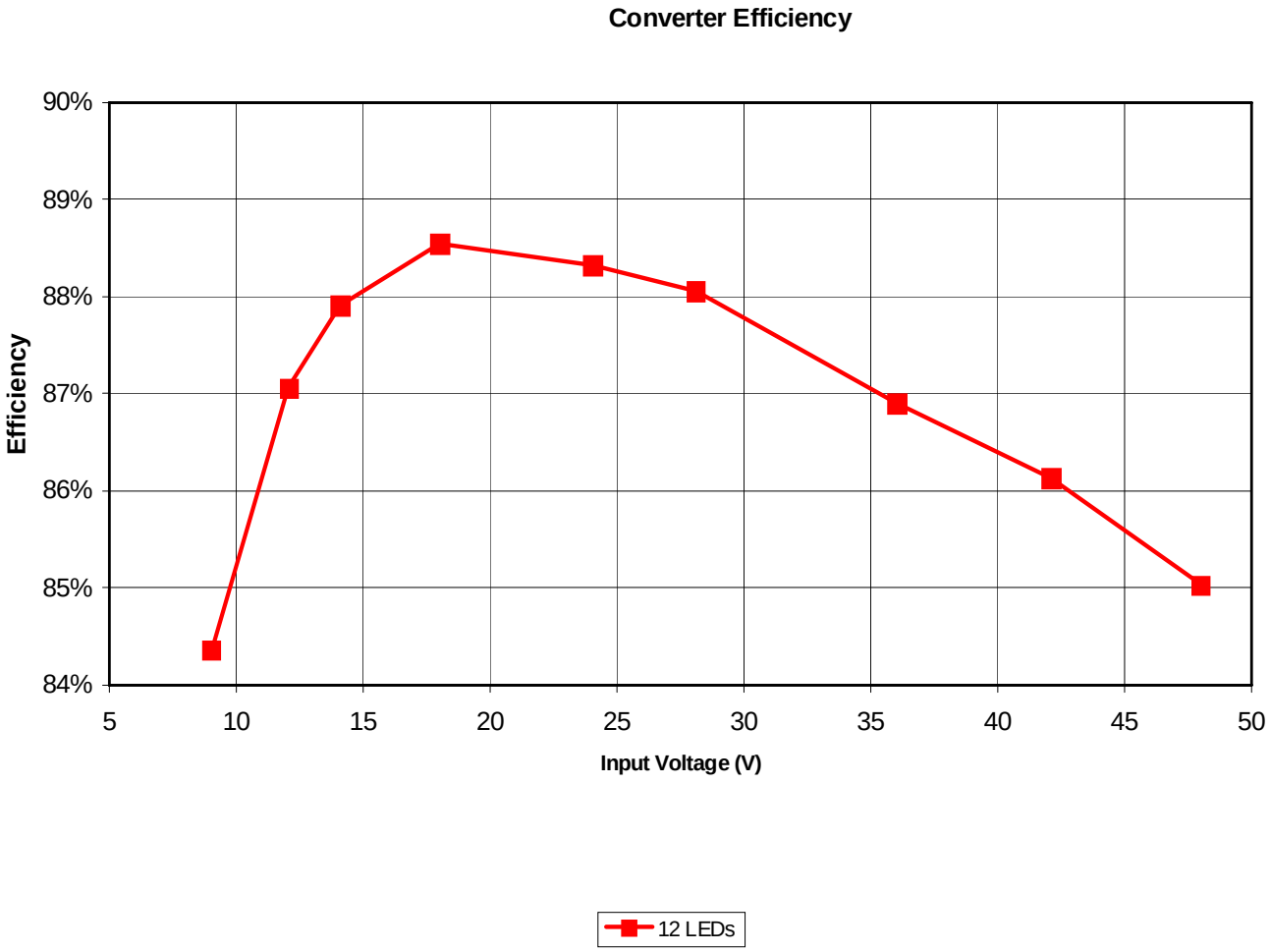


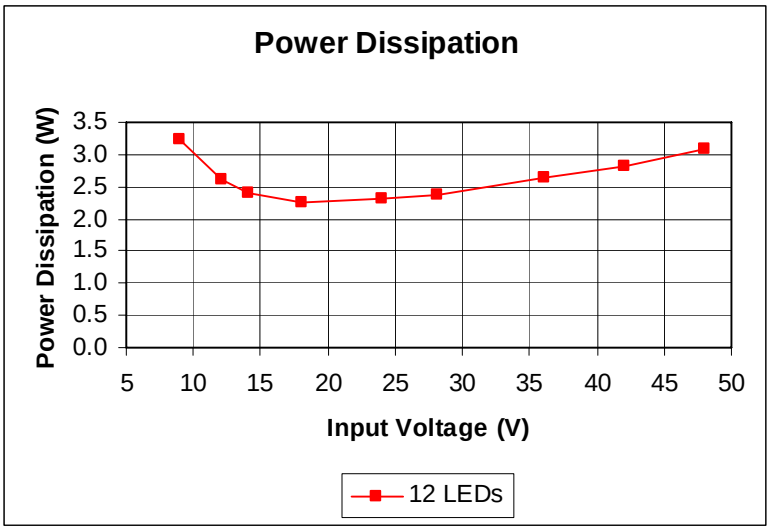
The photo below shows the output current startup waveforms after the application of 48V in. 12 LEDs were used in series