10/17/23

Griffin Rzonca

ECE 445

Meeting with Jason

* Component vs design spec
* Spec = has to stay below a temp is fine, you have to design that
* Want to avoid trivial verification
* Make it about the whole module, not the transistors specifically
* We don’t design the voltage across the transistors, we do design the subsystem
* If it sounds like a pain to measure and/or doesn’t matter, exclude it
* Should not omit a requirement that is clearly necessary for it to work
* Thermal = very reasonable requirement, can it work continuously?
* Can set the turn-on time to a certain quantity
* Change to rise/fall time of switching node
* REFERENCE a standard for the safety - IEEE, arc flash hazard, fire safety,
  + “According to this standard, we don’t have an arc flash, so we don’t need a suit
  + “According to this std, we do have above 40V so we do need gloves
* HL - make musical notes numerical - play notes from 110Hz - 2kHz or so
* Emphasize that tolerance circuit is meant to remove recirculating current
* Make it clear that there are TWO different resonant frequencies and that we chose the second one because it has different behavior
* Check the term “recirculating current” - may not be accurate
* Explain why we’re designing it this way
* Focus less on operation, focus more on why we are doing this
* Here’s how it works, poles, gain, etc, now show why things are the way they are
* Include max current, voltage rating of the different parts
* Discuss sensitivity of the pole locations
* Can simulate secondary coil sparks by doing an LC into a full bridge rectifier with a cap filter and R, creates spikes of current going into the bridge, which could simulate AC sparks
  + Or better yet, can do a cap in parallel with a Diac in parallel w two R’s that control the turn on
  + Diac has a turn on curve that grows, then shoots down, good simulation of air

Biggest questions Jason had on tolerance analysis:

* How do two poles work, which one and why are you designing it this way?
* What are the sensitivities of these?
* What numbers do the Voltage and Currents reach? Make a table maybe
* Talk about bounding component values, not just how it works