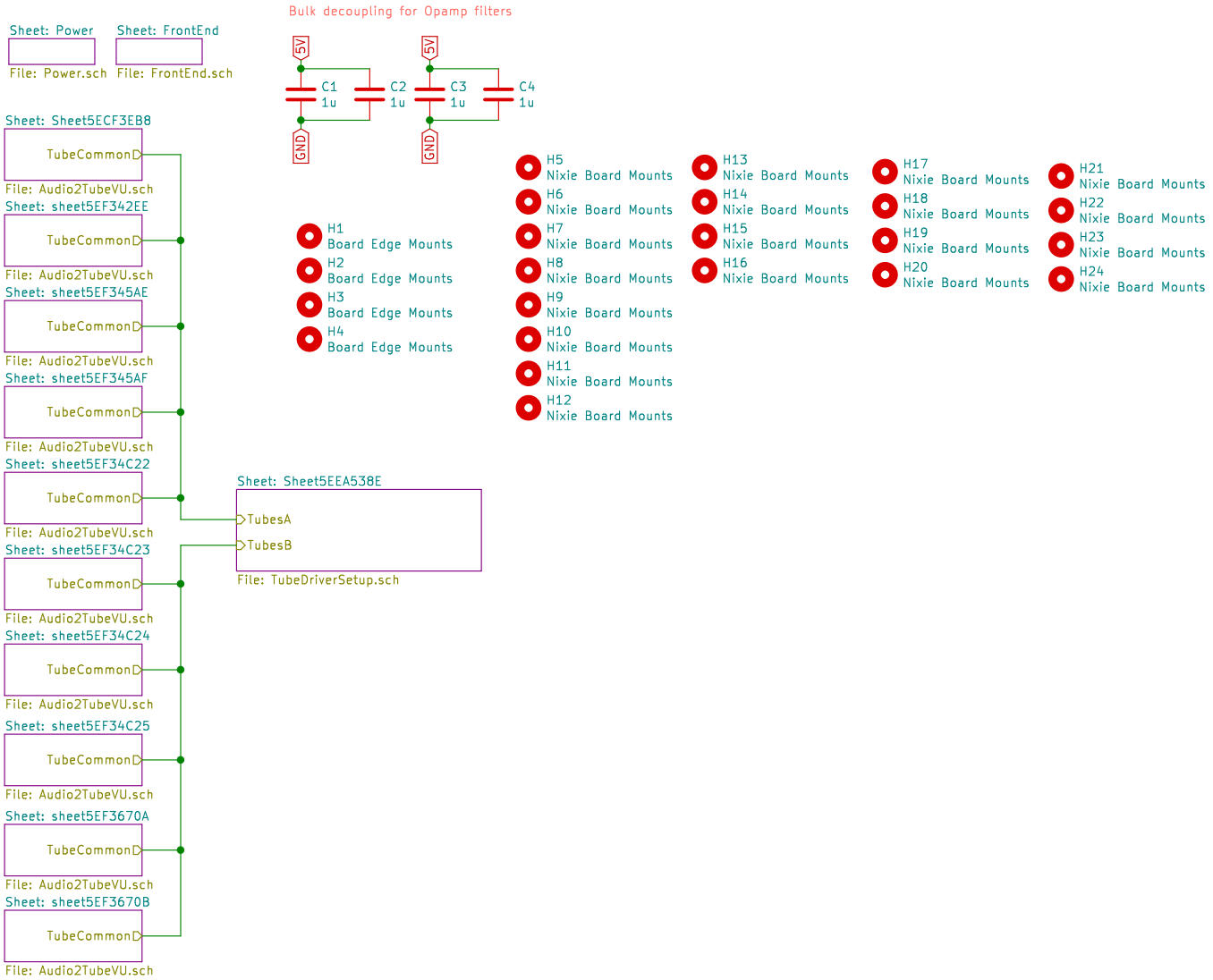
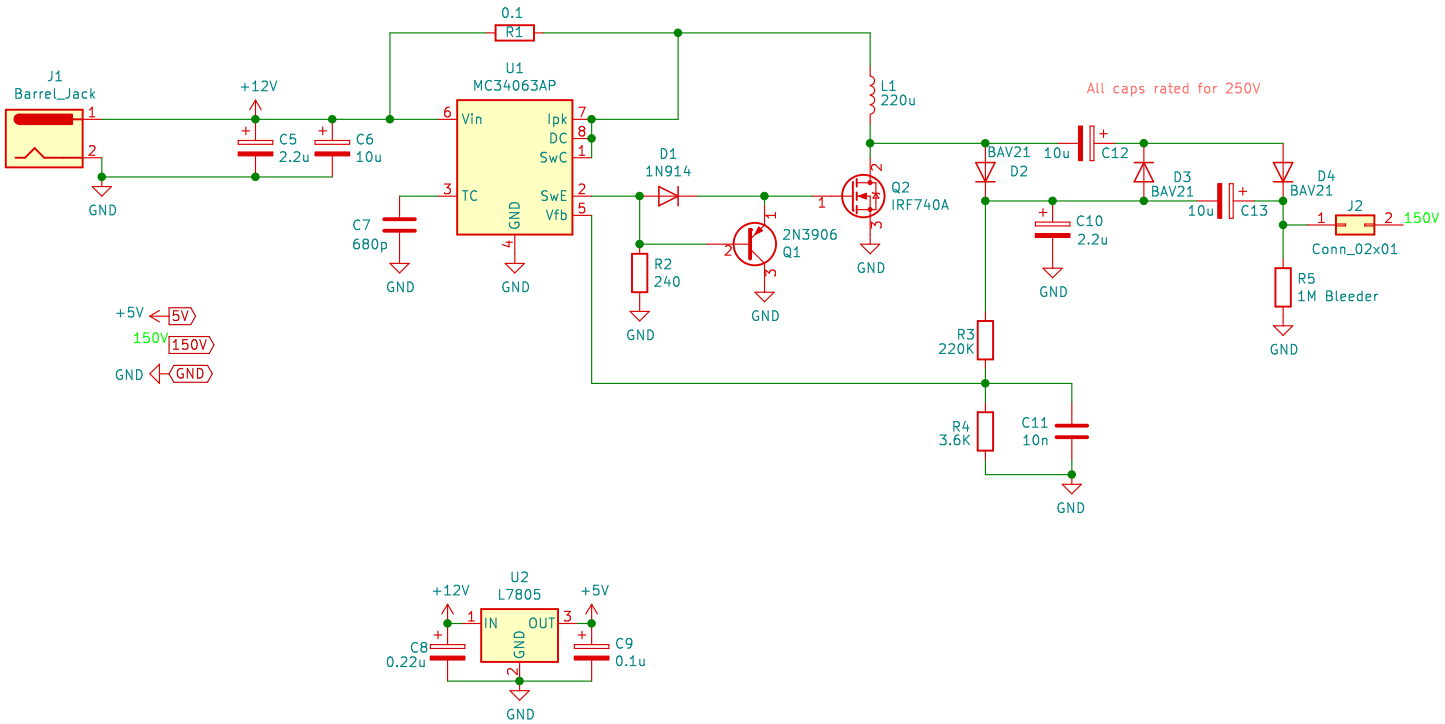
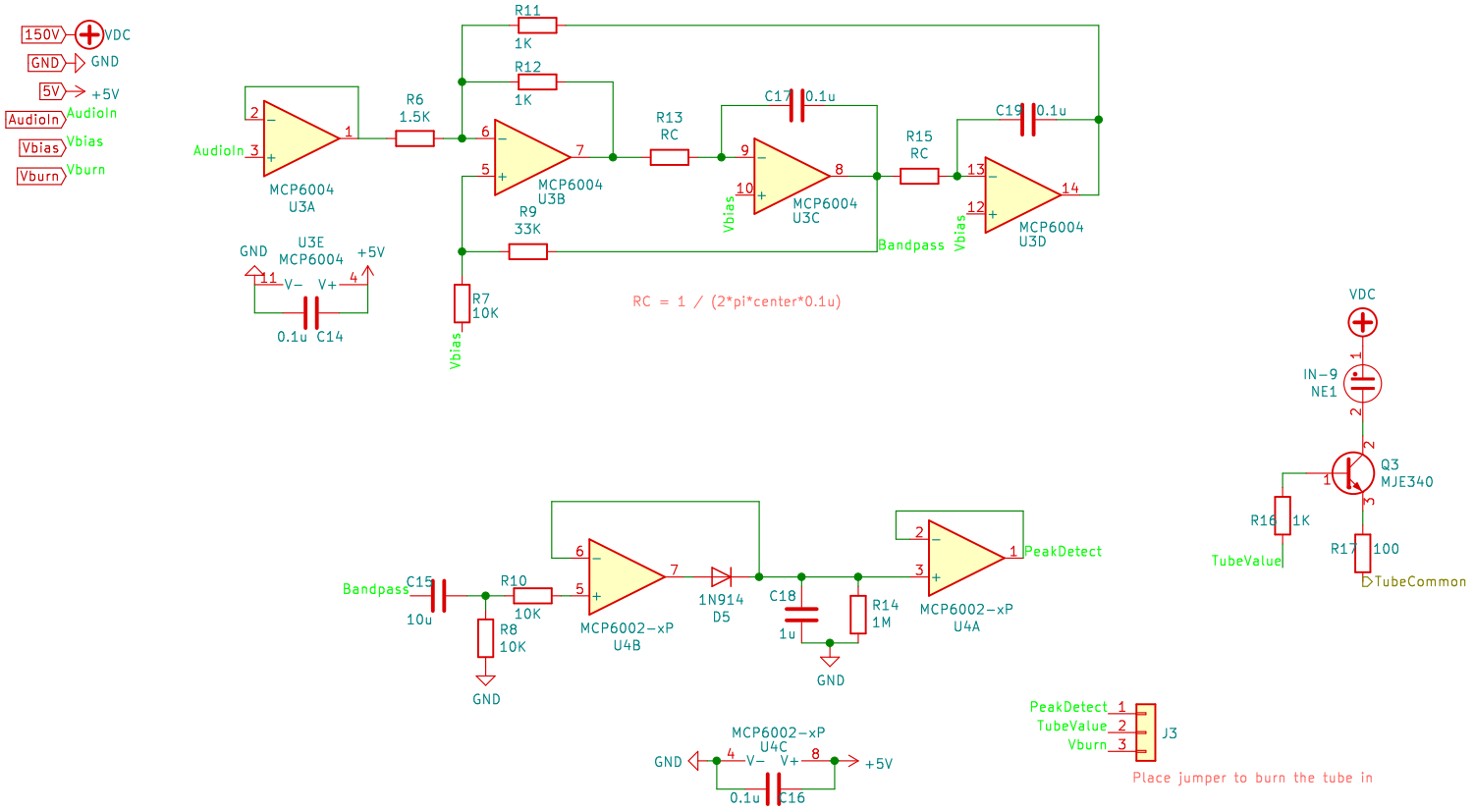
