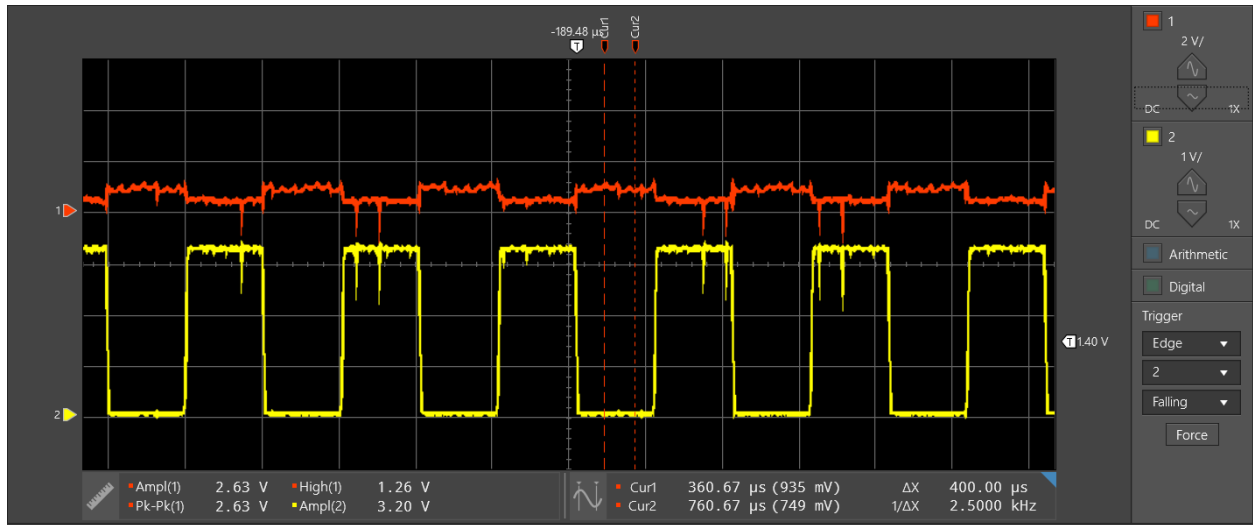


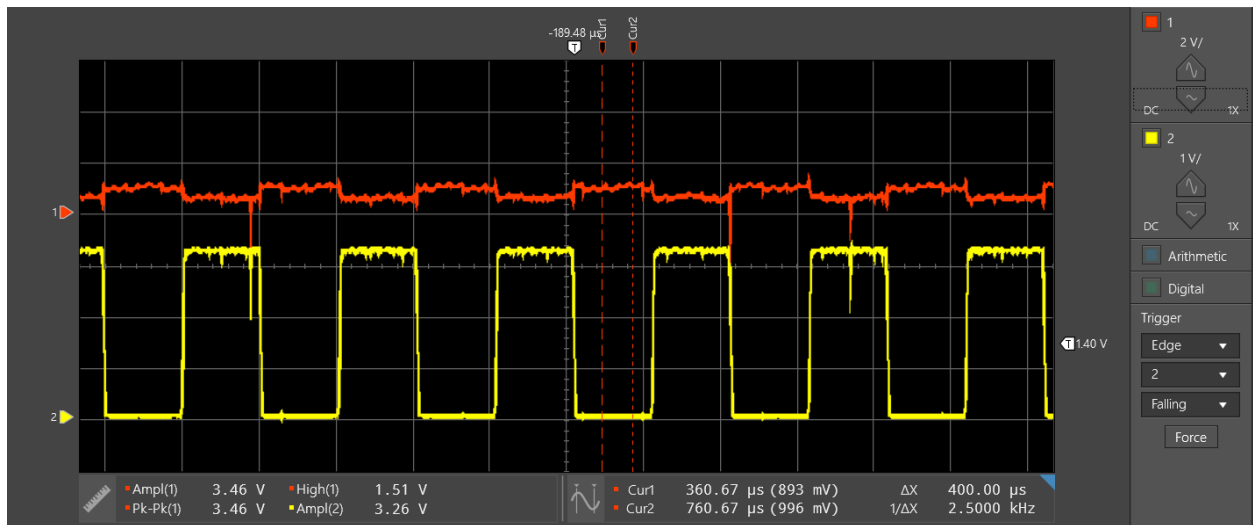
## Lab 5 Writeup

For flyback, we noticed that without the diode there was much more noise and lots of spikes when the PWM signal went low, which are not present with the diode.

