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Some Simple Tachometer Input Circuits

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Steve:

Here are a few simple circuits you can try. The two resistors and the small cap to ground forms a LP filter and the values shown will pass a freq. Up to 12,000 RPM. You can increase the value of the resistors to 4K7 without difficulty. They just need to be the same value. Try the .05uF cap and it can be increased to ~ .1uF. Any more and you may filter out some high RPM information.

Figure 1 is a simple diode clamp with the LP network. The circuit will clamp at the 5volts and you will get a square wave output from ground to +5. You can run this at a higher voltage ... the equipment that you are feeding the circuit into is the limiting factor. I don't like much over 8 volts myself.

Figure 2 is an excellent circuit and the one I use on my tachometer design. This circuit produces a very crisp edge on the pulses. It also divided the input by 2 so that you get on pulse for every two rising edges of the tach signal. This is quite useful for most microprocessors that are measuring the actual pulse duration to calculate RPM. Your analogue tach works on frequency/voltage which is different.

Figure 3 is also a very good circuit I use frequently. This has the standard front LP filter and uses a PNP resistor. When the resistor conducts it will clamp the circuit to the control voltage and it produces a very crisp output rising edge trigger for your equipment. Most all tachometers are happy with this circuit.

On the SRF a much better tach signal is available on Pin 1 of the EDIS module which is the **PIP** line. This is a 50% duty cycle perfect square wave output similar to my **Figure 2**. Perry Edwards has helped me allot with this circuit and he offers a technical discussion of the EDIS here <http://www.dainst.com/info/edis/edis.html> if you're interested.

You are probably aware of the discussion from Mega-Squirt about the Ford EDIS here: <http://www.megamanual.com/ms2/EDIS.htm> You notice that they are also using the PIP signal as the tachometer source.

Rev Limiter:

I made a small unit to control the SPI motor on the 2.0L Ford SPI Engine that I am going to use. It is basically my tachometer circuit and it runs a FET with a PWM signal to the motor. This may work as an interrupt in the coil signal line or in the PIP line of the EDIS.

If it were on the IGN GND signal line (pin 4) it could at a certain RPM open the line and momentarily which should kill the coil.

In the alternate, you might try interrupting the EDM line. This will tell the ECU that a coil has malfunctioned but I'm not sure of the consequence. It will probably set a fault code too.

Or finally, and perhaps the best way, is to interrupt the SAW signal (Pin 3) from the ECU to the EDIS. When this happens the EDIS should default pretty quick to limp mode and retard the spark back to 10 degrees BTDC. In a driving situation where you are against the max RPM this would be quite noticeable and act as a rev limiter.

You are welcome to copy this circuit if you would like to make some of these. It also makes a great shift light control! You can mount the box anywhere and run the wires to a decent control light.



Here is a look at the PCB for the SRF dash. I'm working on code still.

