

# Re: voltage controlled resistor

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- *From:* [et472@xxxxxxxxxxxxxxxxxxxxxx](mailto:et472@xxxxxxxxxxxxxxxxxxxxxx) (Michael Black)
  - *Date:* 17 May 2007 14:19:55 GMT
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Franc Zabkar ([fzabkar@xxxxxxxxxxxxxxxxxxxxxx](mailto:fzabkar@xxxxxxxxxxxxxxxxxxxxxx)) writes:

On 16 May 2007 10:43:47 -0700, [cary.niza@xxxxxxxxxx](mailto:cary.niza@xxxxxxxxxx) put finger to keyboard and composed:

Does anyone know of an IC chip or discrete component intended to be used as a variable resistor whose resistance value may be controlled by varying its voltage input/signal

About 20 years ago I encountered a device consisting of a light source (LED ?) and a light dependent resistor. IIRC the part came in a package that was not much bigger than a TO92 transistor. I think similar schemes are used to provide noiseless volume controls for musical instruments, eg the expression pedals for pianos and organs.

And the poster hasn't really given enough detail.

Those things, and you could make them yourself if you had the light dependent resistors, tend to be the simplest solution, because the existing circuit only sees a variable resistor. I gather though that they tended to be not so linear vs control voltage, and I don't recall them coming in a wide range of values.

Since the original poster didn't specify what he was trying to do, getting a result is not going to be easy. The FETs mentioned by some, those work, but you have to retrofit them onto the existing design, and I thought there were linearity issues too, as in adding distortion to the circuit if not done right. Linearity in the control voltage versus resistance too, I think it was Siliconix who had a whole application note about that.

Someone mentioned 4066s. The trick would be to pulse modulate those to get the varying resistance. The problem then is that you end up with junk on the signal, unless, as Don Lancaster pointed out decades ago, you are controlling a low pass filter that takes out the junk.

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One could use an attenuator made up of a forward biased diode, I've seen those but I don't know how well they worked.

One could always change the circuit, so instead of a stage of amplification and a volume control, you put in a gain control stage. So any sort of stage intended for AGC or voltage controlled amplification would fit in.

Michael

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