

Re: Simple mosfet question

Source: <http://sci.tech--archive.net/Archive/sci.electronics.design/2007-08/msg00410.html>

- *From:* default <default@xxxxxxxxxxxxxx>
 - *Date:* Thu, 02 Aug 2007 14:53:17 -0400
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On Thu, 02 Aug 2007 17:44:50 -0000, Andrew <xxragexx@xxxxxxxxxx> wrote:

I should mention that the input is being driven by a servo motor driver which I did not design or have the schematic for, or really know much about the design. I am just intercepting the signal and using it to drive my circuit.

I'd want to know more about that . . . Servo motor or something like an RC servo? This thing has a motor connected to it? Intercepting makes it sound like it does. If that's the case, you need look no further, that is probably the cause.

Motors are notorious for inductive transients – even the brushless ones can be pretty bad. If the driver is applying PWM or switching from nothing to all out, the wonder is it works at all.

Gate resistors help but it all depends on the energy and persistence of the transient. The mosfet gate is a small capacitor (with an equally fragile dielectric). The resistor in series with the signal to the gate uses the gate capacity to make a low pass filter. Hopefully, the transient will develop across the resistor and not punch through the gate insulator.

In the case of the 2N7000 it is only 20 picofarads – so that isn't much of a low pass filter.

Talk of motors and intercepting signals (one presumes that the signal you are intercepting also has wires running about) would lead me to think you will need something a little more robust than a series gate resistor.

If you need speed (2N7000 has to follow the signal with minimum phase shift) something like a bipolar might be better suited or if speed isn't too important a simple RC low pass filter might be better. Zeners are good but they have to be fast too – There are circuit/transient protectors that specify switching times and those may be the better choice.

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