and regulated to 0.46A. (10V/DIV, 100mA/DIV, 5mS/DIV)



2 Efficiency

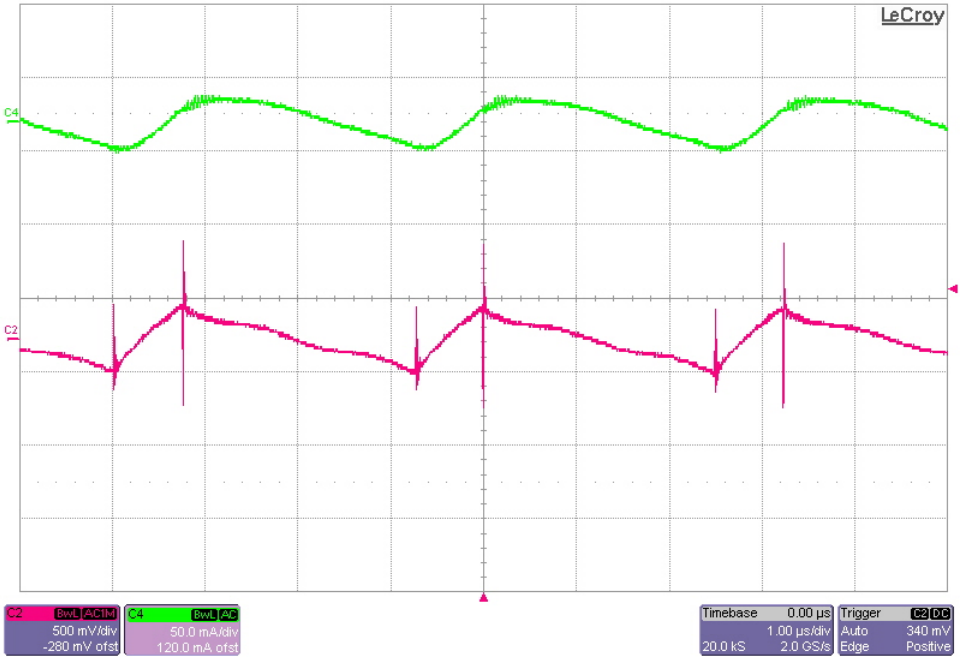
The converter efficiency is shown in the figure below. The LED current is regulated to 0.46A