Flyback no diode:

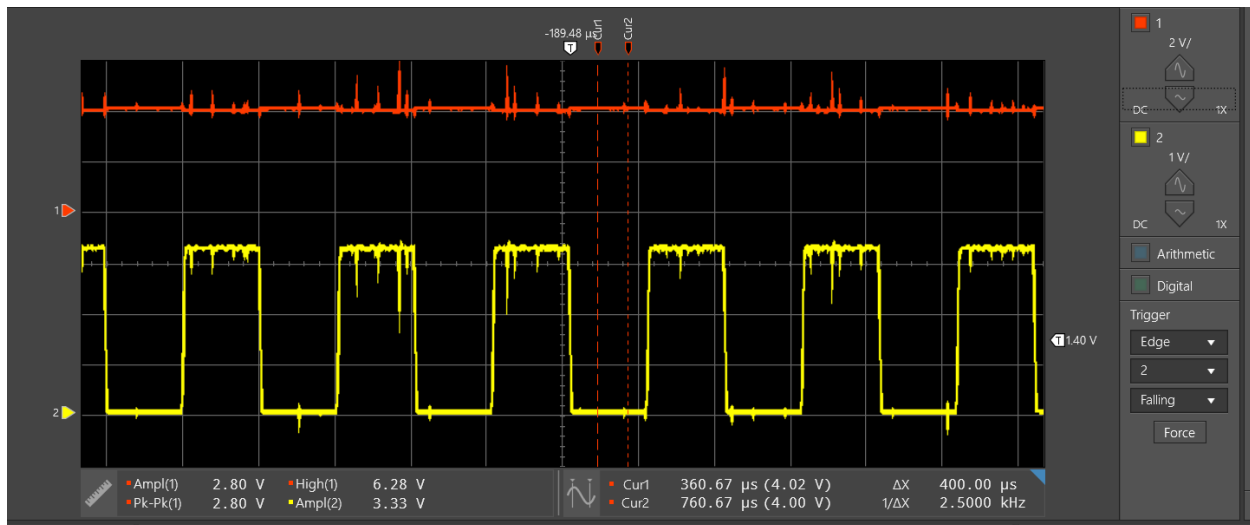


Flyback diode:

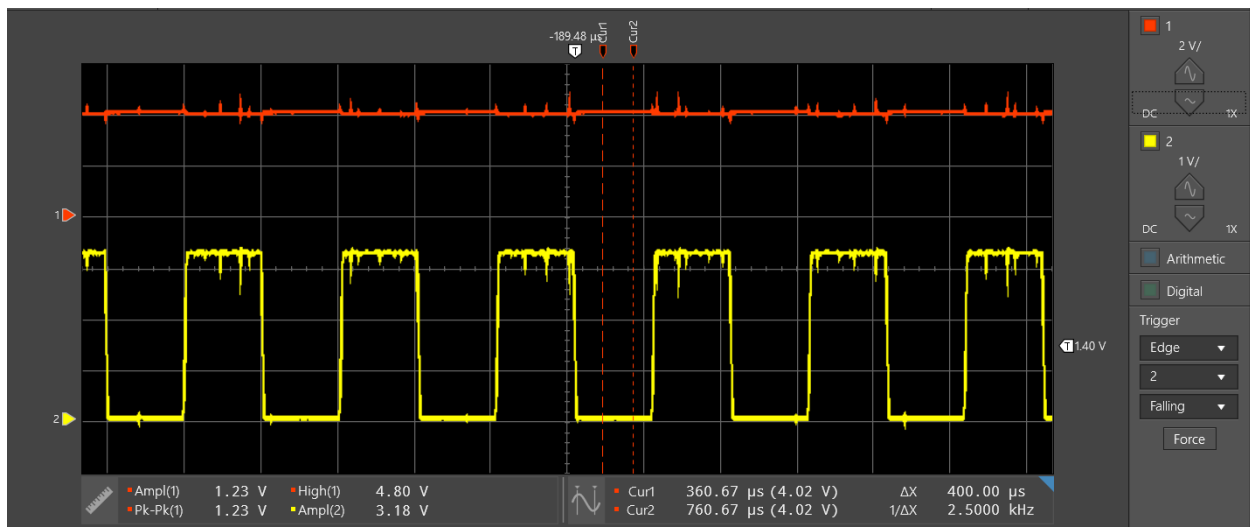


For VCC, without the decoupling cap there were spikes to nearly 6V, and the minimum hovered around 4V. With the decoupling cap, spikes barely exceeded 4V and the minimum hovered around the same area.

