

dsPIC/PIC programmer

In 2008, I built the dsPIC/PIC Programmer described in the May 2008 issue of SILICON CHIP. I have used it successfully several times since. I left out diode D2 as I could not see why it was necessary and there is no such diode in my other programmers.

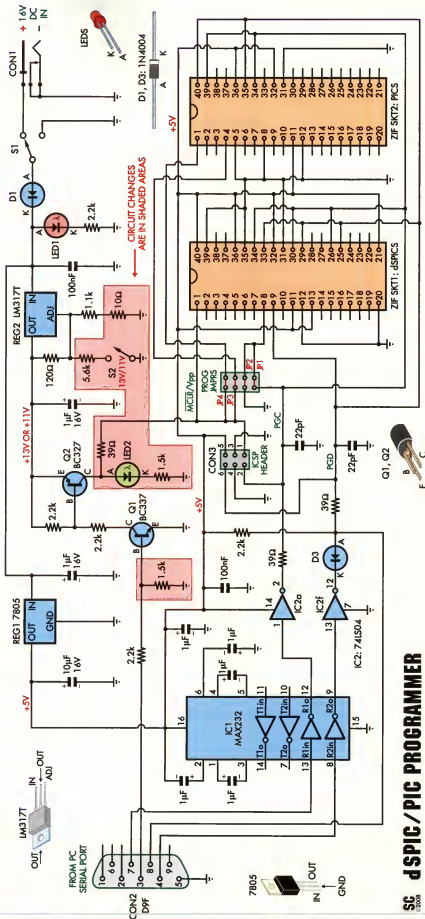
Recently, I decided to modify it to include LED2 to indicate when the Vpp programming voltage is applied and second, to provide a switch to change Vpp from 13V to 11V when programming a PIC such as the 16F684. The required programming voltage range for each type of chip is documented in the *Program Files (x86)\Microchip\MBLAB IDE\Device* folder (assuming you have MPLAB installed) – see, for example, PIC16F684.dev which states “vpp (range=10.000-12.000 dft=11.000)”.

When I switched the modified unit on, I noticed that LED2 came on for about two seconds. If I switched it off and then on after a short delay, LED2 did not light. But if I left it off for several minutes, LED2 would again flash at switch on.

I could not find any reason for this but I noticed that the voltage on the base of Q1 was about -11V due to the voltage coming from the PC via the RS-232 cable. The BC337 data sheet states that the maximum V_{EB} is 5V (ie, the base-emitter breakdown voltage is somewhat greater than -5V). So it appears that the transistor was damaged by the excess voltage. As a result, I replaced Q1 and added a 1.5k Ω resistor to reduce the applied base voltage.

The modifications are shown on the adjacent circuit. S2 is used to switch Vpp between 11V and 13V. Note the added 10 Ω resistor in series with the 1.1k Ω resistor. These changes can all be made quite easily on the existing PCB.

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dsPIC/PIC PROGRAMMER

SC 1000