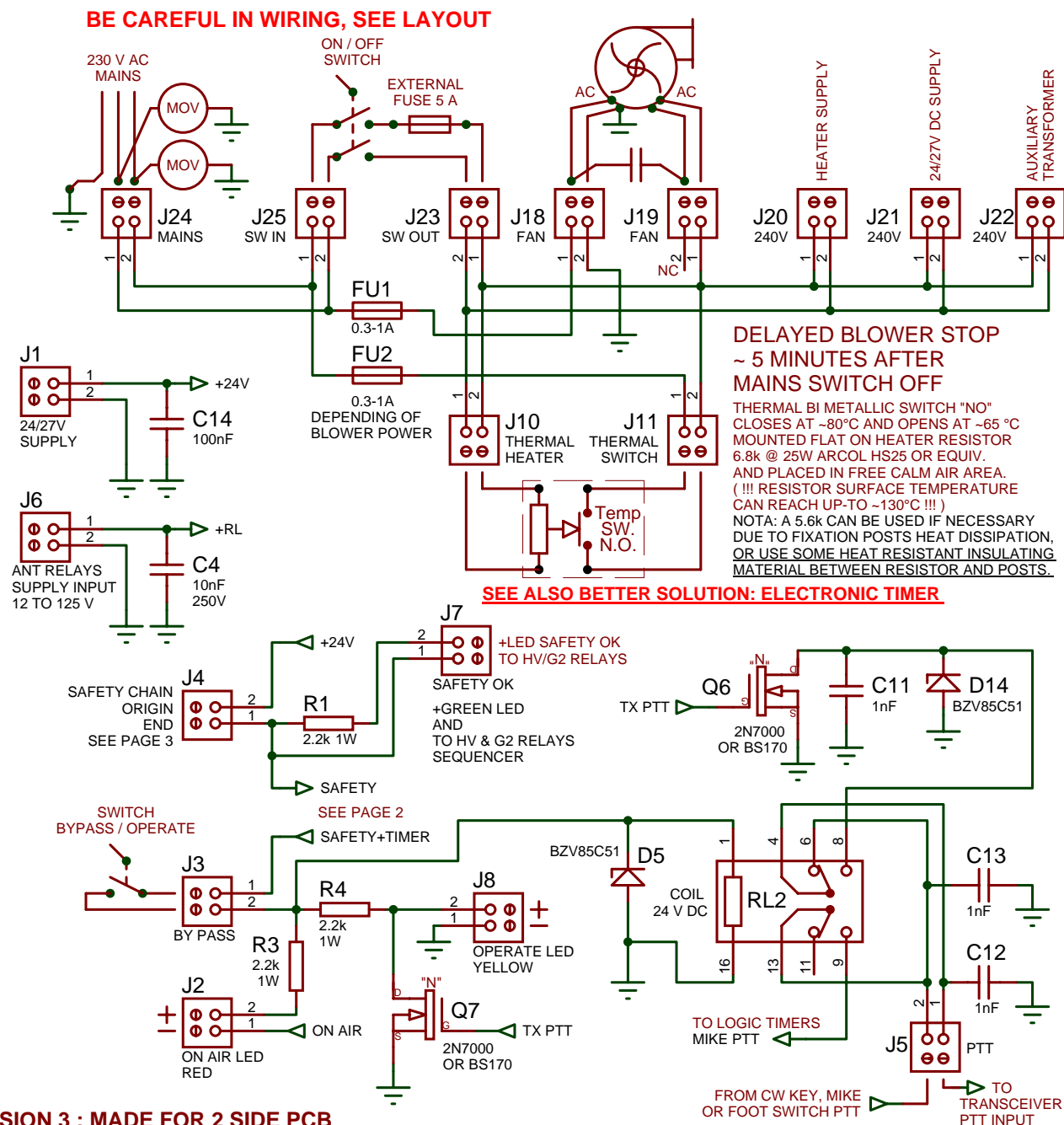


NOTA: BS170 ARE BETTER THAN 2N7000

REVISION 2: REPLACEMENT OF ALL RELAYS FORMERLY "S" RELAYS BY LESS EXPANSIVE AND MORE EASY TO FIND STANDARD RELAYS



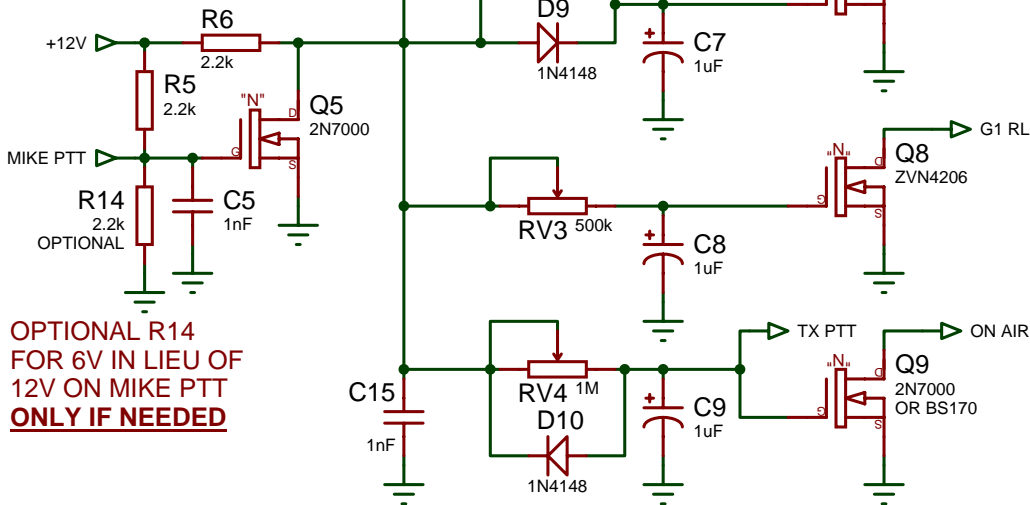
