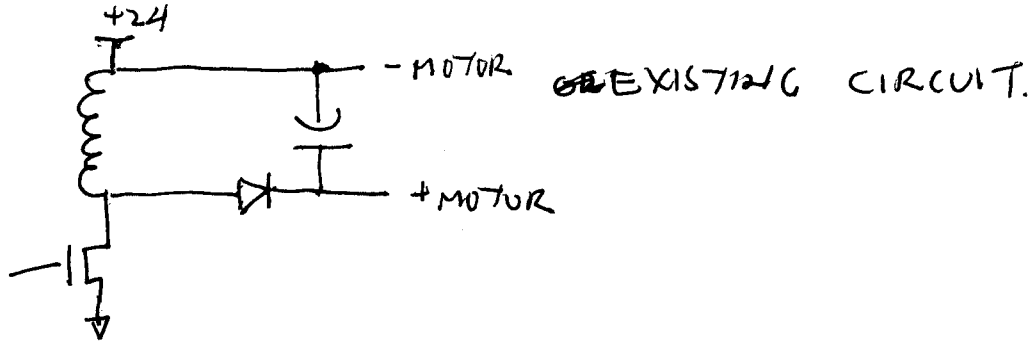


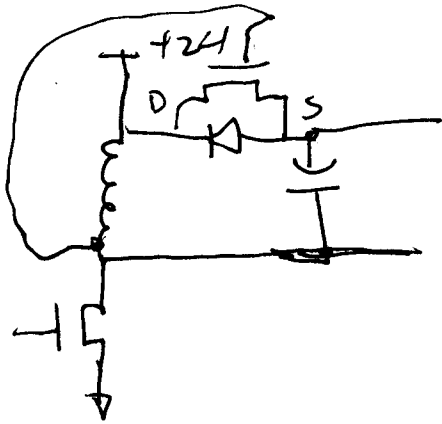
FLIGHT OF FANCY! ACTIVE RECTIFICATION.

PTC COULD BURST 10 WATTS IN THE MAIN RECTIFIER, UNDER HEAVY LOAD. I'M ABLE TO DISSIPATE THAT THERMALLY, BUT IT WOULD BE GREAT NOT TO HAVE TO.



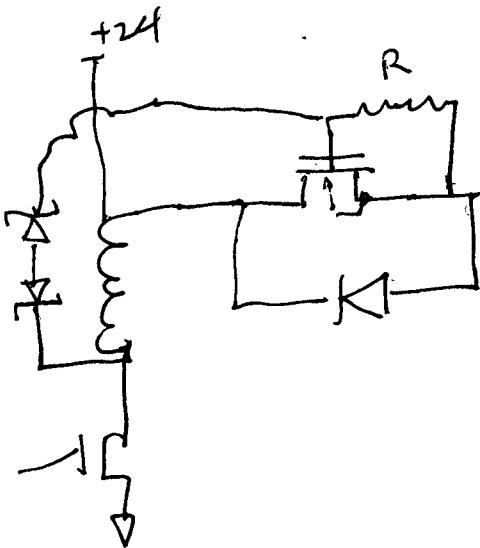
EXISTING CIRCUIT.

WANT TO USE N-MOS ACTIVE RECTIFIER, MORE DIODE



IF COULD FIND A MOSFET THAT WILL TOLERATE  $\pm 30V$ , ( $\pm 40V$  BETTER) ON GATE-SOURCE, DONE.

OR MAYBE COULD GET ONE OF THOSE MOSFETS W/ EMBEDDED SCHOTTKY.



PROBLEM: BATTERY CAN DISCHARGE THROUGH INDUCTOR WHEN CURRENT FLOW REVERSES. BATTERY KEEPS MOSFET ON

09SEP13  
Roderick.

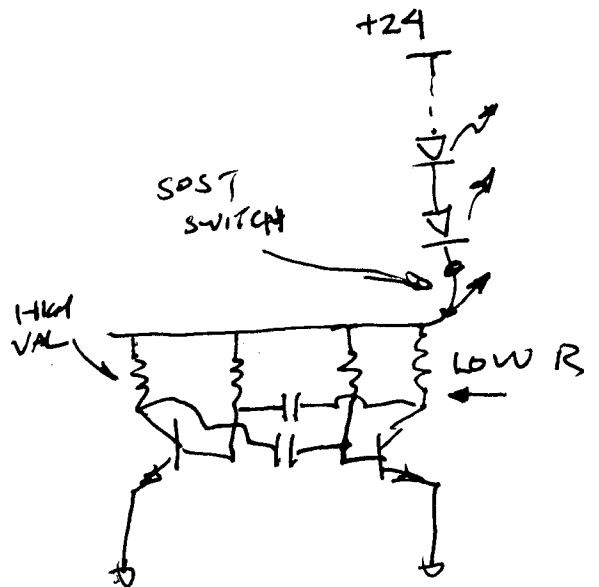
FOR TAIL LIGHT FLASHER, IS DUAL POWER SUPPLY  
REALLY NECESSARY?

