

SMD IC Soldering Tips

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Monday, 07 August 2006
Last Updated Monday, 07 August 2006

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Disclaimer: this tutorial is meant to give you an idea of an easy way to do the initial positioning of an SMD IC for soldering, and how to recover from a solder bridge across a couple pins. Please don't pay too much attention to the rest of the soldering, this board was purely a prototype that was only used for a couple of tests, so getting it built up quickly was more important than 'perfect' solder joints. See the notes at the end for some tips for higher-quality SMD solder joints.

Tips: Solder the IC's first, before you put any other components on, so you have easier access to the leads. As you can see, I break my own rules a lot. Also, ALWAYS keep your soldering iron tip extremely clean and free of solder blobs, it makes a world of difference. Even cleaning it after every 2 or 3 pins is fine.

First step: Apply a small blob of solder to one of the IC pads on the board. This allows you to solder on the chip without needing three hands (chip, solder, iron).

Second step: using tweezers (or needle nose pliers, whatever) set the IC on the pads, and use the soldering iron to melt that solder bump, attaching the chip. By only soldering one pad to start with, you can get the chip attached so it won't slide around while you solder the rest of the pads, (without having to resort to wild things like glue or clamps) and it allows you to easily position the chip since you only have to melt one pad to tweak it.

Third step: Solder all the remaining pads. This is just something you'll get better at with experience, and not within the scope of this tutorial. But honestly, it's not that hard. What happens if you get *gasp* bridged pins??

Well then, you simply re-melt them and remove the excess solder with either desoldering braid, or a solder sucker. Either one is a cheap investment that will save your sanity when soldering surface-mount IC's. With finer pitch packages, like TSSOP, it's often easiest to just carelessly blob solder on all the pins, bridging them together as much as you want, and then suck all the excess solder off, which leaves only the solder directly under the pins.

Some Notes: If you do care about the quality of your solder joints, then I highly recommend the use of separate solder flux. Spread a small amount over all the pads with a toothpick before placing the IC, and it will melt and take a lot of crud off the copper when soldering. When you apply flux this way, you can apply a very tiny amount of solder and it will actively wick into the joint, leaving very nice, clean joints without much excess solder. If you do this, it is a very good idea to clean the board afterward with concentrated isopropyl alcohol and a toothbrush and/or cotton swabs, because the flux gets everywhere (much worse than with flux core solder alone) and can be somewhat conductive, causing problems with your circuit. I recommend 91% concentration isopropyl, which is available at most grocery/drug stores, as it evaporates much more quickly and thoroughly than the standard 70%.