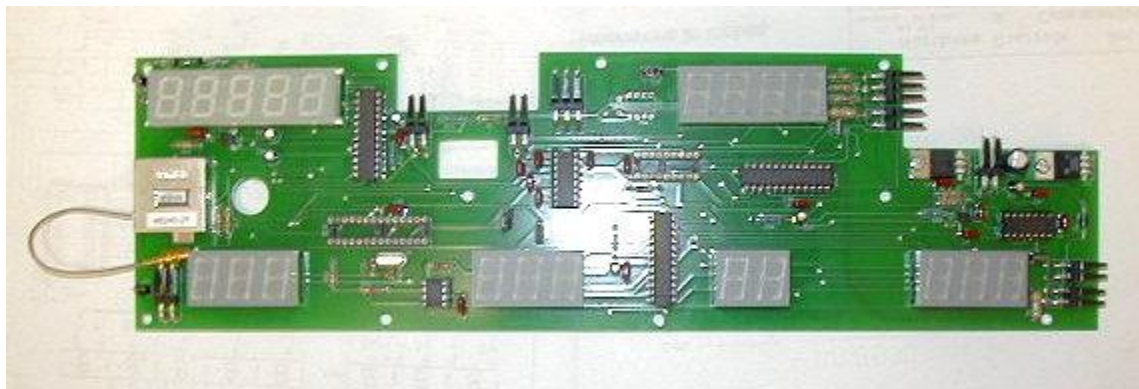


Figure 1

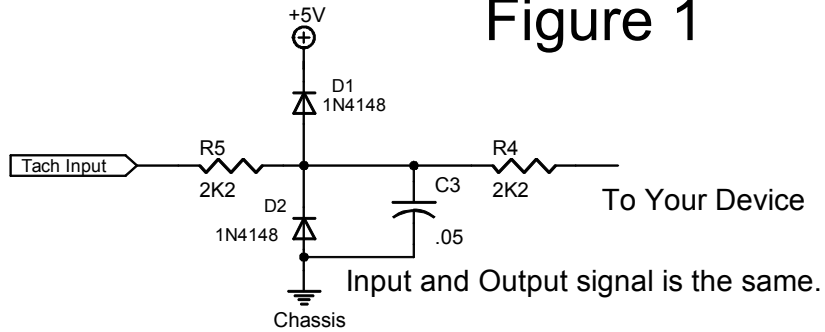


Figure 2

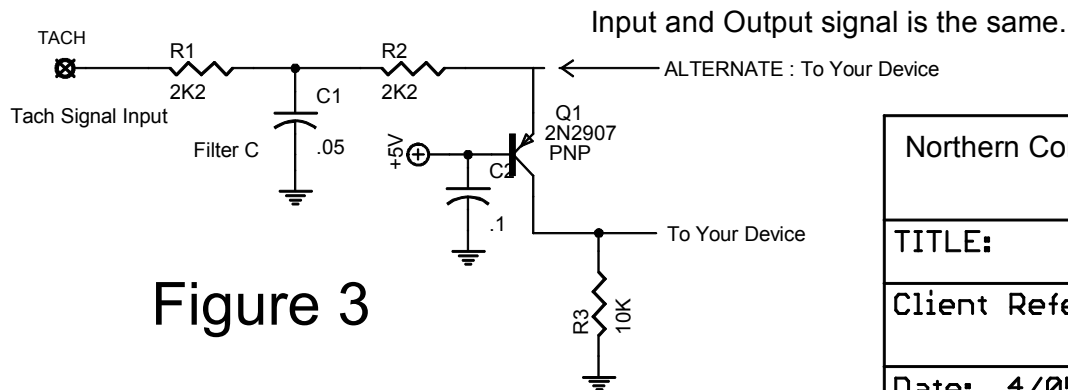
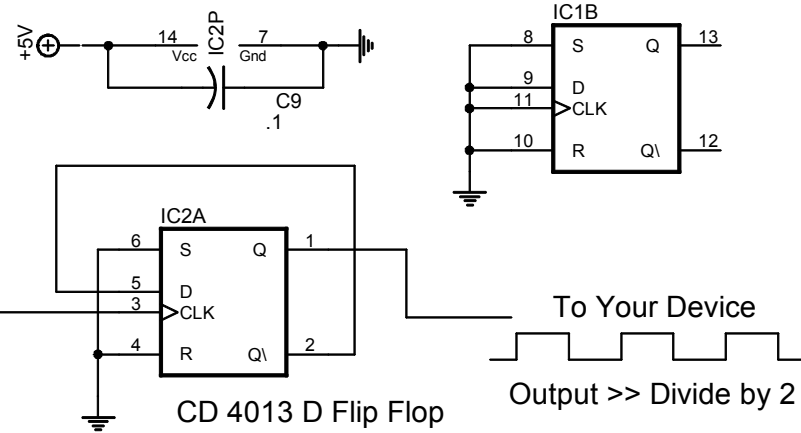


Figure 3

Northern Controls & Communications	
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TITLE:	Tach Circuits
Client Reference	Steve Fenske
Date: 4/05/2007 10:21:39a	Sheet: 1/1