

## Re: Low loss/dissipation xistor or ...

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- *From:* Tim Wescott <[tim@xxxxxxxxxxxxxxxxxxxx](mailto:tim@xxxxxxxxxxxxxxxxxxxx)>
  - *Date:* Fri, 19 Dec 2008 22:55:13 -0600
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On Fri, 19 Dec 2008 20:44:12 -0500, Bob Engelhardt wrote:

The project:

I am making electrically heated socks & gloves. For power I'm using the 9.6v NiCad batteries from my cordless drill. The working assumption is that each sock & glove will need 1w, but that's very tentative & I'll have a regulator to adjust as needed. The critical parameter is the 9w-hr available from a battery before needing to be recharged. So the regulator must have minimum losses. The 2 socks & the 2 gloves will be in series & independently regulated.

The current plan is to use a 555 timer for each pair & vary the duty cycle to achieve regulation. But the 555 can't drive the heaters directly – they'll require about an amp. I'm thinking of using SMT BJT's from ON Semi: <http://www.onsemi.com/PowerSolutions/parametrics.do?id=808> because the very low VCEsat (as low as 50mv) will minimize the regulator losses.

The questions:

– is there another device that I could use instead of BJT's? Switching 10v & carrying an amp at low loss (1/10w +-). (OK, now it's obvious – I don't know anything about semiconductors <G>)

– are there through-hole BJT's with very low VCEsat? (I've not used SMT's & I suspect that they'll be a fabrication challenge.) Googling on "low VCEsat BJT" was not helpful.

Thanks,  
Bob

BTW – I hang around rec.crafts.metalworking mostly & when I subscribed here I was REALLY impressed the the minimal amount of OT posts. No political OT that I recall. Keep up the good work.

If you put the transistor in the sock, then any losses from the transistor will heat the sock just as well as a resistor would.

Re: Low loss/dissipation xistor or ...

In fact, if you controlled it right you could just use the transistor in linear mode, and forget the resistor.

But why not just use a resistor with the right value to dissipate a watt with a 9V input? You'll see a bit of extra dissipation with fully charged batteries and less at low, but it won't be noticeable.

(actually, IMHO, you shouldn't sweat the "constant power" issue at all. What you should concern yourself with is a circuit to shut the thing down when the batteries get to the end of their charge, to avoid damaging the pack).

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Tim Wescott  
Control systems and communications consulting  
<http://www.wescottdesign.com>

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