REVISION 3 : MADE FOR 2 SIDE PCB

TRIODE OR TETRODE AMP DESIGN
230VAC SUPPLY, BLOWER & RELAYS

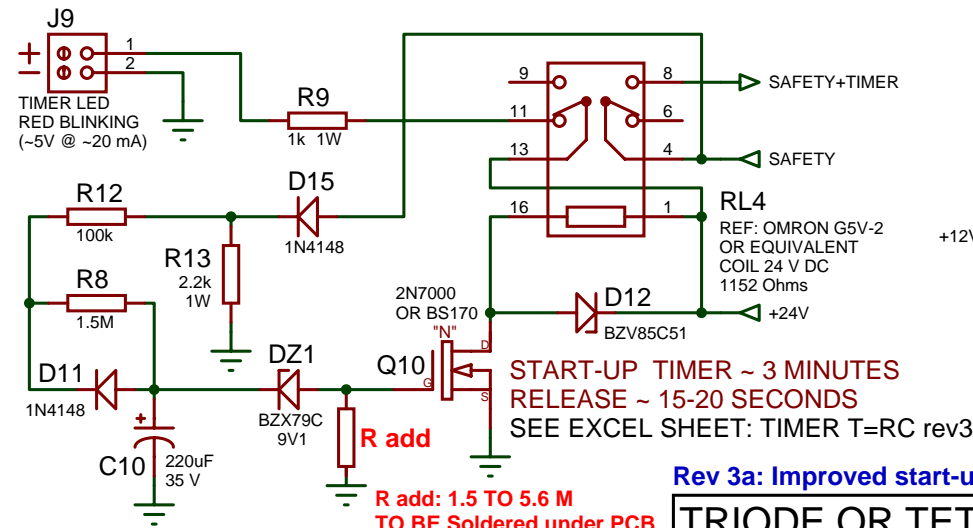
DATE:17/05/14 REV: 3a PAGE: 1/3
BY: F1FRV@SFR.FR
DOC N°: AMATEUR RADIO