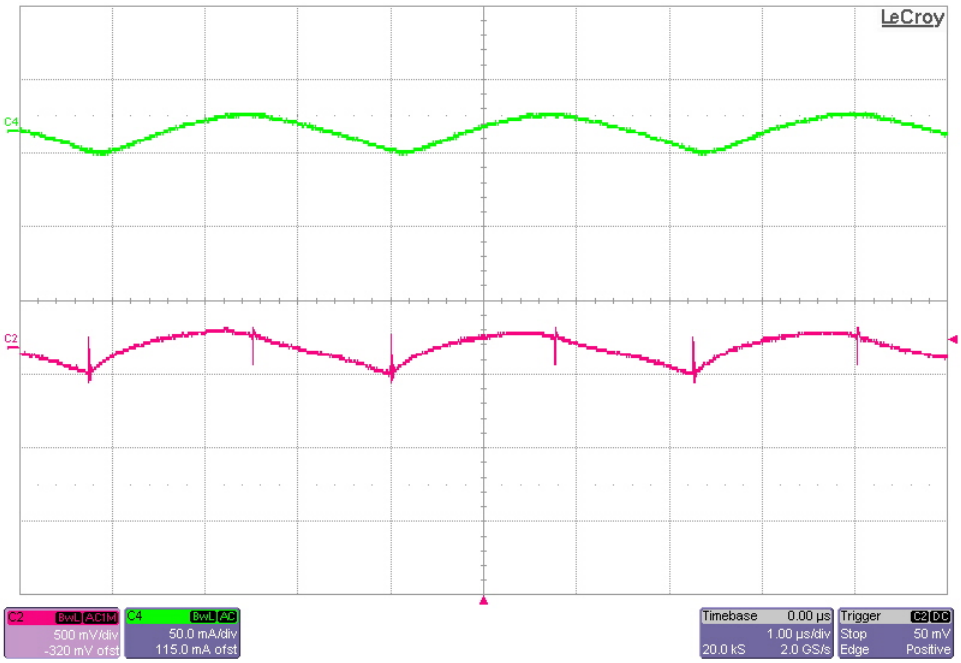


3 LED Ripple Current and Voltage

The ac-coupled LED ripple current and voltage (to ground) is shown in the figure below. The image was taken with the output loaded with 12 LEDs and regulated to 0.46A. The input voltage set to 12V. (500mV/DIV, 50mA/DIV, 1uS/DIV)

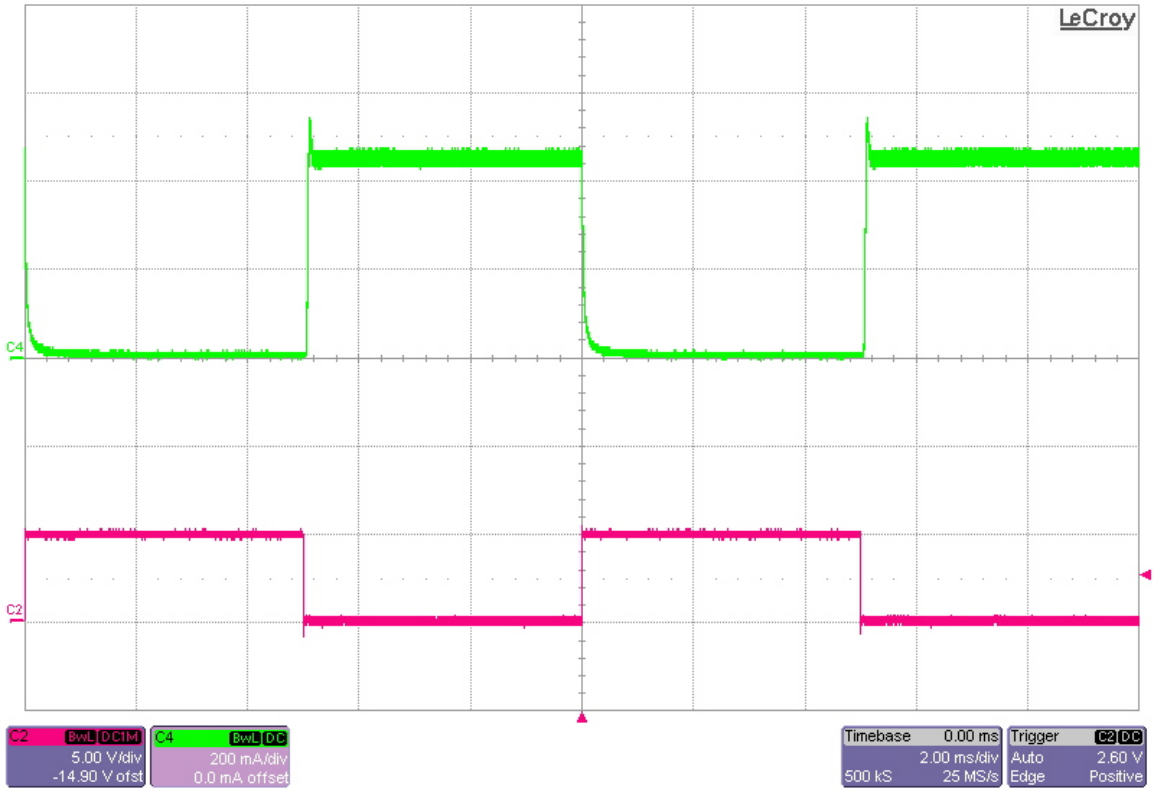


The ac-coupled LED ripple current and voltage (to ground) is shown in the figure below. The image was taken with the output loaded with 12 LEDs and regulated to 0.46A. The input voltage set to 48V. (500mV/DIV, 50mA/DIV, 1uS/DIV)



