

STEAP from start to running.

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ABCB sequencer to gates “with a **fixed** duty cycle to the gates”, shorter the better, 12.5% is good.

From cold start:- C1 and C2 have a precharge voltage.

A fet ON, drain negative, A core negative, current pulled from C2 via CMC through a1c1 “parallel” & a2 series.

A fet OFF, B fet ON, A drain positive, A core positive, B drain negative, current pulled from C1 via CMC direct, B core negative. The core capacitance AB receives charge.

B fet OFF, C fet ON, B fet drain positive, C3 capacitor charges, “B core remains negative”, A core – a2 remain positive, C fet drain – a2 coil negative.

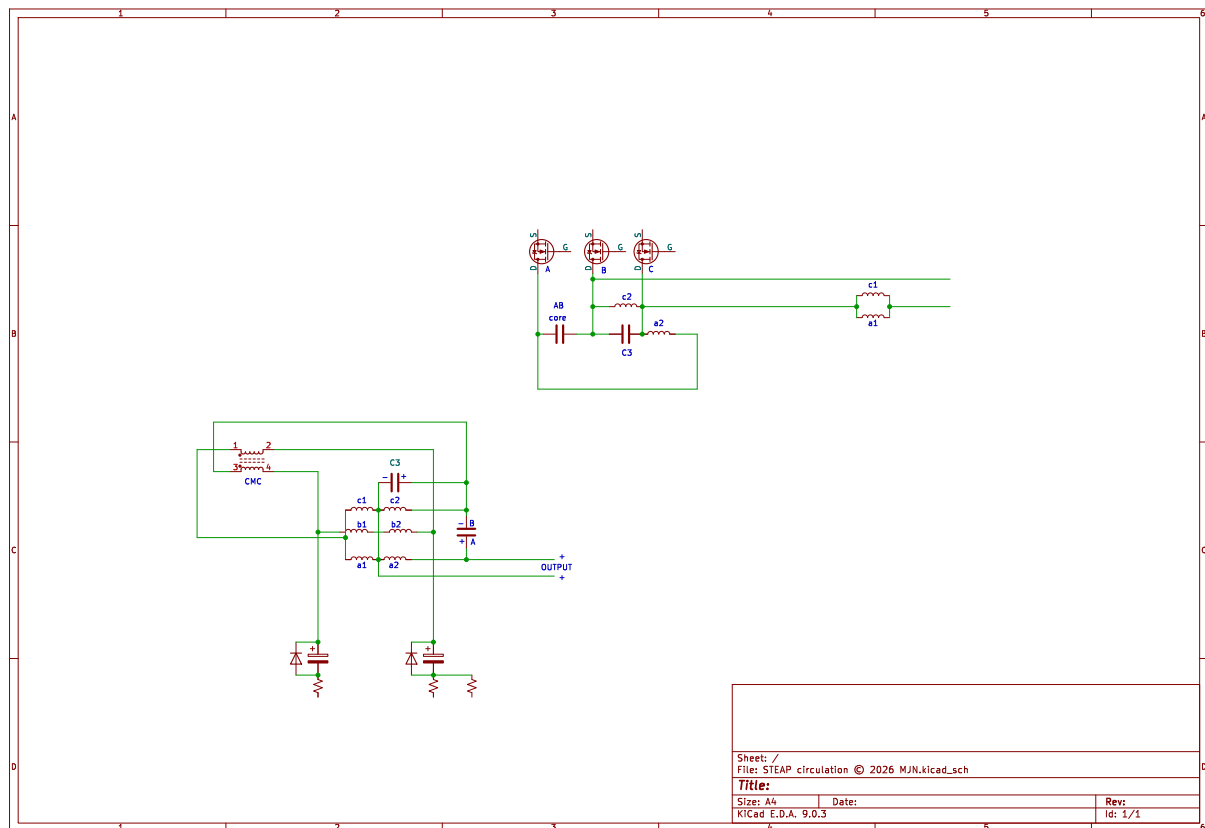
C fet OFF, B fet ON, C3 changes polarity, C fet drain- a2 coil go positive while the other end of a2 (A core) is “still positive” but with a different voltage on the A core plate. B fet drain is negative, so is the B core plate which was negative before the B fet came ON the second time within the sequence.

B fet goes OFF and the drain goes positive, **C3 is now positive at both ends!!!!!!** A fet switches ON and the drain goes negative or DOES IT. **HAVE YOU REALISED YET WHAT IS HAPPENING, follow the polarities and current flow, look at what happens to the polarities of each coil of the CMC.** STEAP runs with NO load and does not “run away”, place a resistive load on the output and it goes into top gear to supply all the current that resistance wants, unless the internal circuit can not handle the current.

During all this time the “b” coils are changing polarity every time a mosfet switches, they alternate the current direction. The “b” coils are capacitively and inductively connected to the “CORE”, both the plates. The induction creates the core magnetic field, without it this does not work. Two large shorted loops with high current circulating in opposite directions.

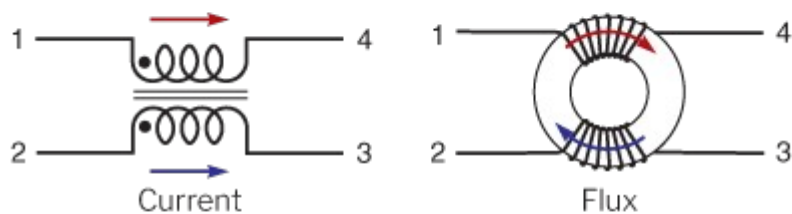
The output is across the a2 coil, either end is positive, a differential positive. The a1 and c1 coils are in parallel for a reason, **lower inductive resistance to and from the CMC in relation to a single coil.** Current will pass through a route of least resistance, so look carefully for example, when the A, B and C fets turn ON and OFF **SO FAST.**

It may be seen to be complicated, but really it is not, and it is not exotic in the way that it works once you realise how it works, just follow the switching ABCB and where the current goes, it is fast.



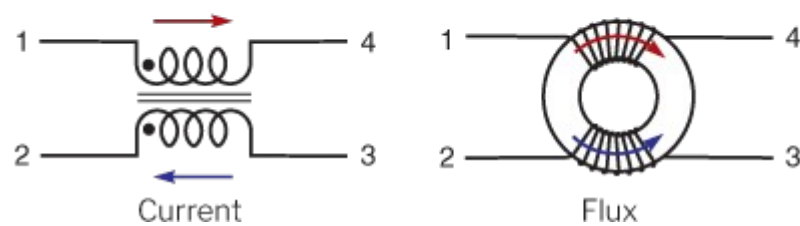
Common mode

Flux adds to impede common-mode current



Differential mode

Flux cancels to pass differential-mode current



It is important to understand how a CMC works in both modes, STEAP uses both automatically, it is very important to how this all works.

One of the most important things is the mosfet gate switching, they are constantly switching in sequence, no gaps, but the mosfet conduction is another thing. The mosfet SOURCE is not the same as the circuit ground, there is a 10ohm resistor which dictates this, therefore ALL the mosfets are floating. There is also a reverse diode across the C1 and C2 electrolytic capacitors connected to either end of the “b” coils. That reverse diode is important when the “b” coil (b1b2) change polarity end to end because the mosfets can pass “current” from drain to source because of the internal diode, even when OFF.