

# ringing with mosfets problems

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Hi all,

I've converted a H-bridge from a P-N type design to using all N-chan mosfets. While the conversion works its left me with a problem. When you turn the rail voltage up from 1-40V the mosfet gates get really bad overshoot and ringing on high and low edges. The mosfets actually start to turn on, then have a large overshoot spike which then turns negative and turns the mosfet off, then it goes high again. Its overheating the mosfets really bad because of these false turn ons.

I managed to filter out the problem with the P-N H-bridge, though I'm having real problems with the N-chan design :-)

I tuned up the H-bridge so the input waves look perfect using a fast diode and a 33R resistor on the mosfet gates, though it wasn't until I actually ran power though the mosfets that the squarewave input looked more like spaghetti.

I've read countless articles on driving the mosfets, bascially now all my copper traces are that short that they is almot nothing there, the whole design is about credit card size, one solid ground plain on the back of the board, no sharp T edges, all traces are rounded. I've done everything no matter how small to keep it as good as possible, and while I've got the P-N bridge sussed, the N-chan version seems a whole new ball game.

I tried adding a small snubber circuit but the mosfets just drew top amps from the PSU and smoked out. I already had to do 13 PCB revisions to get the P-N bridge to work right and that seems easy now compaird to this new set of problems. Its also becoming very tiresome to get something so simple to work right :-)

Reading up on all the pro'c & Con's to driving mosfets in H-bridge style, or any mosfet in general, you could pretty much conclude that its going to be impossible to build a perfect design, the slightest little thing of even making one small copper trace 5mm longer is enough to totally trash the whole design. Hey you can even build your own PCB from a manufactures gerbers and build it up and have it not work right, when your up against impossible problems like that it makes you wonder...

Chris

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- *Follow-Ups:*
    - ◆ **Re: ringing with mosfets problems**
      - ◇ *From: rayjking*
    - ◆ **Re: ringing with mosfets problems**
      - ◇ *From: deneb@xxxxxxxxxxxx*