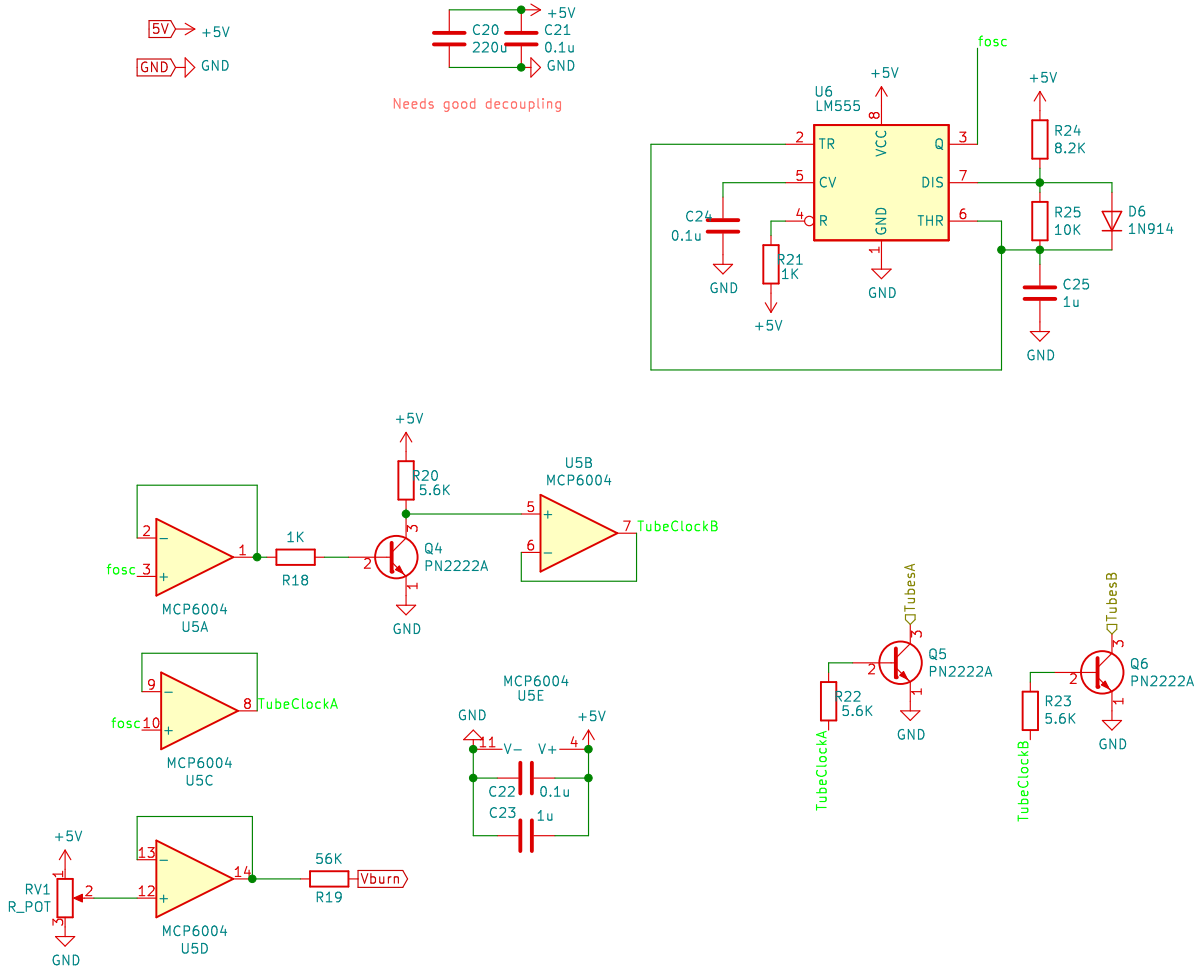
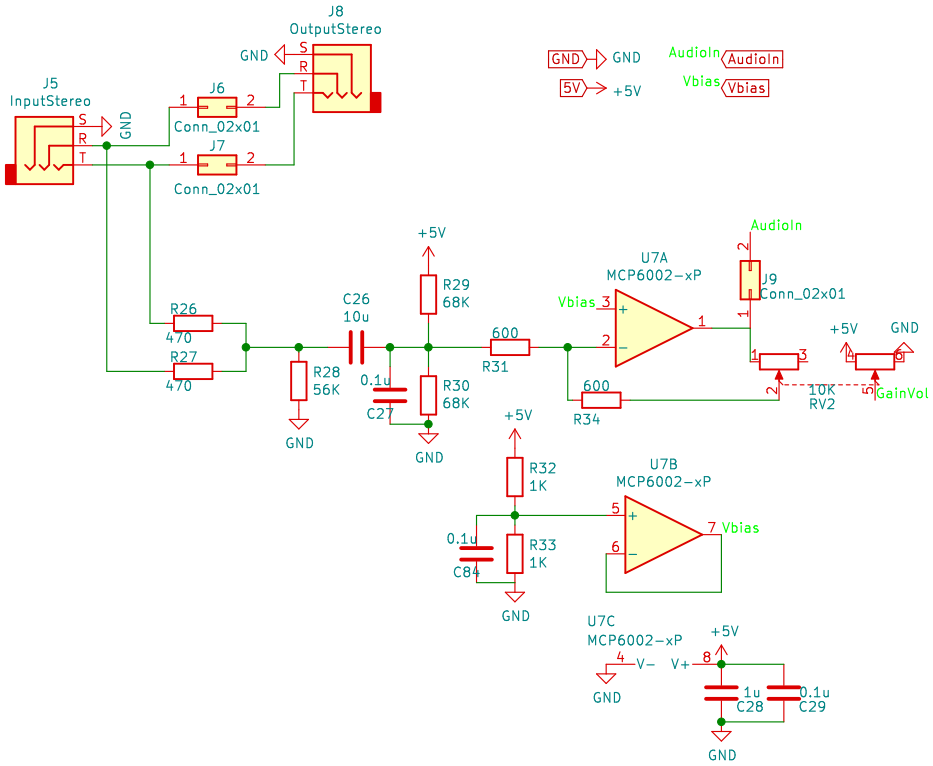
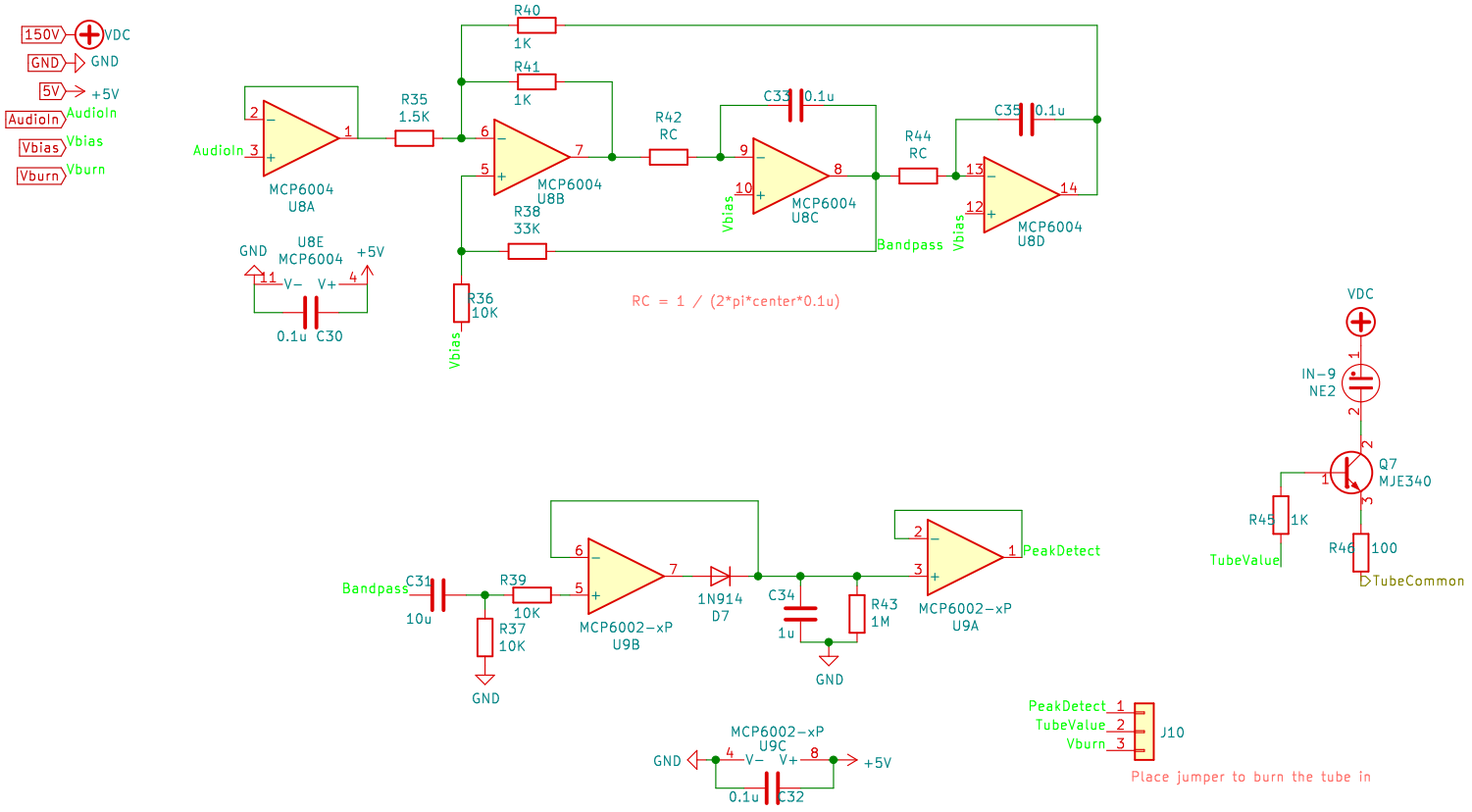