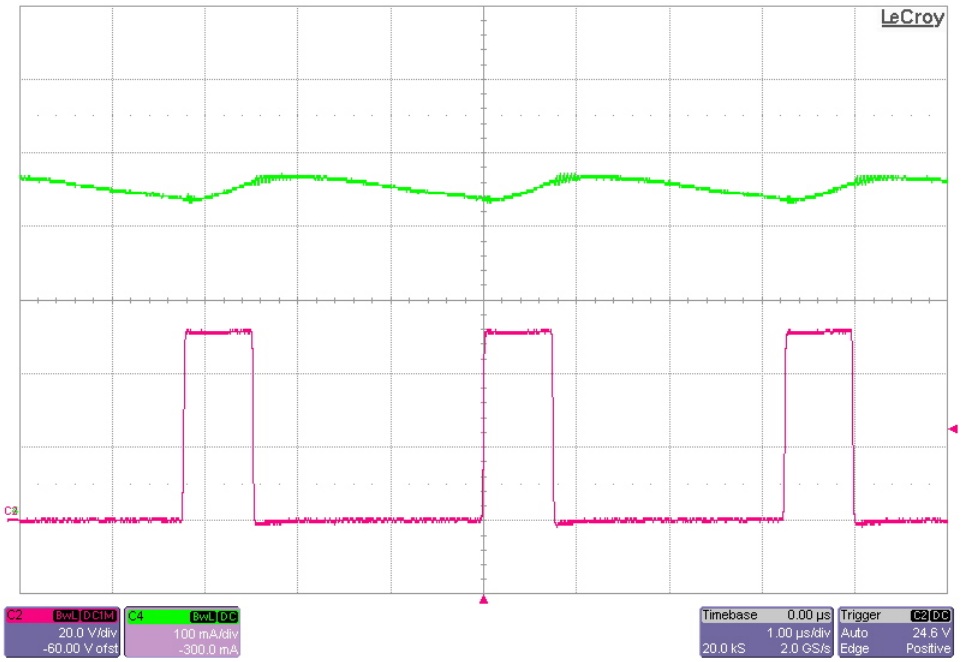
4 PWM of LEDs

The photo below shows an external PWM input (50%) and the LED current. The image was taken with an output of 12 LEDss and regulated to 0.46A. The input voltage set to 24V. (5V/DIV, 200mA/DIV, 2mS/DIV)

