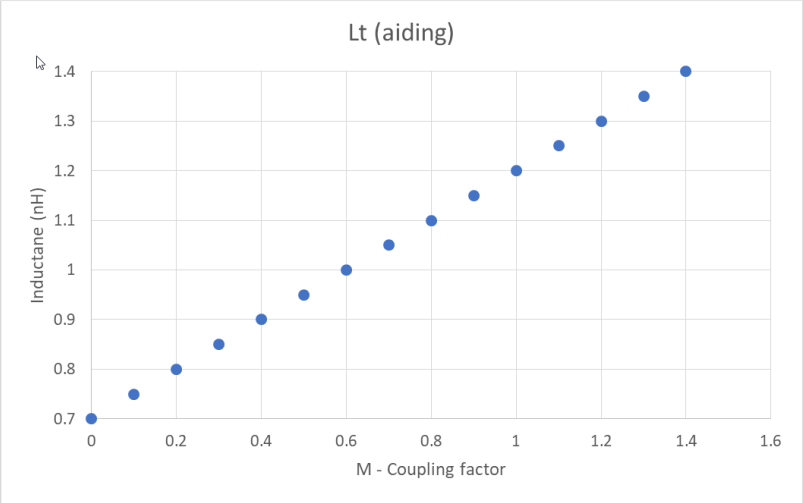
Designing Buck Converter without Bucking the FCC Q & A

Question / Comment	Answer / Response
When a switcher IC has a range of switching frequencies, how do you decide which frequency to choose?	Most people decide that based on the inductor size they want to use and what efficiency they need.
If your design had spacing constraints, which component would be the best to put on the opposite side of the PCB?	We'd seriously discourage this approach. But if you absolutely had to, pick a convertor that had all high current loops outside the controlling IC. If you did that, then you could put all of the high current devices on one side and the controller and feedback on the other side. Just make sure the Vin and Vout are on the same side as the high current loop devices.
Have you heard about parallel caps sometimes having resonances that actually hurt you?	Yes. For our discussion we discussed paralleling identical capacitors. If the SRF is not at exactly the same frequency due to part tolerance, there can be an anti-resonance spike. The more likely case is that the two capacitors are different values and there is interaction between their ESL (effective series inductance). Also, the location of the anti-resonant spike depends on the ratio of the ESL of the decoupling capacitors. Good reading: "Decoupling_capacitors_for_multi-voltage_power_distribution_systems.pdf"
My question was why you need two vias for that low current ground point; please revisit the question than you.	The vias are used by the control circuit. Having two vias gives redundancy just in case there is a build issue. Halving the resistance and ESL, makes for less ground bounce.
What is the ideal spacing for parallel (mutual) vias?	The short answer is that there is not an easy answer. There are many factors that go into the solution set. The only way to truly find out is through EM simulations.

Any rule of thumb of how close do vias have to get before their inductance increases?	You can see that even with a very small M, the impact starts. The real question I think you are after is how close they have to be before M changes. That is dependent on the coupling coefficient (k) since M = k * SQRT (L1 * L2). That coefficient is controlled by many factors and is not easy to predict without EM simulation and is mostly due to variations in the distance between the vias, relative angle between the vias (however we assume they are parallel), and magnetic properties of the material surrounding the vias. 
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