VCC, no decoupling cap:

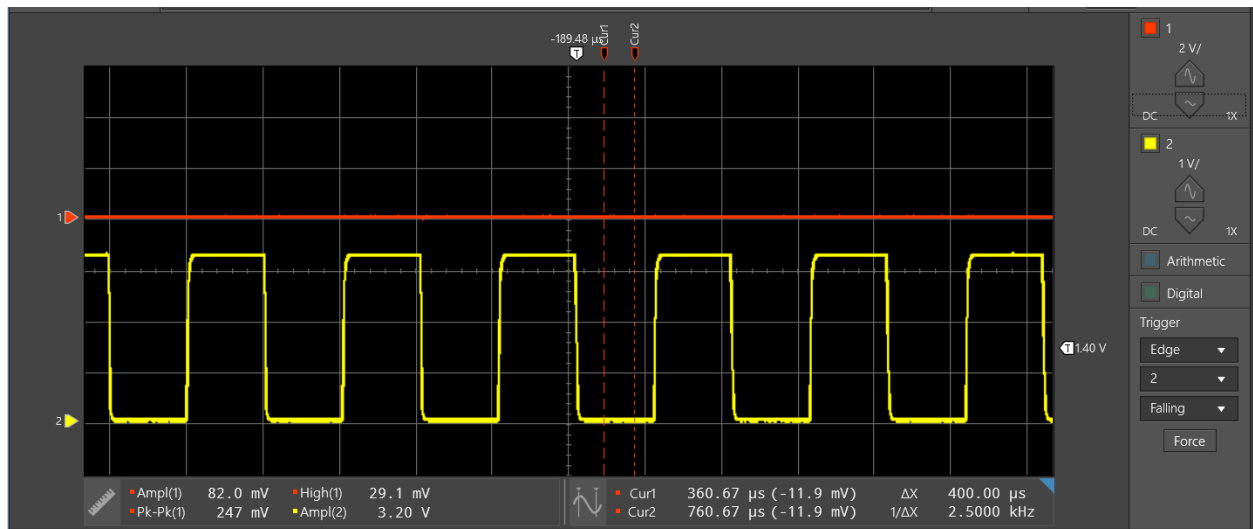


VCC, decoupling cap:

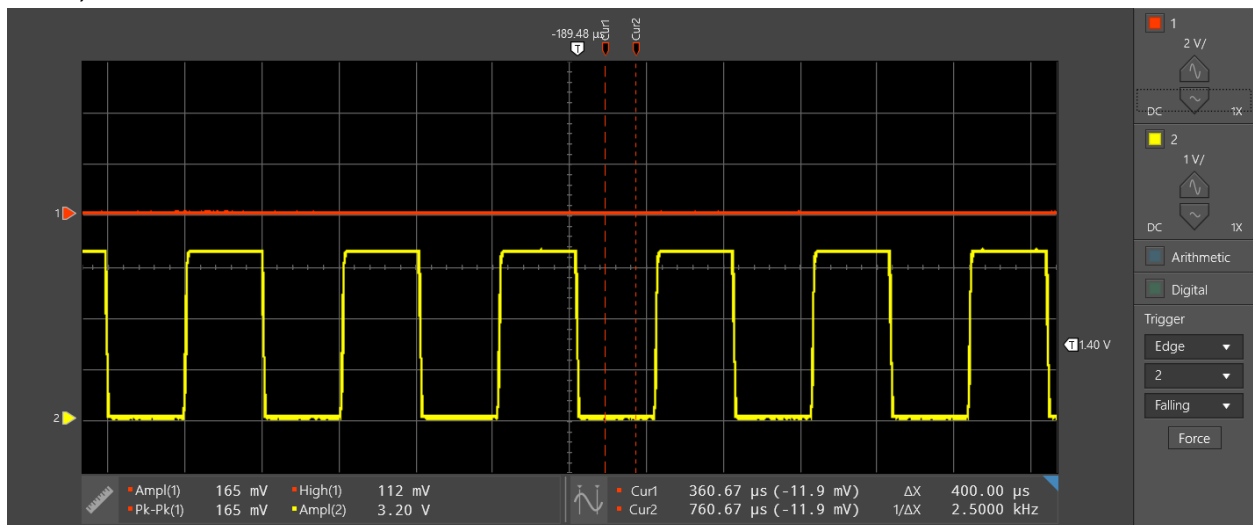


We took our screenshots with the motor disconnected so that we could better see the direct effect of the filter. We found that the filter helped smooth out the rises and falls. We did not run a test with the motor plugged in and no filter, but we found that the PWM signal was affected by the noise from the motor, even with the filter (all above screenshots have the PWM filter).

PWM, no filter:



PWM, filter:



With the filter in place, the spikes from flyback were softened and did not affect the system as much.