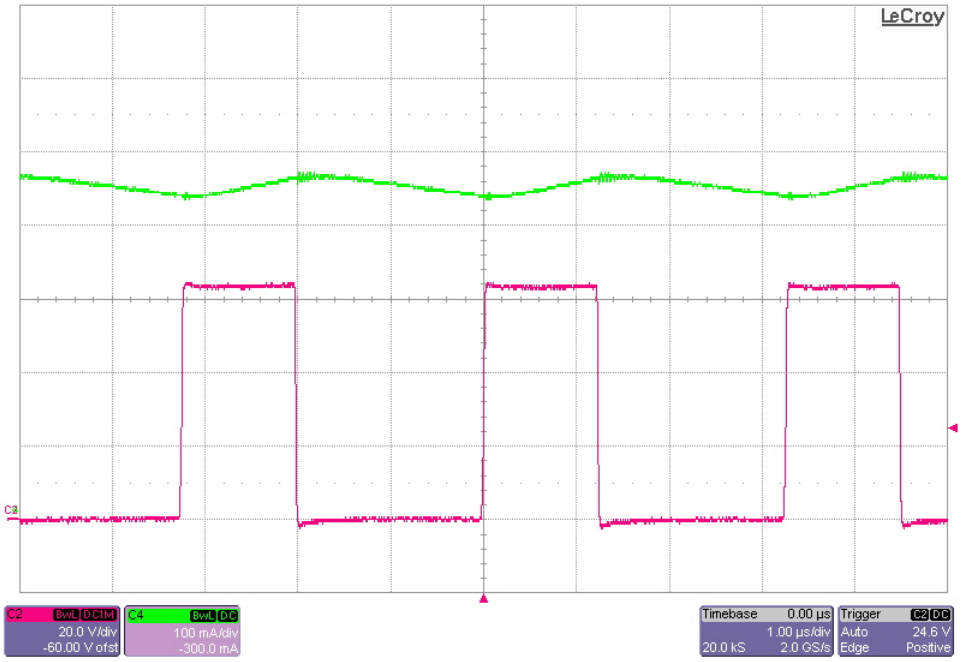


5 Switch Node Waveforms

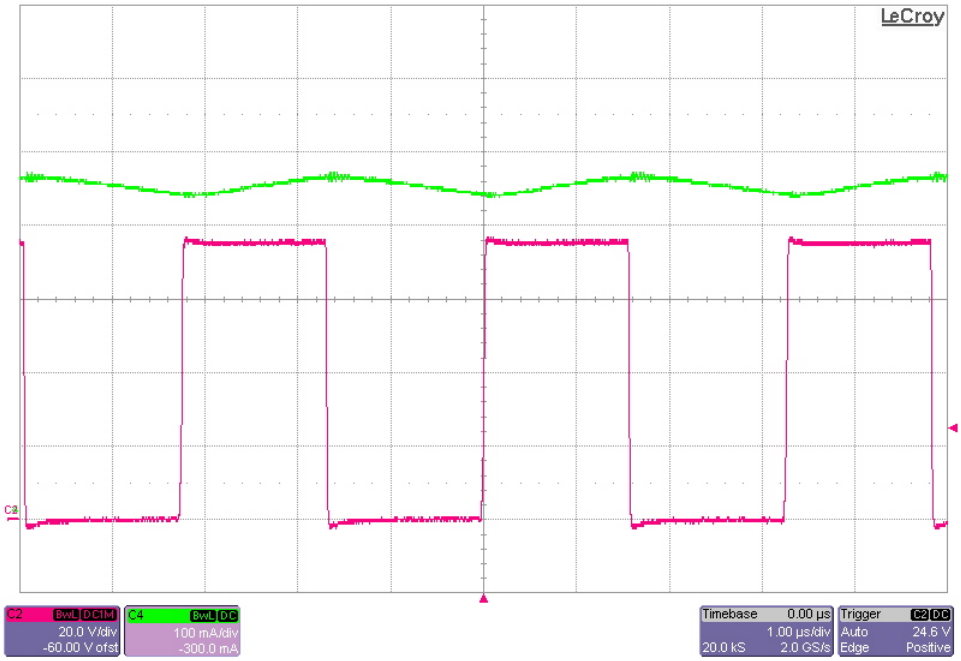
The photo below shows the (Q3) FET switch node and the LED current. The image was taken with an output of 12 LEDs and regulated to 0.46A. The input voltage was set to 12V. (20V/DIV, 100mA/DIV, 1uS/DIV)



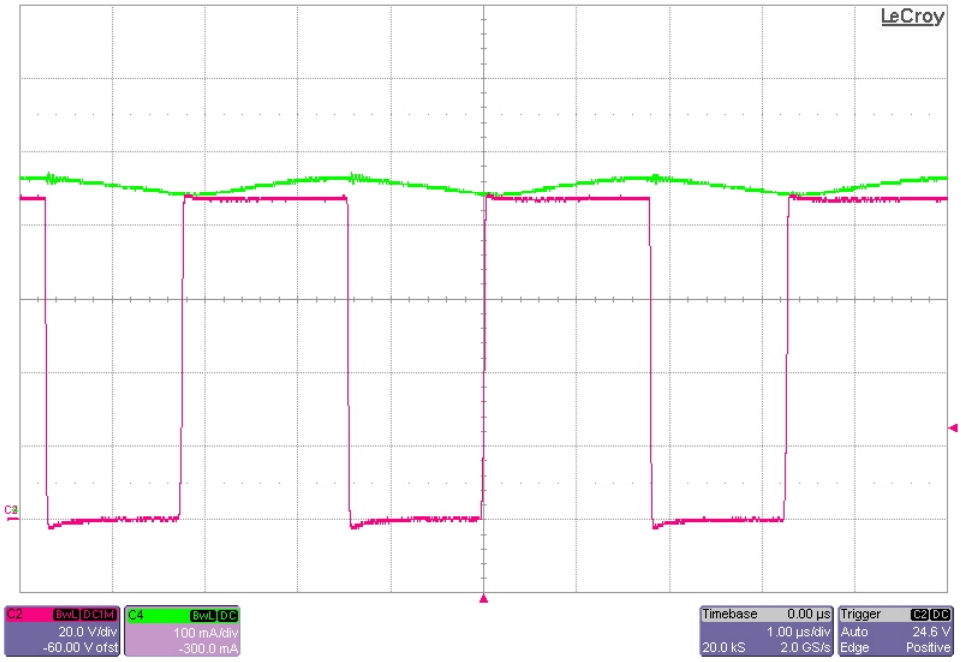
The photo below shows the (Q3) FET switch node and the LED current. The image was taken with an output of 12 LEDs and regulated to 0.46A. The input voltage was set to 24V. (20V/DIV, 100mA/DIV, 1uS/DIV)



