TITLE: -- Crowbar Circuits
Ooopsies page

ISSUE: Sep '01

By Jim Weir

Humble Tinker, RST

About halfway through the article, somehow the reference designator for the SCR (Q101) became confused with one of the silicon diodes (D102). The changes in the paragraphs below reflect the erroneous callout and where ~~D102~~ is called out in error, it is stricken-through as this example shows.

Here are the paragraphs that have errors:

Here's the drill. The (-) input of the op-amp is held at a constant 5.1 volts by D101, the 5 volt regulator diode. Until the (+) input gets above 5.1 volts, the output of the op-amp will be zero, or within a few hundred millivolts of zero. The resistive voltage divider R101, 102, 103 are chosen (and adjusted) to set the voltage at the (+) input so that when the bus voltage gets to 16 volts, the (+) input goes to 5.10001 volts and bingo, the output swings all the way to the power supply voltage. This is more than enough to turn on ~~D102~~ Q101 (the SCR) which provides a hewmongous current path to the overvoltaged bus and blows the fuse (F101).

Now for a few refinements:

It is possible for the output of U101 to be a few hundred millivolts above ground in the "off" or low state. While this will *probably* not trigger ~~D102~~ Q101 on, I wanted the device to be totally stable with regard to temperature. D102 and D103 make a 1.2 volt drop so that ~~D102~~ Q101 will not trigger on until the output of U101 had gone past 1.2 volts.

I sincerely regret the errors.

Jim