BY EXPERIMENT:
FOR CORRECT SEQUENCES
RV1 TO RV4 SHALL BE SET AT
~~ SAME ANGULAR POSITION

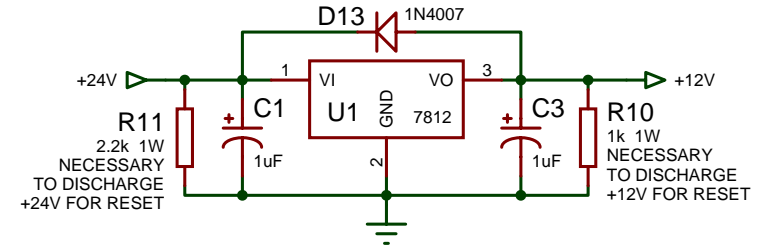
SEE EXCEL CALC. SHEET
TIMER T=RC .XLT
TO ADAPT TO YOUR NEEDS



OPTIONAL R14
FOR 6V IN LIEU OF
12V ON MIKE PTT
ONLY IF NEEDED



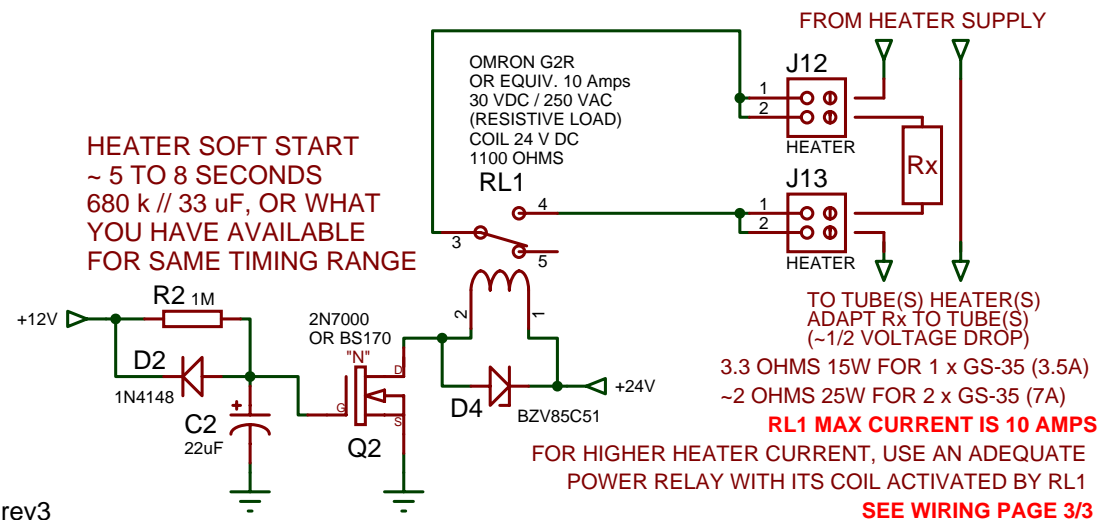
TO INCREASE TIME, IF NECESSARY, INCREASE C10 OR R8 VALUE
TO DECREASE TIME, IF NECESSARY, DECREASE C10 OR R8 VALUE



2N7000, OR BETTER BS170, OR EQUIVALENT
"N" MOSFET, P > 0.3W, ID MAX > 200mA, VDS > 60V
RDS(ON) < 5 OHMS @ VGS10V & ID 20 mA @ 24V
FOR DRAIN CURRENT 35 mA @ 24 V, USE BS170
FOR DRAIN CURRENT 35-100 mA @ 24 V, USE ZVN4206

IRF630: OR EQUIVALENT
"N" MOSFET, P > 60W, ID MAX > 4A, VDS > 150V
RDS(ON) < 3 OHMS @ VGS10V & ID 2A

**NEW IN REV 2 f : STARTUP TIMER ~ 3 MINUTES WILL REMAIN
ACTIVE ~ 15 SECONDS, TO AVOID HAVING TO WAIT TOO LONG
IN CASE OF HOT AMPLIFIER SWITCH OFF FOR A SHORT TIME .
EG. IN CASE OF HV SUPPLY TEMPORARY SURGE EXCESS & TRIP.
(OFTEN IF USING BAD REGULATION BRUSHLESS TOO LOW POWER
GENERATORS DURING PORTABLE OPERATION CONTESTS)**