Sheet: Power
File: Power.sch
Sheet: FrontEnd
File: FrontEnd.sch
Bulk decoupling for Opamp filters
5V
C1
1u
C2
1u
C3
1u
C4
1u
GND
H1
Board Edge Mounts
H2
Board Edge Mounts
H3
Board Edge Mounts
H4
Board Edge Mounts
H5
Nixie Board Mounts
H6
Nixie Board Mounts
H7
Nixie Board Mounts
H8
Nixie Board Mounts
H9
Nixie Board Mounts
H10
Nixie Board Mounts
H11
Nixie Board Mounts
H12
Nixie Board Mounts
H13
Nixie Board Mounts
H14
Nixie Board Mounts
H15
Nixie Board Mounts
H16
Nixie Board Mounts
H17
Nixie Board Mounts
H18
Nixie Board Mounts
H19
Nixie Board Mounts
H20
Nixie Board Mounts
H21
Nixie Board Mounts
H22
Nixie Board Mounts
H23
Nixie Board Mounts
H24
Nixie Board Mounts
Sheet: Sheet5ECF3EB8
TubeCommon
File: Audio2TubeVU.sch
Sheet: sheet5EF342EE
TubeCommon
File: Audio2TubeVU.sch
Sheet: sheet5EF345AE
TubeCommon
File: Audio2TubeVU.sch
Sheet: sheet5EF345AF
TubeCommon
File: Audio2TubeVU.sch
Sheet: sheet5EF34C22
TubeCommon
File: Audio2TubeVU.sch
Sheet: sheet5EF34C23
TubeCommon
File: Audio2TubeVU.sch
Sheet: sheet5EF34C24
TubeCommon
File: Audio2TubeVU.sch
Sheet: sheet5EF34C25
TubeCommon
File: Audio2TubeVU.sch
Sheet: sheet5EF3670A
TubeCommon
File: Audio2TubeVU.sch
Sheet: sheet5EF3670B
TubeCommon
File: Audio2TubeVU.sch
Sheet: Sheet5EEA538E
TubesA
TubesB
File: TubeDriverSetup.sch

