9/21/23

Tesla Coil Tests and Info:

* 15V input made maybe 2mm sparks
* Roughly 1:1000 turn ratio
* 15V 5A into FET box
* 180kHz
* Perhaps FET over igbt since we don’t need crazy high voltage
* Compare resistance of various FETs, find minimal power dissipation
* Coil roughly 56 Ohms
* Inductor roughly 17.8mH
* High current medium-low voltage may be better than high voltage low current
* Coil current was around 50A, same as transistor current
* Find caps connected directly to primary winding 40kHz to 1MHz
* Need to rate them over 1kW, and only 1uF or so
* High V, want low ESR
* Usually ESR is on the order of mili Ohms
* Gate drivers - especially built for the FET we want
* How fast can we drive MOSFETs? Datasheet says 10’s of ns, that’s over 10MHz but may not be possible, how can we find max switching time?

[IRFZ44N MOSFET Pinout, Features, Equivalents & Datasheet (components101.com)](https://components101.com/mosfets/irfz44n-datasheet-pinout-features) Id,peak at 160A, Max Vdx 55V, only $0.98 per FET

* Consider putting 2 FETs in parallel if we want higher current dissipation
* Max Pulsed Id = Roughly 4\* Max Continuous Id