

# Maximum Ratings

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Hi, three (and a half) somewhat related questions:

1. Some LEDs have a maximum reverse voltage rating less than their normal forward voltage. If I want to work out which lead of the LED is the cathode (assuming the length of the lead doesn't help, e.g. it has been cut when wired up), is there a risk of destroying the LED when testing? I normally measure semiconductor junction breakdown voltages with a (pulsed/ramped) very low current source, but that will show similar voltages no matter which way around the light emitting diode is, surely. If I increase the current to be enough to see light, am I risking damage if the diode happens to be reversed during the test?
2. This raises the question of reverse breakdown currents in general: how much reverse current do semiconductor junctions generally stand? Is it based on total power dissipation? Is it about the same (assuming pulsed) as the forward current limit?? Normally, data sheets only refer to pretty low leakage currents while specifying breakdown/"sustaining" voltages, and that is appropriate for most people because once you go past the onset of breakdown you normally (without current limited circuits) get heaps of current soon afterwards. But if the reverse current occurs at a lowish voltage, e.g. the LED mentioned above, or a base-emitter junction that is reverse-biased, \*and the current is limited\* so we don't have to worry about thermal runaway, what sort of current can you use in the test without damage? Should a light emitting diode that can stand 30mA forward current be able to stand at least 3mA of reverse current? Would a small signal transistor's base-emitter junction be able to stand 1mA in the reverse direction? The latter is an important problem for me: if I have a simple transistor tester and I accidentally get the pinout or polarity wrong, what current limiting is "safe" enough for most (all??) transistors... if it exceeds the base-emitter reverse voltage rating (and some are only 3volts) how limited does the current have to be?
3. Which leads to the question: how high can the FORWARD base current be in general? Some transistor spec sheets don't mention the limit; some give something like half the collector current rating, and a small number give currents like 1mA (i.e. less than a tenth the maximum collector current). Again, thinking about simple transistor testers where the base might accidentally be connected to where the collector should go, and get more than 1mA, how likely is that to kill some transistors? Is there a non-destructive way to tell what current an unknown diode can take? Is there are pattern to the base current limitation (e.g. a given fraction of the collector current for particular types of transistors? Or the current wh