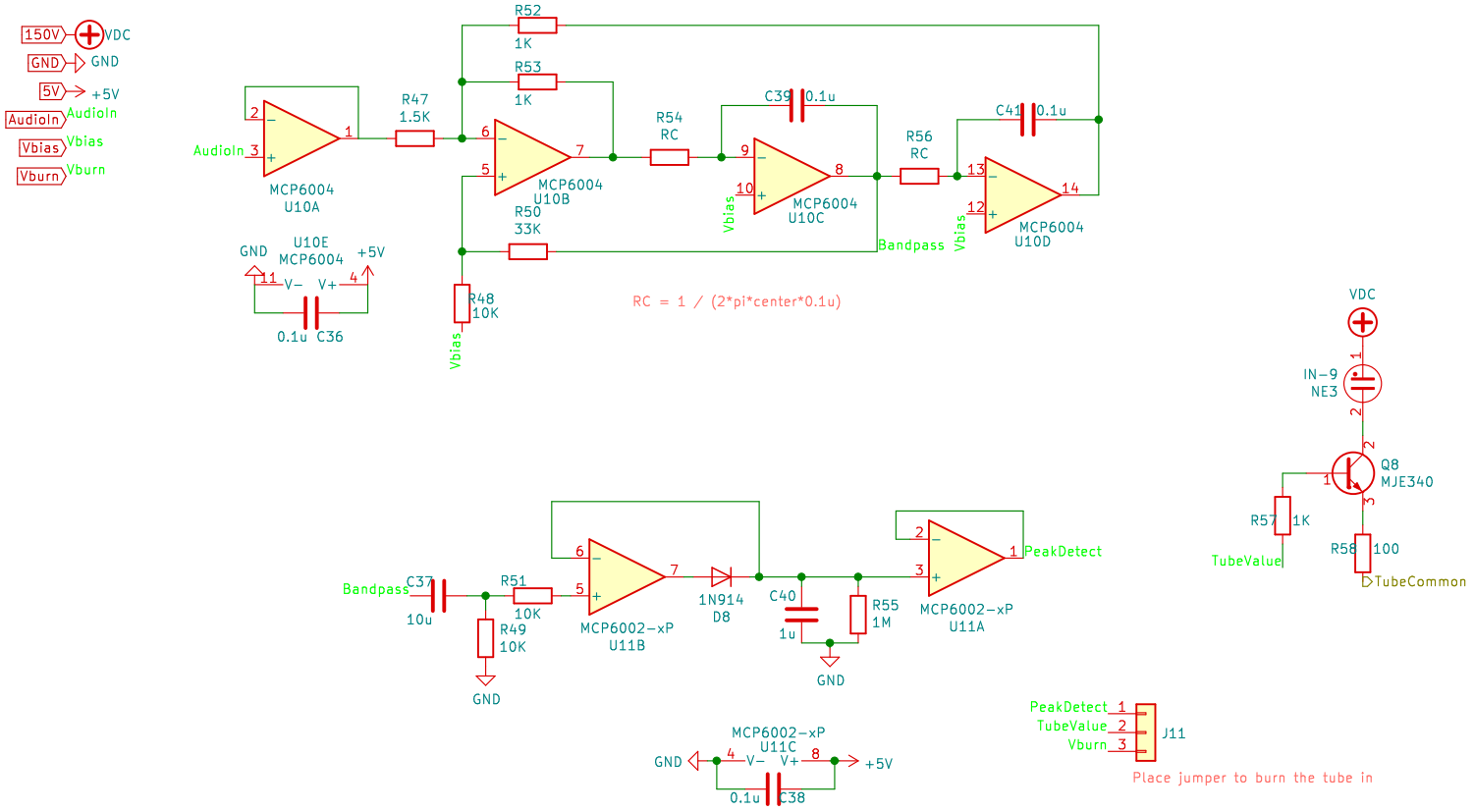

0.1
R1
J1
Barrel_Jack
+12V
U1
MC34063AP
L1
220u
All caps rated for 250V
C5
2.2u
C6
10u
Vin
Ipk
DC
SwC
SwE
Vfb
TC
GND
D1
1N914
Q2
IRF740A
BAV21
D2
C12
10u
D3
BAV21
C13
10u
D4
BAV21
J2
Conn_02x01
150V
C7
680p
2N3906
Q1
C10
2.2u
R2
240
R5
1M Bleeder
+5V
5V
150V
R3
220K
R4
3.6K
C11
10n
U2
L7805
IN
OUT
C8
0.22u
C9
0.1u

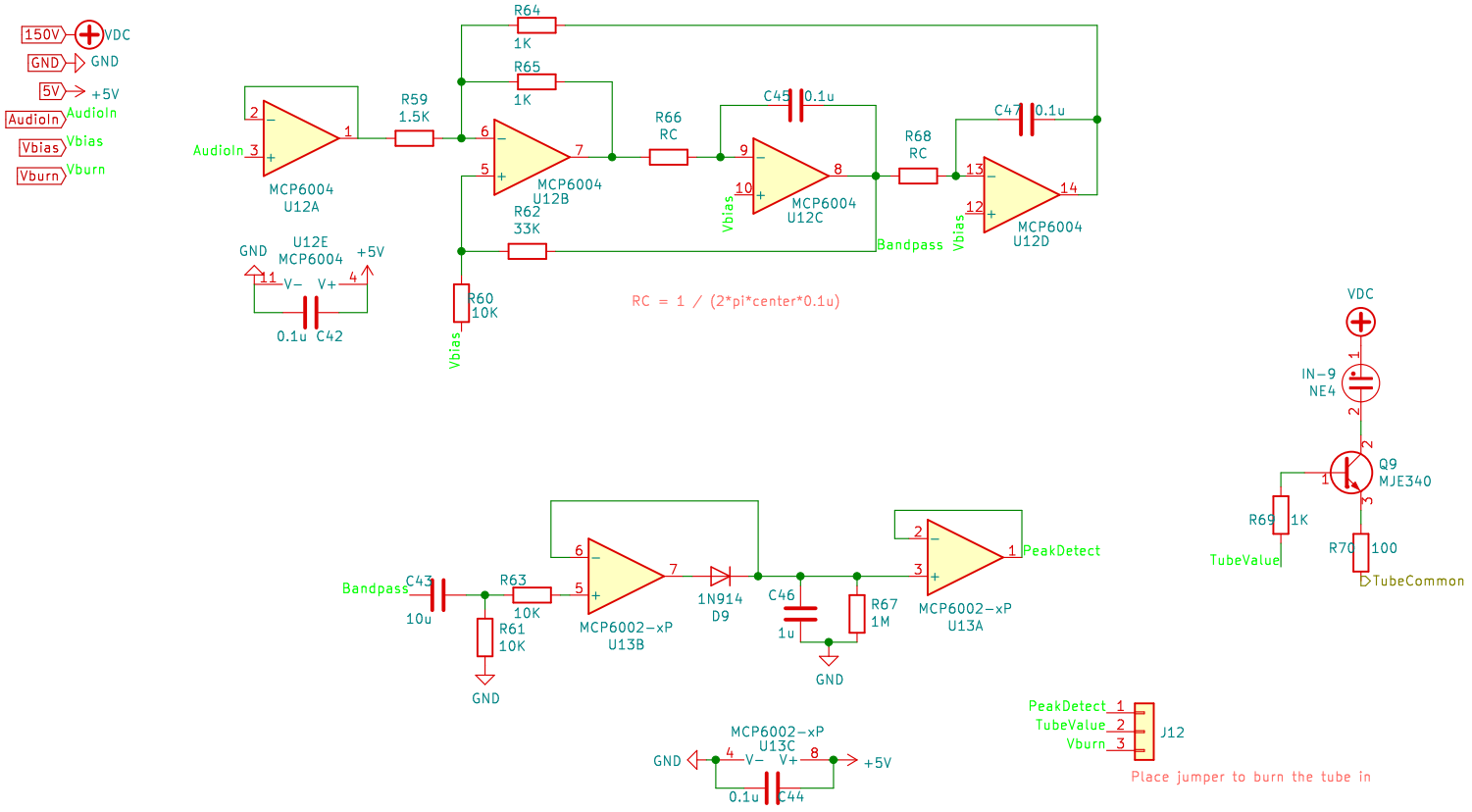

150V
VDC
GND
GND
5V
+5V
AudioIn
AudioIn
Vbias
Vbias
Vburn
Vburn
R11
1K
R12
1K
R6
1.5K
AudioIn
MCP6004
U3A
R13
RC
C17 0.1u
R15
RC
C19 0.1u
MCP6004
U3B
MCP6004
U3C
MCP6004
U3D
Vbias
Bandpass
Vbias
R9
33K
U3E
MCP6004
GND
+5V
V−
V+
0.1u C14
R7
10K
Vbias
RC = 1 / (2*pi*center*0.1u)
VDC
IN-9
NE1
Q3
MJE340
R16 1K
R17 100
TubeValue
TubeCommon
Bandpass
C15
10u
R10
10K
R8
10K
GND
MCP6002-xP
U4B
1N914
D5
C18
1u
R14
1M
GND
MCP6002-xP
U4A
PeakDetect
MCP6002-xP
U4C
GND
V−
V+
+5V
0.1u C16
PeakDetect
TubeValue
Vburn
J3
Place jumper to burn the tube in

