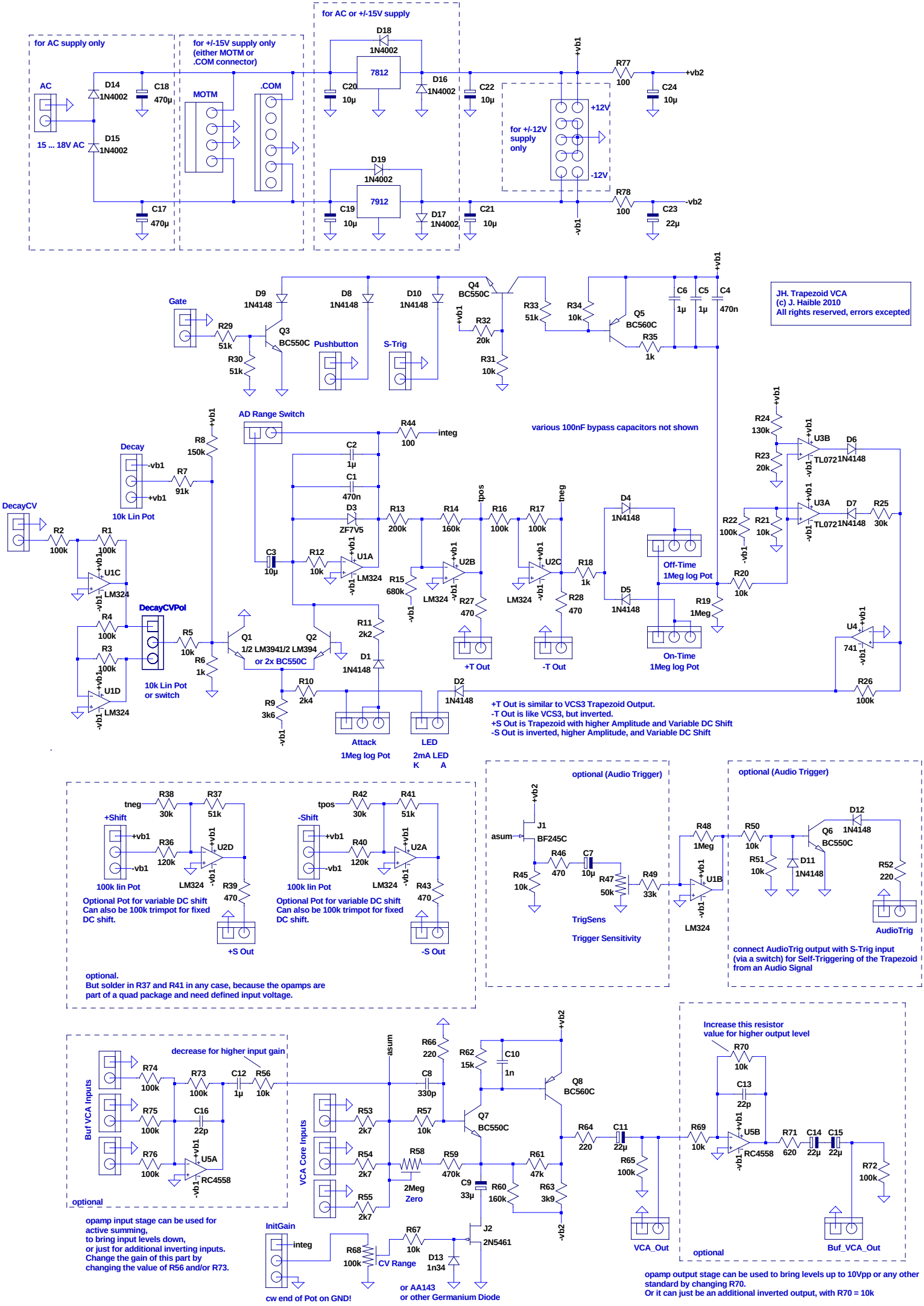
for AC supply only
for +/-15V supply only (either MOTM or .COM connector)
for AC or +/-15V supply
AC
15 ... 18V AC
D14 1N4002
D15 1N4002
C18 470µ
C17 470µ
MOTM
.COM
D18 1N4002
7812
C20 10µ
D16 1N4002
D19 1N4002
7912
C19 10µ
D17 1N4002
C22 10µ
C21 10µ
+vb1
-vb1
R77 100
R78 100
+vb2
-vb2
C24 10µ
C23 22µ
for +/-12V supply only
+12V
-12V
JH. Trapezoid VCA
(c) J. Haible 2010
All rights reserved, errors excepted
Gate
D9 1N4148
D8 1N4148
D10 1N4148
Q4 BC550C
R29 51k
R30 51k
Q3 BC550C
Pushbutton
S-Trig
R32 20k
R31 10k
R33 51k
R34 10k
Q5 BC560C
R35 1k
C6 1µ
C5 1µ
C4 470n
various 100nF bypass capacitors not shown
AD Range Switch
R44 100
integ
Decay
R8 150k
R7 91k
10k Lin Pot
DecayCV
R2 100k
R1 100k
U1C
LM324
R4 100k
R3 100k
U1D
DecayCVPol
R5 10k
R6 1k
10k Lin Pot or switch
Q1
Q2
1/2 LM3941/2 LM394 or 2x BC550C
C2 1µ
C1 470n
D3 ZF7V5
C3 10µ
R12 10k
U1A
R13 200k
R14 160k
R15 680k
U2B
tpos
R16 100k
R17 100k
tneg
U2C
R18 1k
R27 470
R28 470
+T Out
-T Out
D4 1N4148
D5 1N4148
Off-Time 1Meg log Pot
On-Time 1Meg log Pot
R19 1Meg
R20 10k
R22 100k
R21 10k
R24 130k
R23 20k
U3B
TL072
D6 1N4148
U3A
D7 1N4148
R25 30k
U4
741
R26 100k
R11 2k2
D1 1N4148
R10 2k4
R9 3k6
D2 1N4148
Attack
1Meg log Pot
LED
2mA LED
K A
+T Out is similar to VCS3 Trapezoid Output.
-T Out is like VCS3, but inverted.
+S Out is Trapezoid with higher Amplitude and Variable DC Shift
-S Out is inverted, higher Amplitude, and Variable DC Shift
+Shift
tneg
R38 30k
R37 51k
R36 120k
U2D
100k lin Pot
R39 470
+S Out