ORIGINAL THOUGHT WAS, MIGHT WANT TO RUN  
FLASHER AT NIGHT, SO CAN MUST RUN OFF BATTERIES,  
BUT ALSO, MIGHT ~~RUN OFF~~ WANT TO RIDE WITHOUT  
BATTERY, OR BATTERY COULD FAIL, MEANING SHOULD  
RUN OFF SOLAR

	BATTERY	NO BAT
☀ SUN	POWER SOLAR	POWER SOLAR
NO SUN (NIGHT)	POWER BATTERY	SHOULDN'T BE RIDING

INSTEAD:

	BAT	NO BAT
SUN	BAT	CAPACITOR CHARGED BY SOLAR
NO SUN	BAT	SHOULDN'T RIDE



19 SEP 2013

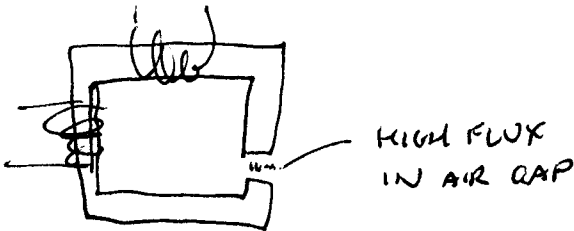
Roderick

# NOTES FROM "DEMYSTIFYING SWITCHING POWER SUPPLIES"

BY RAYMOND A. MACK, JR.

FLYBACK TRANSFORMER HAS AIR GAP - MAGNETIC FLUX IS STORED IN AIR GAP. EFFICIENT CORES DO NOT STORE MAGNETIC ENERGY WELL - SATURATE AT LOW MAGNETIZING FORCE.

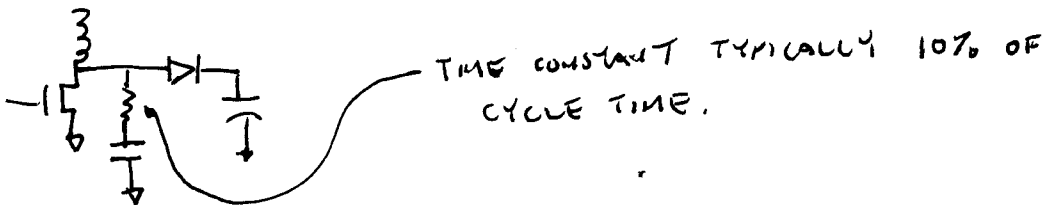
ONE WINDING'S VOLTAGE SERVES AS PROXY FOR ALL OTHER WINDINGS, AS THE WINDING WITH LOWEST  $V/N$  (VOLTAGE / TURNS) RATIO WILL HOG ALL THE CURRENT UNTIL THINGS EVEN UP.



POWDERED IRON FERRITES HAVE INTRINSIC AIR GAP BETWEEN INSULATED PARTICLES.

PCB LAYOUT - PUT HIGH CURRENT PATHS AWAY FROM SENSITIVE ELEMENTS, AND MINIMIZE LOOP AREA. SWITCH COMPONENTS AND CAPACITORS CLOSE TO EACH OTHER. BYPASS CAP NEAR TO SWITCH DRIVER. CERAMIC CAPS HAVE LOW ESR COMPARED TO ELECTROLYTIC, USE WIDE TRACES TO REDUCE PARASITIC INDUCTANCE.

SNUGGER TO PREVENT VOLTAGE SPIKE WHILE DIODE TURNS ON;



EDUCATED GUESS AT DRIVING POWER FOR MOSFET IS TWICE DRIVING IC POWER, PLUS A LITTLE MORE. IC DISSIPATION = 30 MW, SO WITH 70 MW FOR SWITCH,

SWITCH DRIVE CURRENT =  $CATE \text{ CHARGE} \times \text{FREQ.}$  DRIVE POWER = DRIVE VOLTAGE  $\times$  THIS CURRENT.