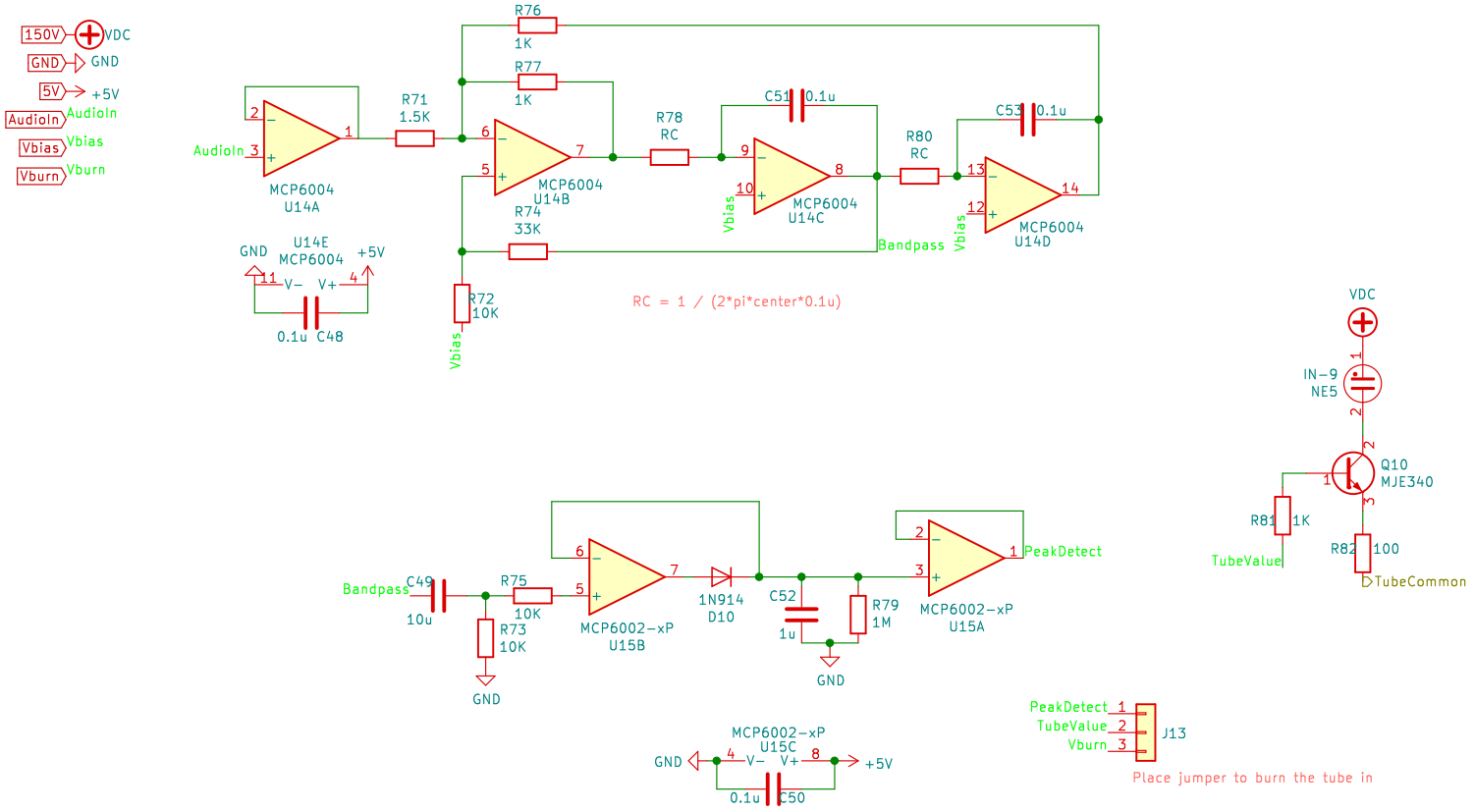

5V
+5V
GND
GND
C20
220u
C21
0.1u
+5V
GND
Needs good decoupling
U6
LM555
+5V
fosc
TR
CV
R
VCC
GND
Q
DIS
THR
C24
0.1u
R21
1K
R24
8.2K
R25
10K
D6
1N914
C25
1u
U5A
MCP6004
U5B
MCP6004
R20
5.6K
1K
R18
Q4
PN2222A
TubeClockB
U5C
MCP6004
TubeClockA
U5E
MCP6004
C22
0.1u
C23
1u
Q5
PN2222A
R22
5.6K
TubesA
Q6
PN2222A
R23
5.6K
TubesB
RV1
R_POT
U5D
MCP6004
56K
R19
Vburn

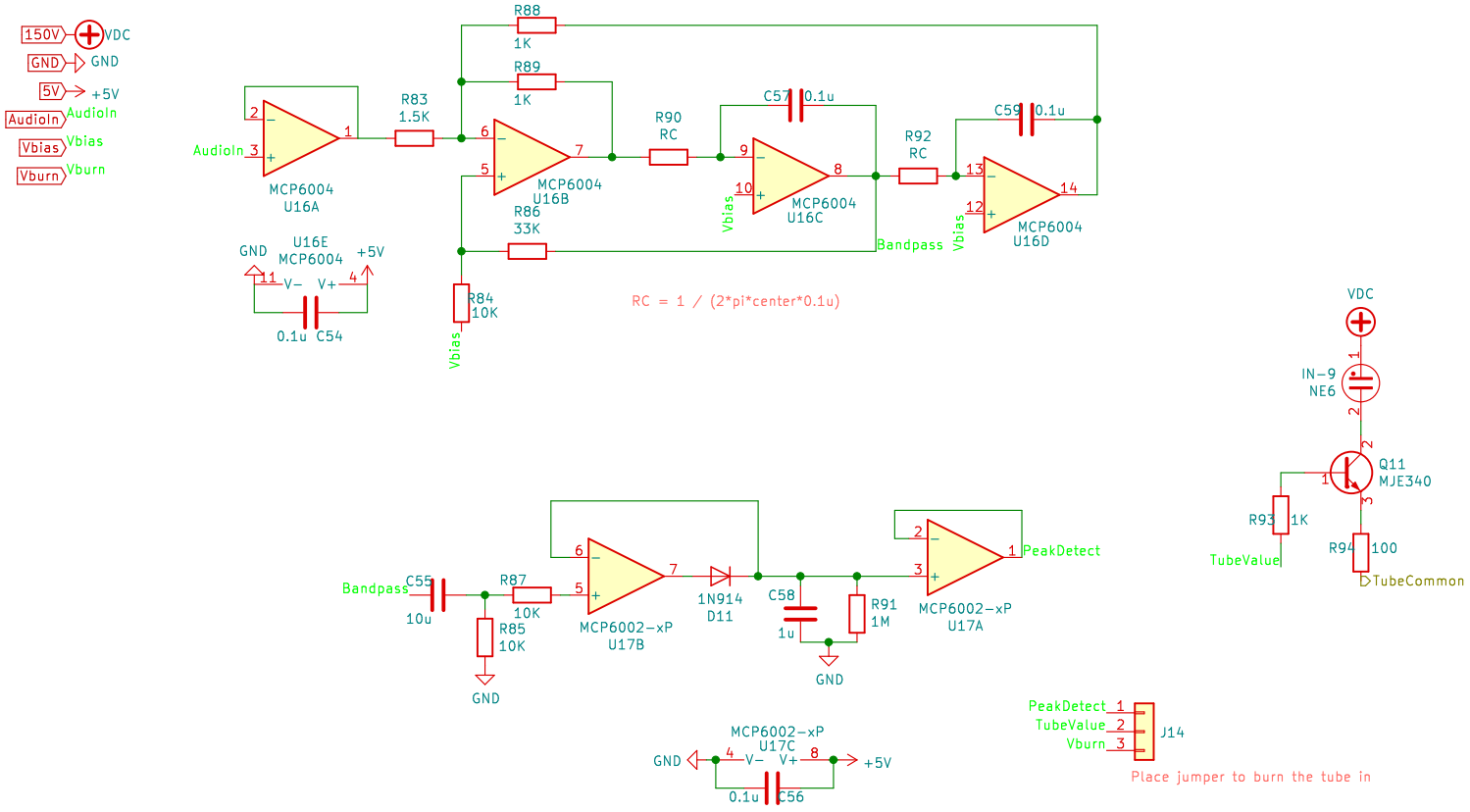

J8
OutputStereo
GND
S
R
T
J5
InputStereo
S
R
T
GND
J6
1
2
Conn_02x01
J7
1
2
Conn_02x01
GND
GND
5V
+5V
AudioIn
AudioIn
Vbias
Vbias
R26
470
R27
470
C26
10u
R28
56K
0.1u
C27
GND
+5V
R29
68K
R30
68K
GND
600
R31
U7A
MCP6002-xP
Vbias
3
+
2
−
1
600
R34
AudioIn
2
J9
Conn_02x01
1
1
3
2
10K
RV2
5
GainVol
+5V
GND
4
6
+5V
R32
1K
0.1u
C84
R33
1K
GND
U7B
MCP6002-xP
5
+
6
−
7
Vbias
U7C
MCP6002-xP
4
V−
V+
8
+5V
1u
C28
0.1u
C29
GND

