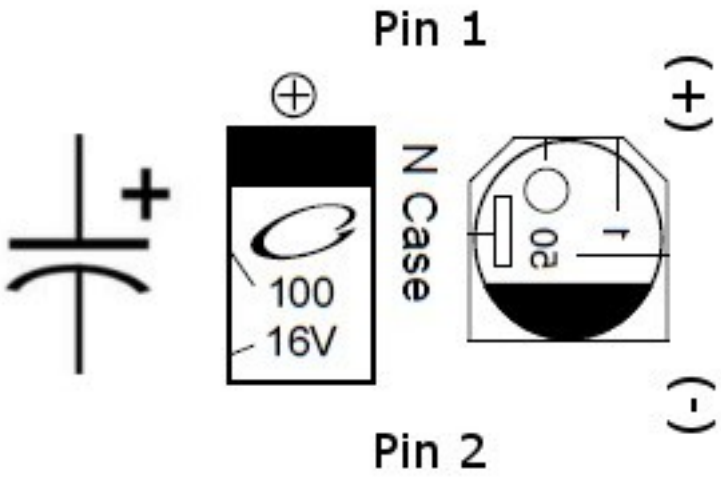
How NOT to mark a diode

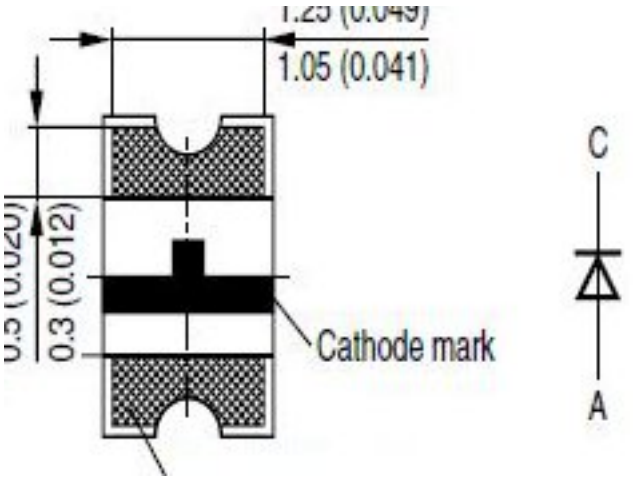
Screaming Circuits

A while back, I wrote about ambiguity in the markings on electrolytic capacitors. In doing that, I cobbled together a little image to illustrate how surface mount electrolytics are marked. Take a look at the image below:



Note how I have illustrations showing how tantalum and metal can electrolytic capacitors are marked. Further note, that I have the capacitor schematic symbol there too. Finally, note that all three are oriented in the same direction. I have the plus side up and the negative side down.

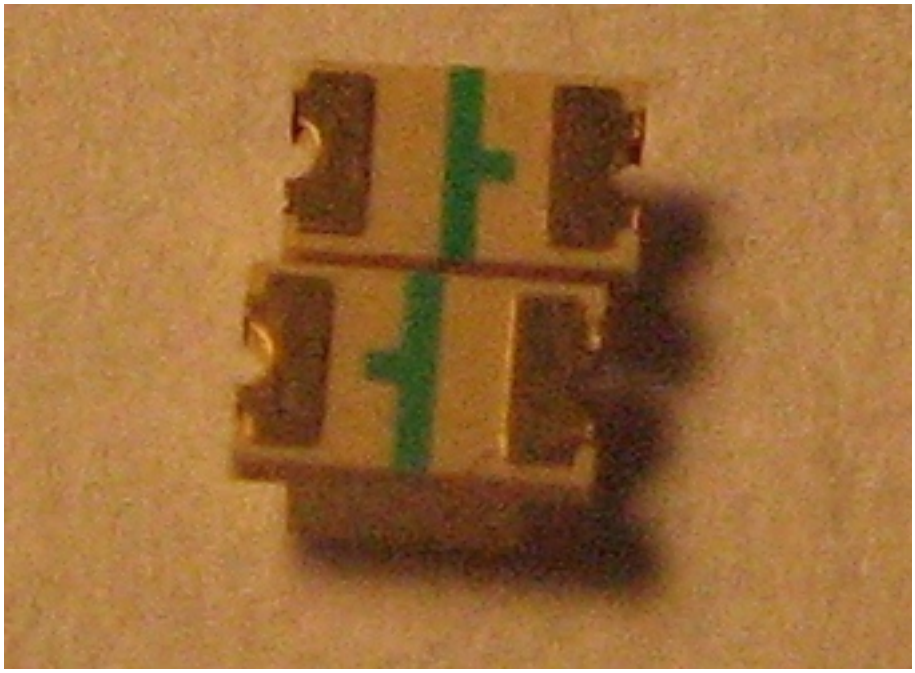
Now for comparison, look at the LED image below:



I did not alter this image in any way except to crop it. Look at it. Now look closely. Look at it again. The schematic symbol on the right has cathode up and anode down. The mark on the LED image could be interpreted either way. The bump could be seen as pointing toward the cathode, since it is the cathode mark. Or, The line could be on the side of the cathode. That would make sense because the line on the

schematic symbol represents the cathode.

Now here's one final thing to look at. I have two nearly but not quite identical 0805 SMT LEDs in the following photo. Wait for the punchline:



The punchline is that the cathode is on the left on both of these LEDs. I have empirically determined that to be the case, both by putting them on a board and by subjecting them to a diode checker. Punchline number two is that both are correct according to their respective datasheets. One of the LEDs is represented in the data sheet excerpt above. The other has a nearly identical datasheet with the same markings, except the mark is called an "anode mark" and the schematic symbol is reversed in orientation.

And, drum-roll please ... The third punchline is that both of these parts are from the same manufacturer!

If your board uses SMT LEDs, send the datasheet with your assembly order. Include it as a PDF in your files set. It would also behoove you to double check your CAD library footprint against your specific part number datasheet. IPC says the cathode is pin-one and pin-one zero degree orientation is with pin-one to the left.

Duane Benson

Forward, the LED pick and place
Was there a machine dismayed?
Not tho' the engineers knew
Someone had blundered
Cathodes to right of them
Cathodes to left of them
Cathodes behind them
And I cannot reason why

Source URL (retrieved on *07/24/2014 - 12:03am*):
http://www.ecnmag.com/blogs/2013/01/how-not-mark-diode?qt-recent_content=0