The photo below shows the (Q3) FET switch node and the LED current. The image was taken with an output of 12 LEDs and regulated to 0.46A. The input voltage was set to 36V. (20V/DIV, 100mA/DIV, 1uS/DIV)

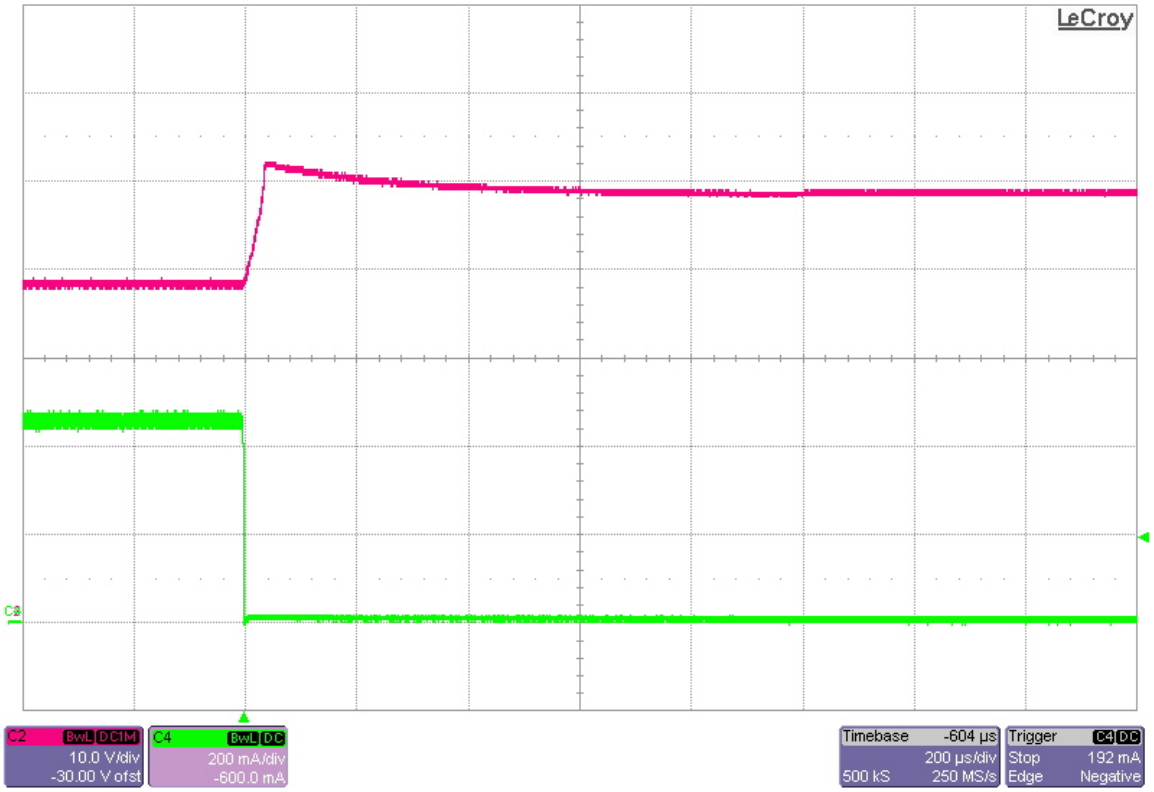


The photo below shows the (Q3) FET switch node and the LED current. The image was taken with an output of 12 LEDs and regulated to 0.46A. The input voltage was set to 48V. (20V/DIV, 100mA/DIV, 1uS/DIV)



