Rectification through a Full-Wave Bridge

AC Cycle power flow + Positive

Red = Flow when in the + cycle

U1

+v positive Cycle

D11

DF1510S-E3/77

C2 470µF

R2Load 100Ω

AC Cycle power flow - negitive

Blue = Flow when in the - cycle

U2

+v positive Cycle

D1

DF1510S-E3/77

C1 470µF

R1 100Ω
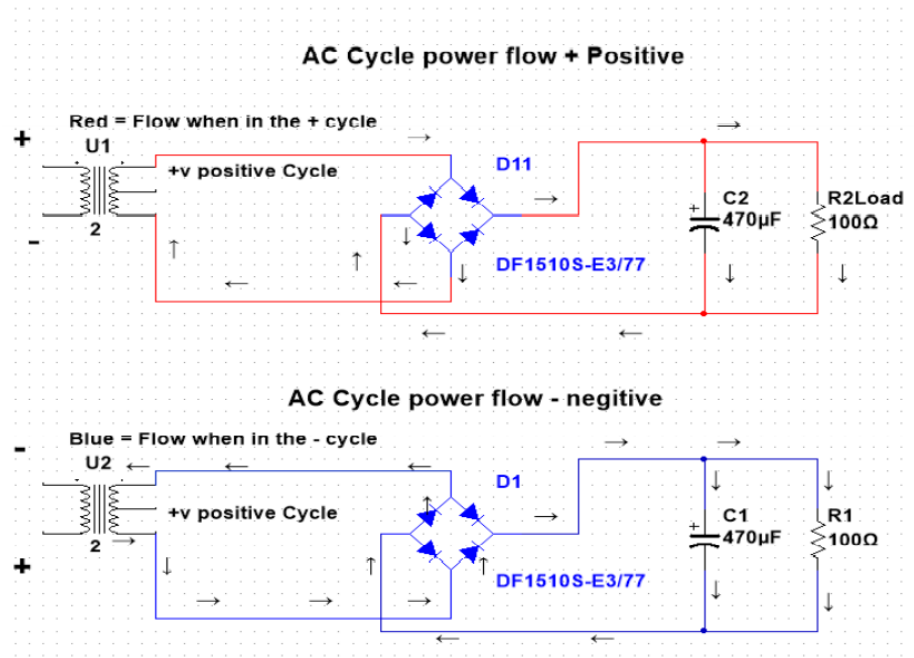
Buck Converter Non-Continous Mode Using Switching MOSET

For surface mount designs, solid tantalum capacitors can be used, but exercise caution with regard to the capacitor surge current rating (see *Input Capacitor (C_IN)* in this data sheet). The TPS series available from AVX, and the 593D series from Sprague are both surge current tested.
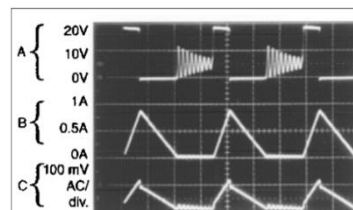
9.2.2.3 Application Curves

Discontinuous Mode Switching Waveforms V_{IN} = 20 V, V_{OUT} = 5 V, I_{LOAD} = 500 mA L = 10 µH, C_{OUT} = 330 µF, C_{OUT} ESR = 45 mΩ
A: Output Pin Voltage, 10 V/div.
B: Inductor Current 0.5 A/div.
C: Output Ripple Voltage, 100 mV/div.

Figure 36. Horizontal Time Base: 2 µs/div

Load Transient Response for Discontinuous Mode V_{IN} = 20 V, V_{OUT} = 5V, I_{LOAD} = 500 mA to 2 A, L = 10 µH, C_{OUT} = 330 µF, C_{OUT} ESR = 45 mΩ
A: Output Voltage, 100 mV/div. (AC)
B: 500-mA to 2-A Load Pulse
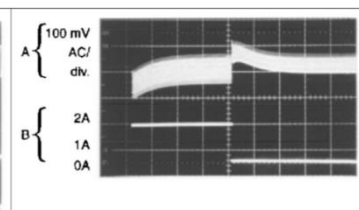
Figure 37. Horizontal Time Base: 200 µs/div

Filter Noise from DC Motors

Transistor Motor Driver and Noise Reduction L47

This circuit uses a transistor switch with a PN222A PNP transistor ("P" stands for plastic) to study and eliminate the transient noise. The maximum current through the transistor (I_c) is 500mA. The following is a set of circuits and oscilloscope images that show the circuit and the motor running noise and on /off transients.