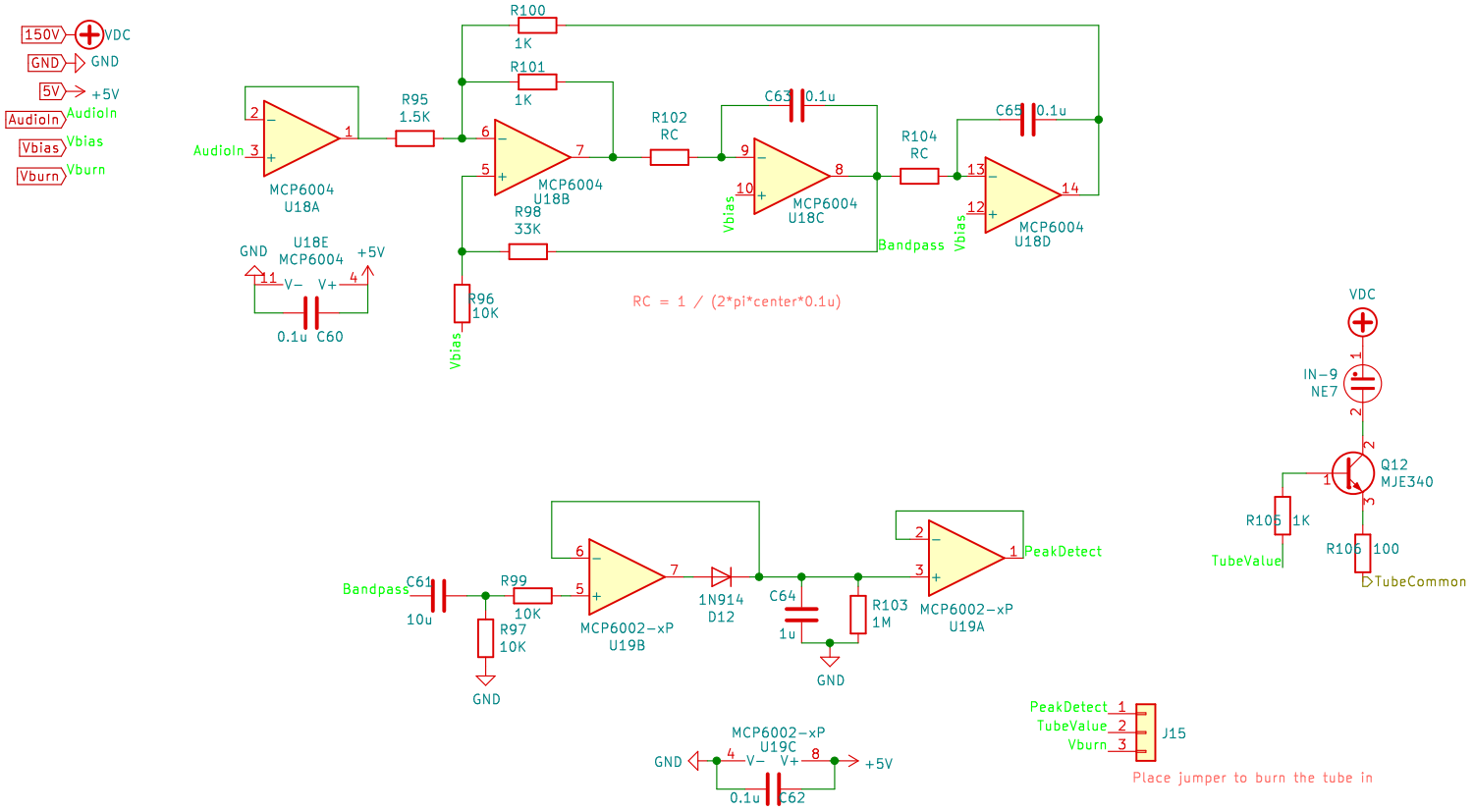

150V
VDC
GND
GND
5V
+5V
AudioIn
AudioIn
Vbias
Vbias
Vburn
Vburn
R40
1K
R41
1K
R35
1.5K
R42
RC
C33
0.1u
R44
RC
C35
0.1u
MCP6004
U8A
MCP6004
U8B
MCP6004
U8C
MCP6004
U8D
R38
33K
R36
10K
Vbias
Bandpass
Vbias
U8E
MCP6004
GND
+5V
0.1u
C30
RC = 1 / (2*pi*center*0.1u)
VDC
IN-9
NE2
Q7
MJE340
R45
1K
R46
100
TubeValue
TubeCommon
Bandpass
C31
10u
R39
10K
R37
10K
MCP6002-xP
U9B
1N914
D7
C34
1u
R43
1M
MCP6002-xP
U9A
PeakDetect
GND
GND
MCP6002-xP
U9C
+5V
0.1u
C32
PeakDetect
TubeValue
Vburn
J10
Place jumper to burn the tube in

