

Re: Transmission Gate question

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- *From:* "Noway2" <no_spam_me2@xxxxxxxxxxx>
 - *Date:* 31 Jan 2006 06:01:28 -0800
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Fets are controlled by the gate source voltage V_{gs} and its relationship to the threshold voltage. When the fets are fully turned on, they act as a resistance equivalent to the R_{ds-on} parameter. Think of the devices as being switches, either on or off and then modeling them as a small or large resistance.

Be aware, the input – output side of the fets (drain and source) are not really interchangeable. I was taught that they were in school and got bit by this on a circuit board design. The result was \$500 and two weeks down the toilet. I didn't understand it at first, until I realized I was trying to turn the device on by controlling V_{ds} not V_{gs} .

Most text books focus too much on the $I_d = k(V_{gs} - v_t)^2$ equation. Unless you are getting into semiconductor physics, this equation is probably about worthless. It may help for you to look at some product data sheets for fets and look at the curves relating on resistance versus the V_{ds} and V_{gs} .

- *Follow-Ups:*
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◇ *From:* jwelser
 - ◆ [**Re: Transmission Gate question**](#)
◇ *From:* Pooh Bear
- *References:*
 - ◆ [**Transmission Gate question**](#)
◇ *From:* Angmor
 - ◆ [**Re: Transmission Gate question**](#)
◇ *From:* Angmor
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◇ *From:* Pooh Bear
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