6 Open LED Test

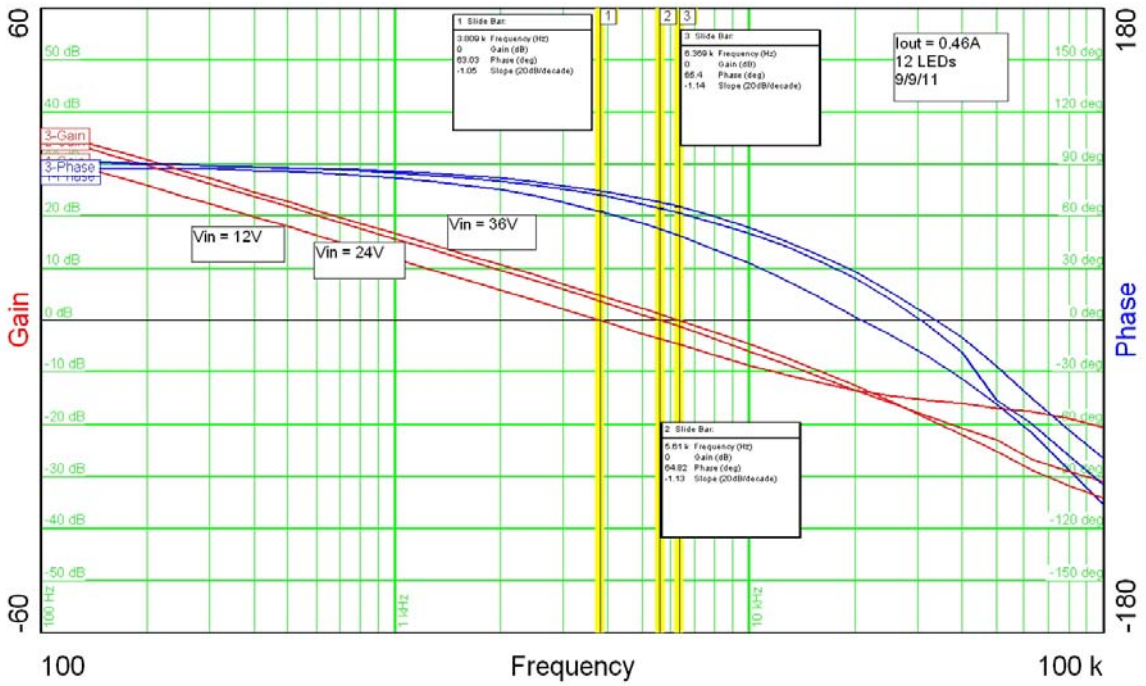
The photo below shows the LED Anode voltage (with respect to ground) and the LED current during an open LED test. The image was taken with an output of 12 LEDs and regulated to 0.46A. The input voltage was set to 24V. (10V/DIV, 200mA/DIV, 200uS/DIV)



7 Control Loop Gain / Stability

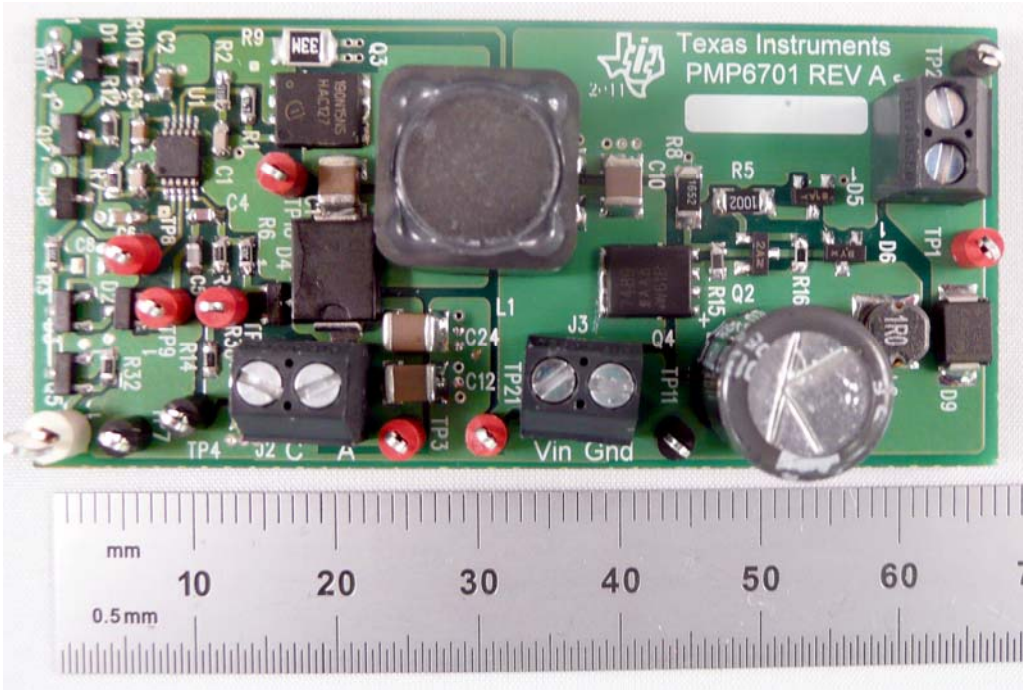
The plot below shows the loop gain and phase margin with 12 LEDs regulated to 0.46A. The input voltage was set to 12V, 24V, and 36V.