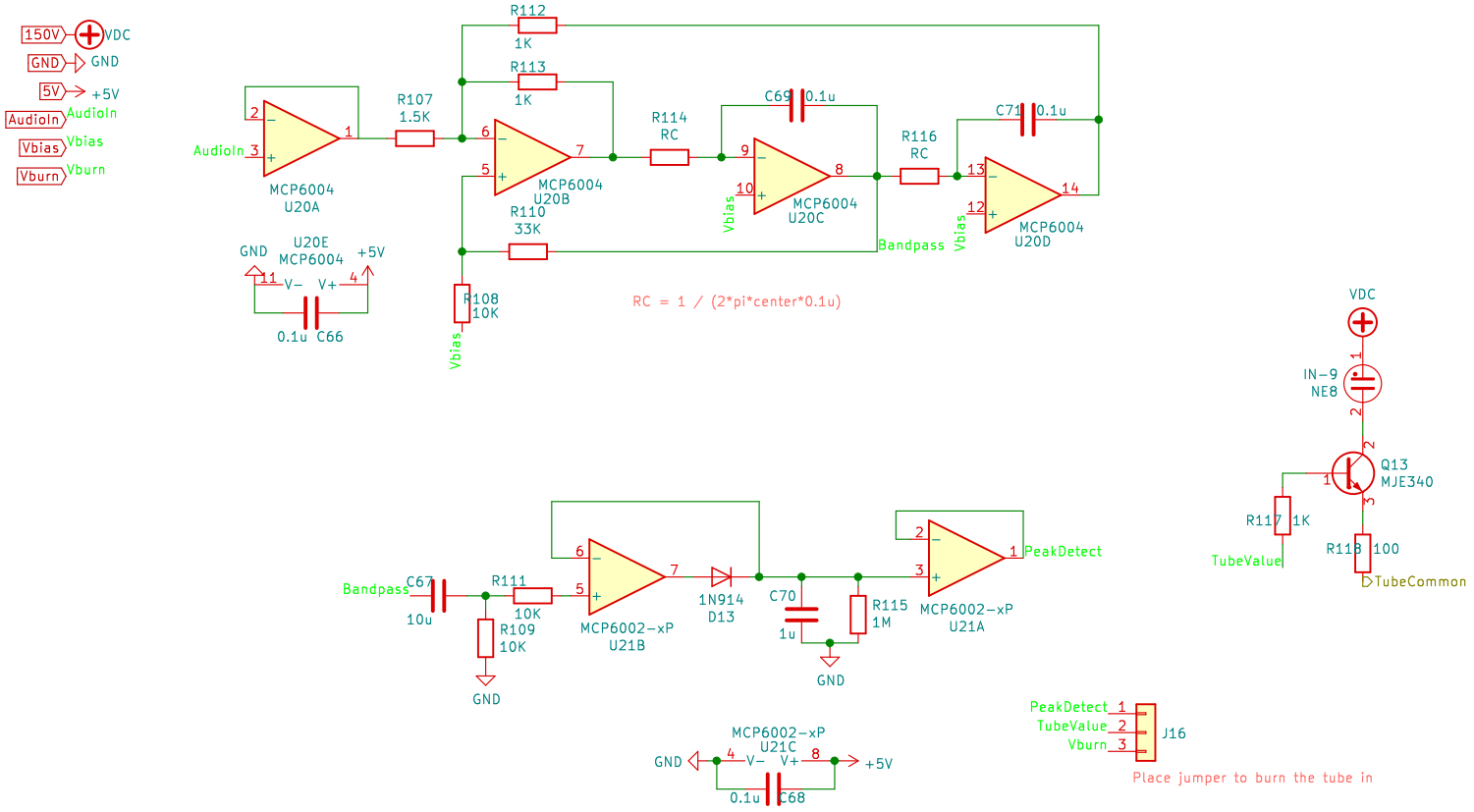

150V
VDC
GND
GND
5V
+5V
AudioIn
AudioIn
Vbias
Vbias
Vburn
Vburn
R52
1K
R53
1K
R47
1.5K
AudioIn
MCP6004
U10A
R54
RC
C39
0.1u
R56
RC
C41
0.1u
MCP6004
U10B
MCP6004
U10C
MCP6004
U10D
Vbias
Bandpass
Vbias
R50
33K
R48
10K
Vbias
U10E
MCP6004
GND
+5V
V-
V+
0.1u
C36
RC = 1 / (2*pi*center*0.1u)
VDC
IN-9
NE3
Q8
MJE340
R57
1K
R58
100
TubeValue
TubeCommon
Bandpass
C37
10u
R51
10K
R49
10K
GND
MCP6002-xP
U11B
1N914
D8
C40
1u
R55
1M
GND
MCP6002-xP
U11A
PeakDetect
MCP6002-xP
U11C
GND
V-
V+
+5V
0.1u
C38
PeakDetect
TubeValue
Vburn
J11
Place jumper to burn the tube in

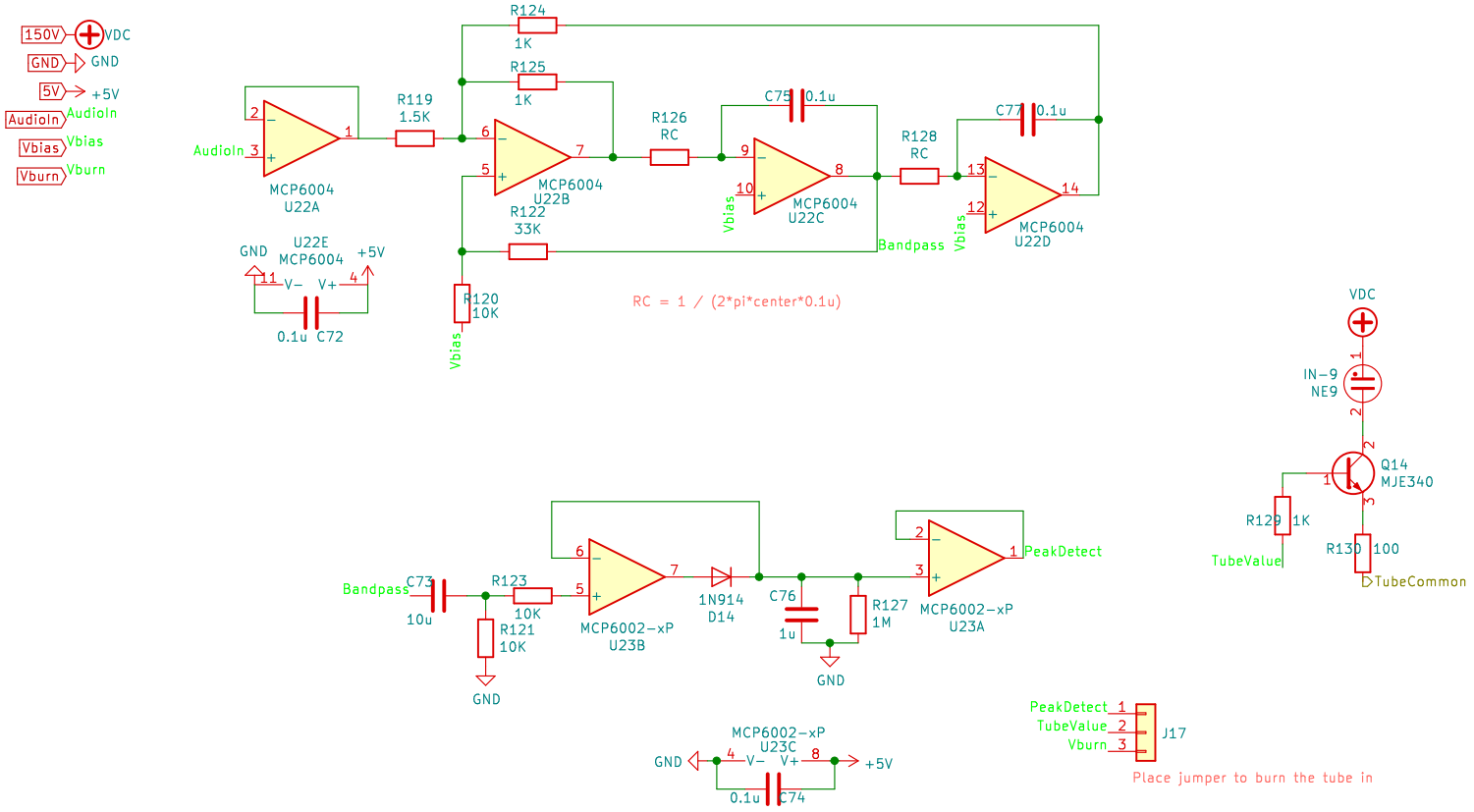

150V
VDC
GND
GND
5V
+5V
AudioIn
AudioIn
Vbias
Vbias
Vburn
Vburn
R64
1K
R65
1K
R59
1.5K
AudioIn
MCP6004
U12A
R62
33K
R60
10K
Vbias
R66
RC
C45
0.1u
MCP6004
U12B
Vbias
MCP6004
U12C
R68
RC
C47
0.1u
Bandpass
Vbias
MCP6004
U12D
GND
U12E
MCP6004
+5V
0.1u
C42
RC = 1 / (2*pi*center*0.1u)
Bandpass
C43
10u
R63
10K
R61
10K
GND
MCP6002-xP
U13B
1N914
D9
C46
1u
R67
1M
GND
MCP6002-xP
U13A
PeakDetect
MCP6002-xP
U13C
GND
+5V
0.1u
C44
VDC
IN-9
NE4
Q9
MJE340
R69
1K
TubeValue
R70
100
TubeCommon
PeakDetect
TubeValue
Vburn
J12
Place jumper to burn the tube in