Other circuits are presented with extra filtration components added and corresponding scope images.
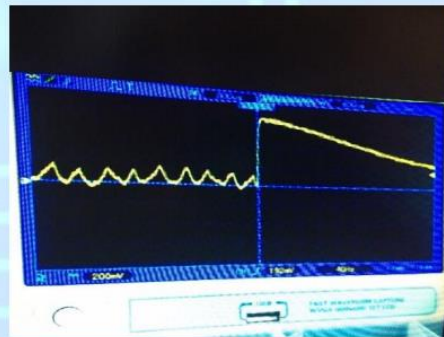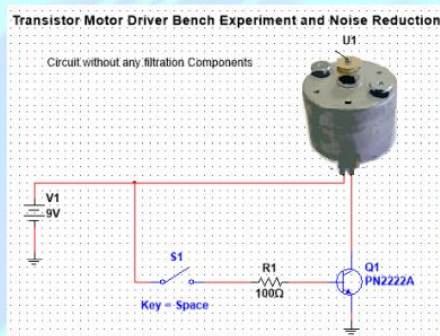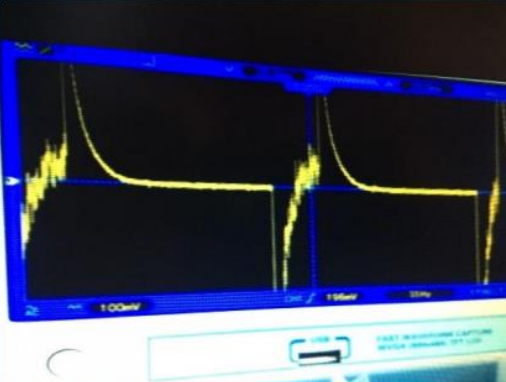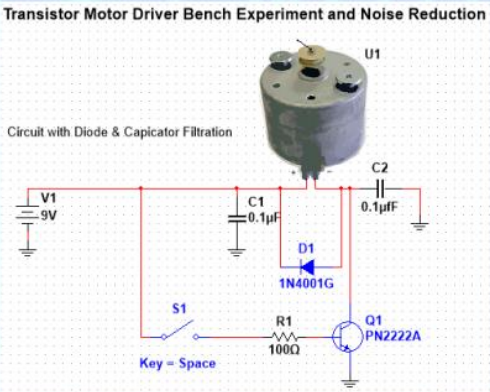

The scope is set to 200mV without any filtering; there is substantial running noise and a large turn off spike.

Use Caps and Diode to Minimize Noise

Transistor Motor Driver Bench Experiment and Noise Reduction
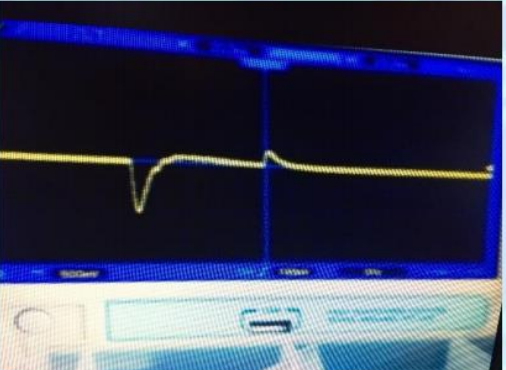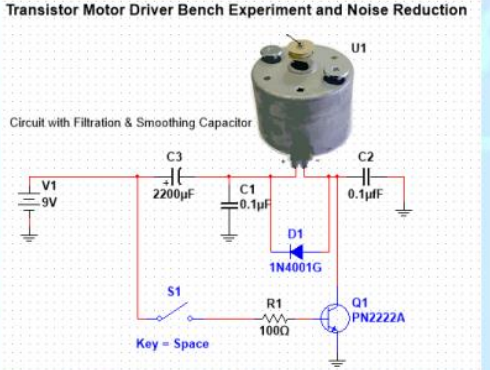
Circuit with Diode & Capicator Filtration

Changing the scope to 100mv and using the diode and small caps as a filter, the running noise has diminished, but the on / off spikes remain.

Transistor Motor Driver Bench Experiment and Noise Reduction

Circuit with Filtration & Smoothing Capacitor

The scope is set to 500mv and using a 2200mF electrolytic cap for smoothing we are now getting smaller spikes and killed the noise.