Re: snubber resistor power rating?

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From: John Popelish (*jpopelish_at_rica.net*)
Date: 11/29/04

Date: Sun, 28 Nov 2004 19:34:17 −0500

Terry Given wrote:
>
> Ken Smith wrote:
> > In article <41a9a09e$0$566$e4fe514c@news.xs4all.nl>,
> > Arie de Muynck <send.spam.to@spammer.org> wrote:
> >
> >>AAArrghhh...
> >>
> >>OK, here's the right drawing:
> >>
> >>"Arie de Muynck" ...
> >>
> >>>Ken Smith" ....
> >>>
> >>>>Is this what we are dealing with here:
> >>>>...
> >>>>If so, how does the [triac] get turned off with a current flowing in the
> >>>
> >>>load?
> >>>
> >>>No. It is:
> >>
> >> L (mainly inductive load)
> >> −−−−−−−−−UUUU−−−−−−−−−−−−−−−−−−−−−−−−−−
> >> ^ | |
> >> ! | /
> >> ! | \ R
> >> ! | /
*> >> Mains | *
> >> ! −−−−− |
> >> ! A V Triac |
> >> ! −−−−− ___
> >> ! Trigger ckt−−−−/ | ___ C
> >> V | |
> >> −−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−
> >>
> >>
> >>>The triac turns off at the zerocrossing of the current through it. Since

> >>
> >>*the*
> >>
> >>>*mains voltage will be about maximum then, the snubber limits the slewrate,*
> >>>*preventing the turnon by excessive dV/dt.*
> >>>*The resistor provides damping of the turnoff efect. It also limits the*
> >>>*current when the triac fires at turnon:*
> >>> *I(pk) = Vmains(pk) / R*
> >>>*and this discussion is about how a 2W 47 Ohm resistor likes that hefty*
> >>>*spike...*
> >>>
> >>>*Regards,*
> >>>*Arie de Muynck*
> >
> >
> > *Ok got it.*
> >
> > *So, the spike like current in the resistor is a current that starts equal*
> > *to mains/R and then decreases very rapidly.*
> >
> > *Does the triac get turned on only at zero crossings in this application or*
> > *is it phase controlled? If it is turned on at zero crossings, there is a*
> > *reduced requirement on the resistor. In the phase controlled case, the*
> > *resistor can end up with 4 spikes of almost a big per cycle.*
> >
> > *47 Ohms is a lot of resistance to solve this way but at lower voltages, I*
> > *have made resistors to protect crowbar SCRs out just a length of hook up*
> > *wire folded back on its self. The accuracy of the value isn't good but*
> > *copper wire can take a huge spike with no trouble because the resistance*
> > *is spread over a large volume and it is very thermally conductive.*
> >
> >
> > *I have had a lot of trouble finding any resistor that has a good pulse*
> > *handling ability in surface mount. The ones I did find were very*
> > *expensive and not very available. They were from one of the Tyco*
> > *companies.*
> >
>
> *IRC (the company, I do Recall Correctly) make some great smt resistors.*
> *And have peak pulse power curves.*

Caddock does too:
http://www.caddock.com/Online_catalog/smt/smt.html

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John Popelish