Re: Ultra low temperature microcontroller ?

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Everett M. Greene wrote:

> A little more seriously, can anyone give a simple explanation as to why low temperatures are a problem for solid−state electronics? Do the eletrons freeze?

Exactly. I am trying to explain it without going into details; it is actually lot more complicated.

The behavior of a semiconductor material depends on how many charge carriers can jump across the energy gap from valent to conduction zone. The average energy of the charge carriers depends on the temperature. So, at low temperatures the semiconductor material behaves like a dielectric, and at high temperatures it behaves like a metal. A semiconductor acts as a semiconductor only within a range of temperatures.

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