Optional Pot for variable DC shift
Can also be 100k trimpot for fixed DC shift.
-Shift
tpos
R42 30k
R41 51k
R40 120k
U2A
R43 470
-S Out
optional.
But solder in R37 and R41 in any case, because the opamps are part of a quad package and need defined input voltage.
optional (Audio Trigger)
+vb2
J1 BF245C
asum
R46 470
C7 10µ
R45 10k
R47 50k
R49 33k
TrigSens
Trigger Sensitivity
R48 1Meg
U1B
LM324
optional (Audio Trigger)
R50 10k
R51 10k
D12 1N4148
Q6 BC550C
D11 1N4148
R52 220
AudioTrig
connect AudioTrig output with S-Trig input (via a switch) for Self-Triggering of the Trapezoid from an Audio Signal
Buf VCA Inputs
R74 100k
R75 100k
R76 100k
decrease for higher input gain
R73 100k
C12 1µ
R56 10k
C16 22p
U5A
RC4558
optional
opamp input stage can be used for active summing, to bring input levels down, or just for additional inverting inputs. Change the gain of this part by changing the value of R56 and/or R73.
VCA Core Inputs
R53 2k7
R54 2k7
R55 2k7
R66 220
C8 330p
R57 10k
R58 2Meg Zero
R59 470k
C9 33µ
R60 160k
R62 15k
C10 1n
Q7 BC550C
Q8 BC560C
R61 47k
R63 3k9
R64 220
C11 22µ
R65 100k
VCA_Out
Increase this resistor value for higher output level
R70 10k
C13 22p
R69 10k
U5B
RC4558
R71 620
C14 22µ
C15 22µ
R72 100k
Buf_VCA_Out
optional
opamp output stage can be used to bring levels up to 10Vpp or any other standard by changing R70.
Or it can just be an additional inverted output, with R70 = 10k
InitGain
integ
R68 100k
CV Range
R67 10k
D13 1n34
J2 2N5461
cw end of Pot on GND!
or AA143 or other Germanium Diode