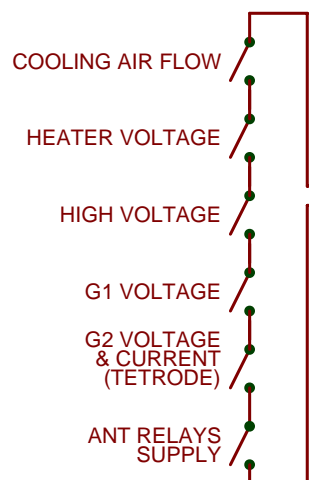


Rev 3a: Improved start-up and heater soft start timings, and modified some MOSFETS references

TRIODE OR TETRODE AMP DESIGN
PTT LOGIC & START-UP TIMERS

DATE:05/05/14 REV: 3a PAGE: 2/3
BY: F1FRV@SFR.FR
DOC N°: AMATEUR RADIO

SAFETY CHAIN

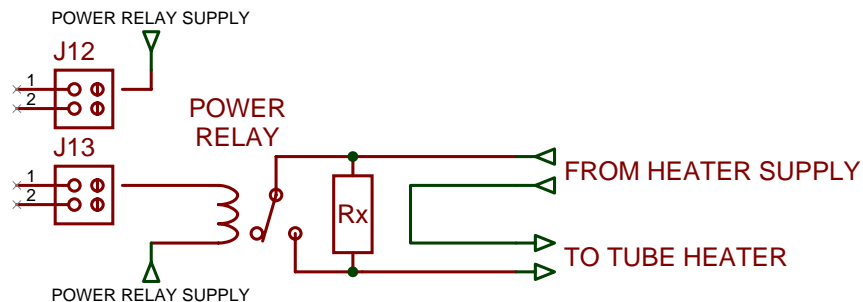


SAFETY CONTACTS
NORMALLY OPEN, CLOSED WHEN OK
YOU CAN ADD OR REMOVE
ALL SAFETIES YOU WANT OR
DONT WANT IN THIS CHAIN ...
(REMOVE AT YOUR OWN RISK)

**FOR TRIODES
MINIMUM SAFETY
IN SAFETY CHAIN
IS ONLY TRIP ON
EXCESS OF GRID CURRENT**

NOTA: IF YOUR TX HAS AN INTERNAL TEMPO (~25 ms) ON AMP OUTPUT CONNECTOR, YOU CAN USE YOUR TX AS USUAL, AND NOT USE THE AMP SEQUENCER. IN THIS CASE, ONLY CONNECT YOUR TX AMP RELAY OUTPUT TO THE PTT INPUT OF THE LOGIC BOARD (J5-2). IN THIS CASE, YOU CAN SET TRIMERS RV1 TO RV4 AT ~1/3