Band Width = 6.4KHz,	Phase Margin = 65 degrees	(Vin = 36V)
Band Width = 5.6KHz,	Phase Margin = 65 degrees	(Vin = 24V)
Band Width = 3.8KHz,	Phase Margin = 63 degrees	(Vin = 12V)



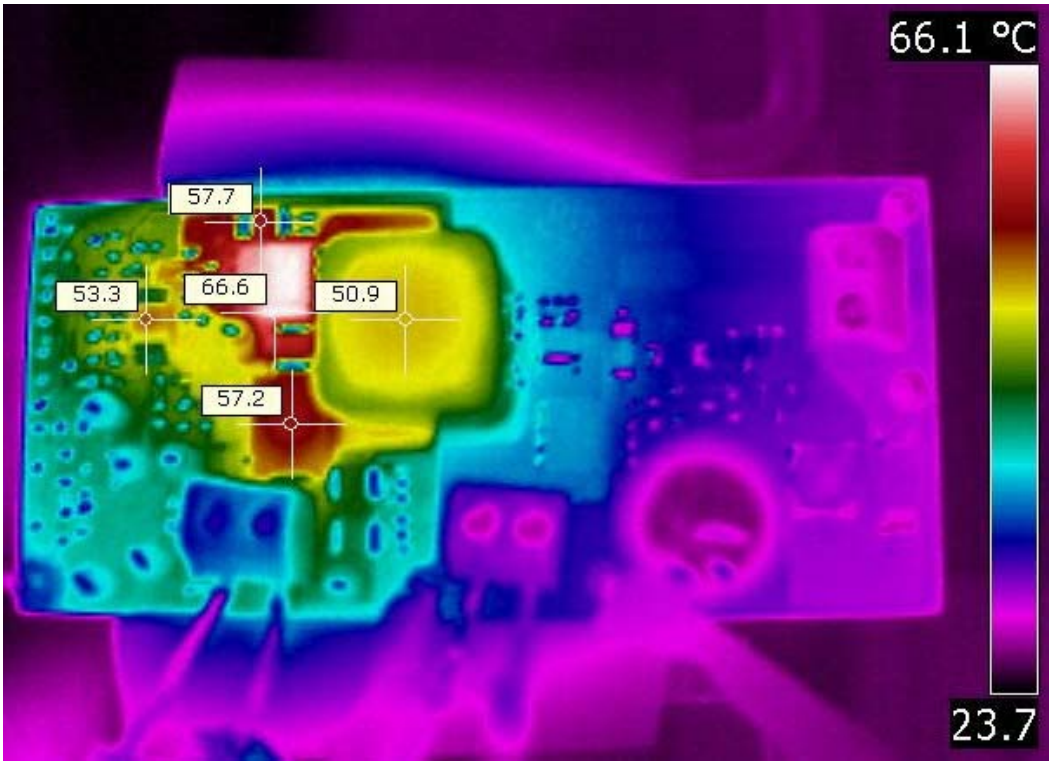
8 Photo

The photo below shows the PMP6877 REVB assy built on the PMP6701 PWB.



9 Thermal Image

A thermal image is shown below driving 12 LEDs at 24V input and 0.46A output.



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