

Re: Parasitic charge current into lithium coin cell

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Our product uses a CR2032 lithium coin cell as a CMOS battery for an embedded PC. The cell is OR'ed with a 3.3V supply which becomes available when the product is powered on, the intention was to extend the cell life. I think desktop PCs do a similar thing using the standby power.

However the diodes we are using have a reverse leakage of a few microamps at room temp, rising to a few tens of microamps when hot. This means the cell could see a 'trickle-charge' current of say 30uA under worst-case conditions.

Suggestion: see "Troubleshooting Analog Circuits" by Bob Pease, page 66.

Pease suggests using a transistor's collector-base junction, instead of a discrete diode, if you want low leakage... avoid transistors using a gold-doped architecture as these are leakier. "You can easily find such 'diodes' that have less than 1 pA leakage even at 7V."

Such CE diodes are quite slow (compared to fast switching diodes) but that would be irrelevant in your application.

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