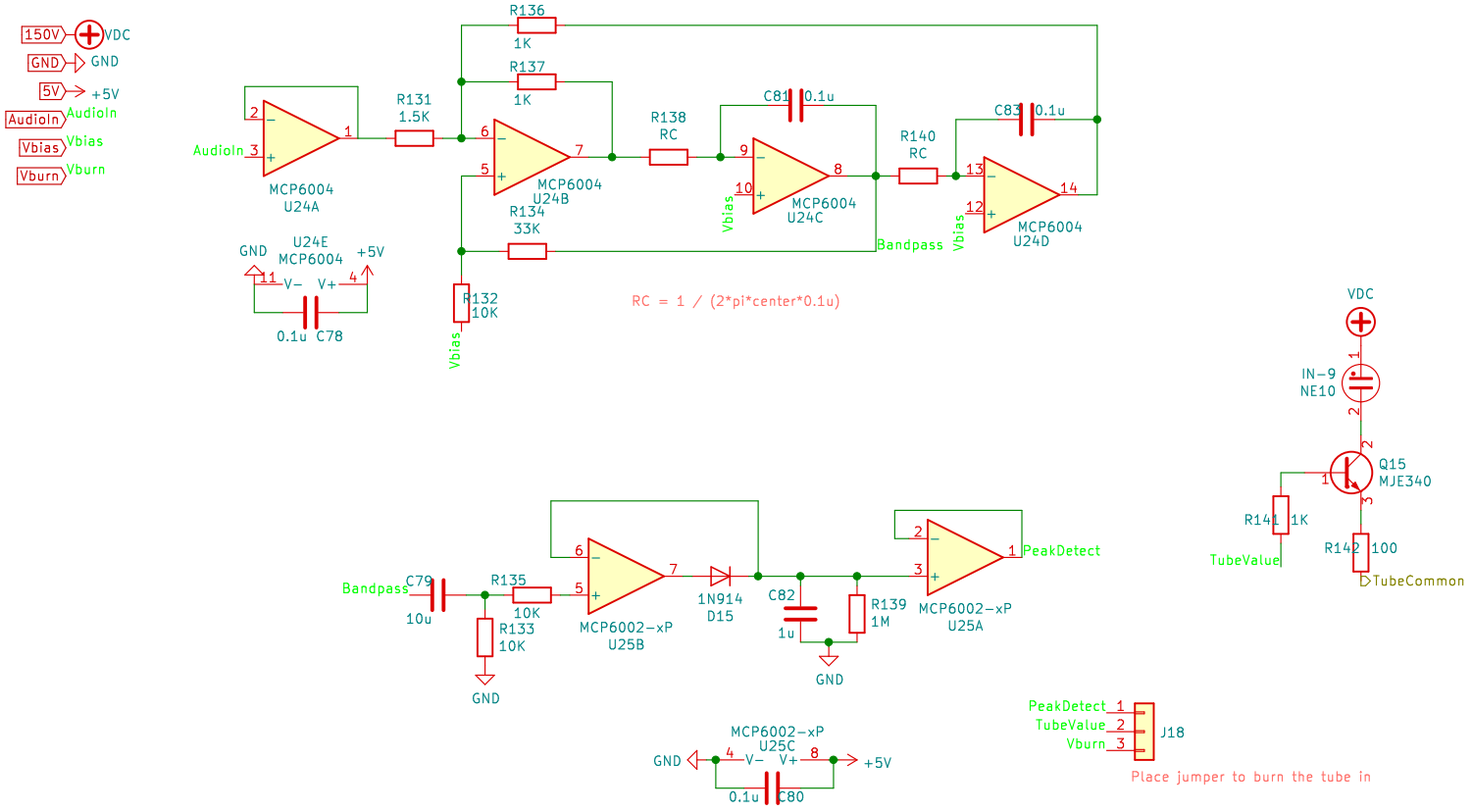

150V
VDC
GND
GND
5V
+5V
AudioIn
AudioIn
Vbias
Vbias
Vburn
Vburn
R76
1K
R77
1K
R71
1.5K
R78
RC
C51
0.1u
R80
RC
C53
0.1u
MCP6004
U14A
MCP6004
U14B
MCP6004
U14C
MCP6004
U14D
R74
33K
R72
10K
Vbias
Bandpass
Vbias
U14E
MCP6004
GND
+5V
V−
V+
0.1u
C48
RC = 1 / (2*pi*center*0.1u)
Bandpass
C49
10u
R75
10K
R73
10K
GND
MCP6002−xP
U15B
1N914
D10
C52
1u
R79
1M
GND
MCP6002−xP
U15A
PeakDetect
MCP6002−xP
U15C
GND
V−
V+
+5V
0.1u
C50
VDC
IN−9
NE5
Q10
MJE340
R81
1K
R82
100
TubeValue
TubeCommon
PeakDetect
TubeValue
Vburn
J13
Place jumper to burn the tube in


150V
VDC
GND
GND
5V
+5V
AudioIn
AudioIn
Vbias
Vbias
Vburn
Vburn
R88
1K
R89
1K
R83
1.5K
R90
RC
C57
0.1u
R92
RC
C59
0.1u
AudioIn
MCP6004
U16A
MCP6004
U16B
MCP6004
U16C
MCP6004
U16D
R86
33K
Vbias
Bandpass
Vbias
GND
U16E
MCP6004
+5V
0.1u
C54
R84
10K
Vbias
RC = 1 / (2*pi*center*0.1u)
VDC
IN-9
NE6
Q11
MJE340
R93
1K
R94
100
TubeValue
TubeCommon
Bandpass
C55
10u
R87
10K
R85
10K
GND
MCP6002-xP
U17B
1N914
D11
C58
1u
R91
1M
GND
MCP6002-xP
U17A
PeakDetect
MCP6002-xP
U17C
GND
+5V
0.1u
C56
PeakDetect
TubeValue
Vburn
J14
Place jumper to burn the tube in


150V
VDC
GND
GND
5V
+5V
AudioIn
AudioIn
Vbias
Vbias
Vburn
Vburn
R100
1K
R101
1K
R95
1.5K
R102
RC
C63 0.1u
R104
RC
C65 0.1u
MCP6004
U18A
MCP6004
U18B
MCP6004
U18C
MCP6004
U18D
R98
33K
R96
10K
Vbias
Bandpass
U18E
MCP6004
GND
+5V
0.1u C60
RC = 1 / (2*pi*center*0.1u)
C61
10u
R99
10K
R97
10K
MCP6002-xP
U19B
1N914
D12
C64
1u
R103
1M
MCP6002-xP
U19A
PeakDetect
MCP6002-xP
U19C
GND
+5V
0.1u C62
VDC
IN-9
NE7
Q12
MJE340
R105 1K
R106 100
TubeValue
TubeCommon
PeakDetect
TubeValue
Vburn
J15
Place jumper to burn the tube in


150V
VDC
GND
GND
5V
+5V
AudioIn
AudioIn
Vbias
Vbias
Vburn
Vburn
R112
1K
R113
1K
R107
1.5K
AudioIn
MCP6004
U20A
R110
33K
MCP6004
U20B
R114
RC
C69 0.1u
MCP6004
U20C
Vbias
R116
RC
C71 0.1u
MCP6004
U20D
Vbias
Bandpass
U20E
MCP6004
GND
+5V
V−
V+
0.1u C66
R108
10K
Vbias
RC = 1 / (2*pi*center*0.1u)
Bandpass
C67
10u
R111
10K
R109
10K
GND
MCP6002−xP
U21B
1N914
D13
C70
1u
R115
1M
GND
MCP6002−xP
U21A
PeakDetect
MCP6002−xP
U21C
GND
V−
V+
+5V
0.1u C68
VDC
IN−9
NE8
Q13
MJE340
R117 1K
TubeValue
R118 100
TubeCommon
PeakDetect
TubeValue
Vburn
J16
Place jumper to burn the tube in


150V
VDC
GND
GND
5V
+5V
AudioIn
AudioIn
Vbias
Vbias
Vburn
Vburn
R124
1K
R125
1K
R119
1.5K
R126
RC
C75 0.1u
R128
RC
C77 0.1u
AudioIn
MCP6004
U22A
MCP6004
U22B
MCP6004
U22C
MCP6004
U22D
R122
33K
Vbias
Bandpass
Vbias
GND
U22E
MCP6004
+5V
V−
V+
0.1u C72
R120
10K
Vbias
RC = 1 / (2*pi*center*0.1u)
VDC
IN-9
NE9
Q14
MJE340
R129 1K
R130 100
TubeValue
TubeCommon
Bandpass
C73
10u
R123
10K
R121
10K
GND
MCP6002-xP
U23B
1N914
D14
C76
1u
R127
1M
GND
MCP6002-xP
U23A
PeakDetect
MCP6002-xP
U23C
GND
V−
V+
+5V
0.1u C74
PeakDetect
TubeValue
Vburn
J17
Place jumper to burn the tube in


150V
VDC
GND
GND
5V
+5V
AudioIn
AudioIn
Vbias
Vbias
Vburn
Vburn
R136
1K
R137
1K
R131
1.5K
R138
RC
C81 0.1u
R140
RC
C83 0.1u
MCP6004
U24A
MCP6004
U24B
MCP6004
U24C
MCP6004
U24D
R134
33K
R132
10K
Vbias
Bandpass
U24E
MCP6004
GND
+5V
0.1u C78
RC = 1 / (2*pi*center*0.1u)
C79
10u
R135
10K
R133
10K
MCP6002-xP
U25B
1N914
D15
C82
1u
R139
1M
MCP6002-xP
U25A
PeakDetect
MCP6002-xP
U25C
0.1u C80
VDC
IN-9
NE10
Q15
MJE340
R141 1K
R142 100
TubeValue
TubeCommon
PeakDetect
TubeValue
Vburn
J18
Place jumper to burn the tube in