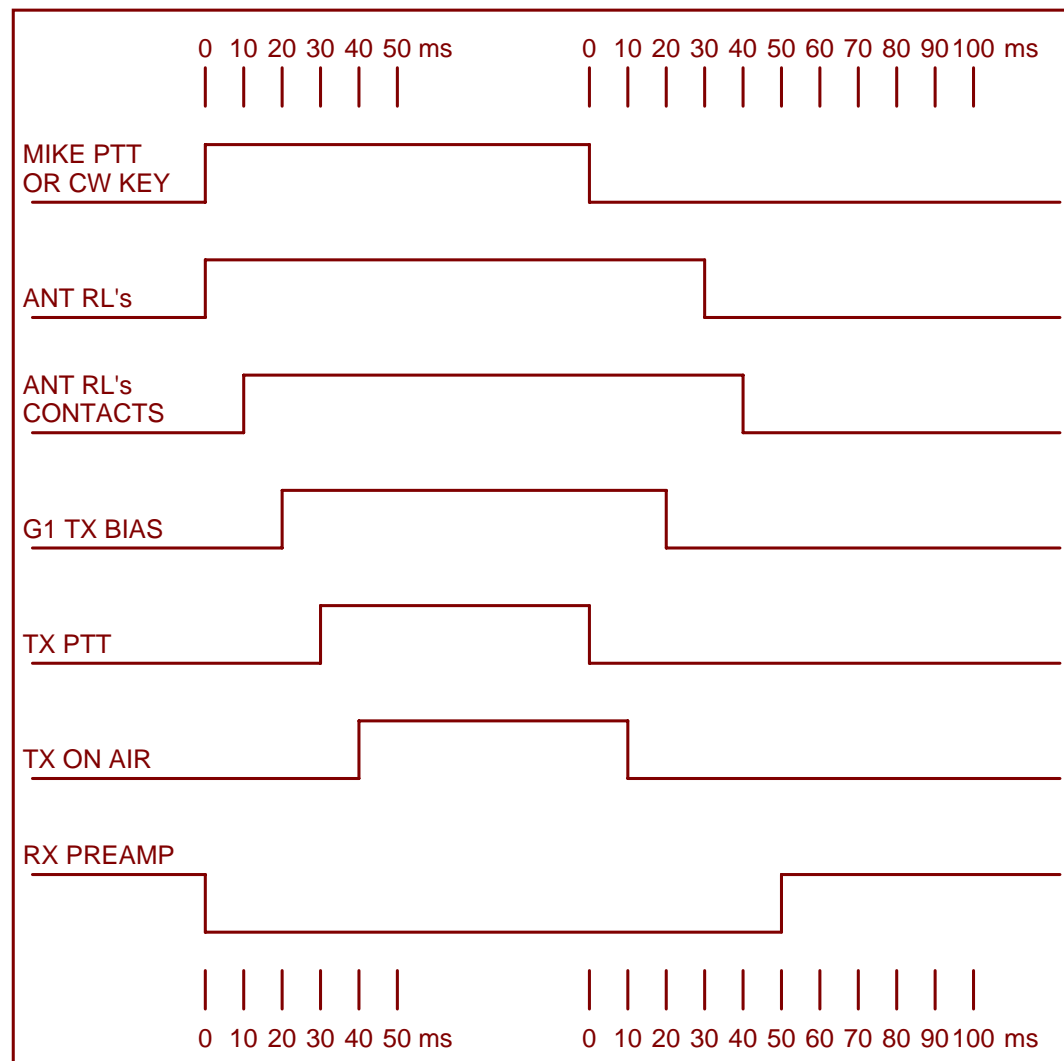
EXTERNAL POWER RELAY WIRING FOR HEATER CURRENT > 10 A



ADAPT Rx TO TUBE(S), ~1/2 VOLTAGE DROP
Eg. For 1 x 4CX1500A (40 A @ 5 V) Rx = ~0.125 OHM 50 W
R"X" CAN BE 4 x 0.5 OHMS 10 W in //

SEE SPECIFIC FRONT PLATES WITH LEDS 1 FOR TRIODES, 1 FOR TETRODES

FOR ANTENNA RELAYS:
BEFORE SELECTING VACUUM RELAYS, CHECK MANUFACTURER DATA
FOR LIFE EXPECTANCY (OFTEN ONLY 100 000 CYCLES !!!!)



TRIODE OR TETRODE AMP DESIGN PTT & SAFETY LOGIC DIAGRAMS

DATE: 06/05/14 REV: 3a PAGE: 3/3
BY: F1FRV@SFR.FR
DOC N°: AMATEUR RADIO

TRIODE OR TETRODE LINEAR AMPLIFIER DESIGN LOGIC BOARD WITH LOW COST RELAYS

DATE: 11/2013 REV: 3
BY: F1FRV@SFR.FR
DOC N°: AMATEUR RADIO

PCB DIMENSIONS: 100x160 mm

ALL THESE TYPES OF VARIABLE
RESISTORS CAN BE USED

