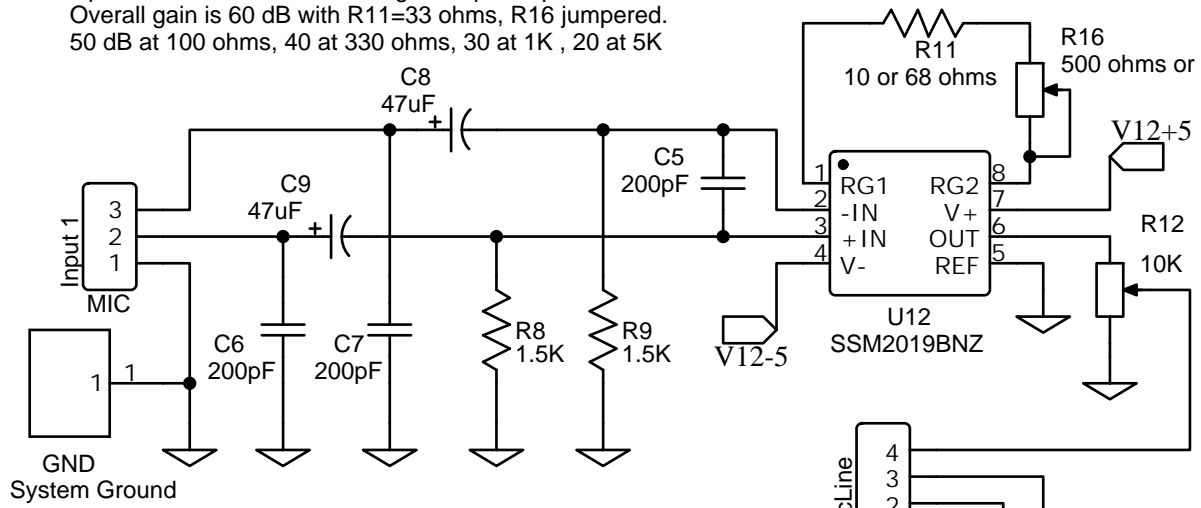


Input Preamp, Phase Rotator, Low Cut Filter, and PreEmphasis

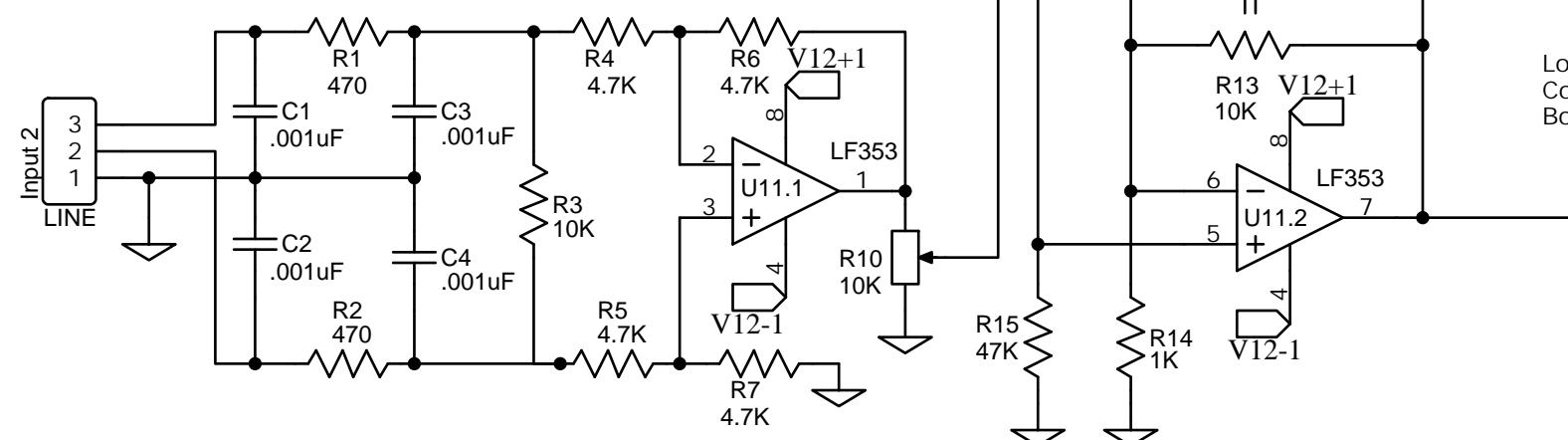
Optional trimmer R16 sets the gain of preamplifier U12
 Overall gain is 60 dB with R11=33 ohms, R16 jumpered.
 50 dB at 100 ohms, 40 at 330 ohms, 30 at 1K , 20 at 5K



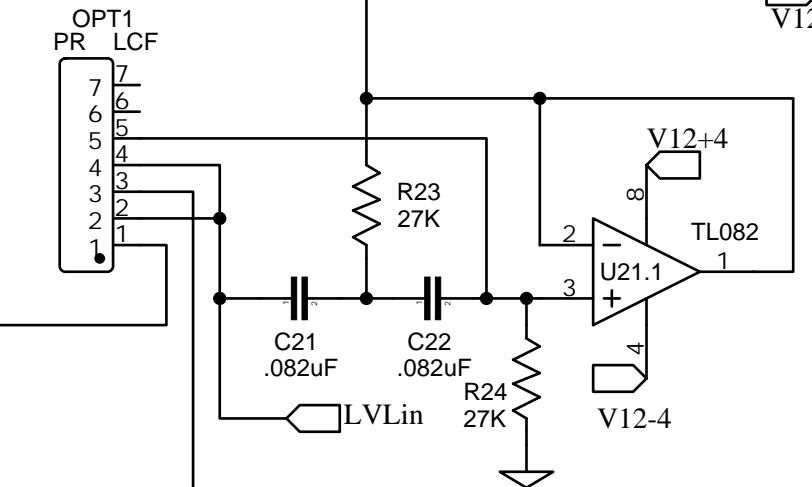
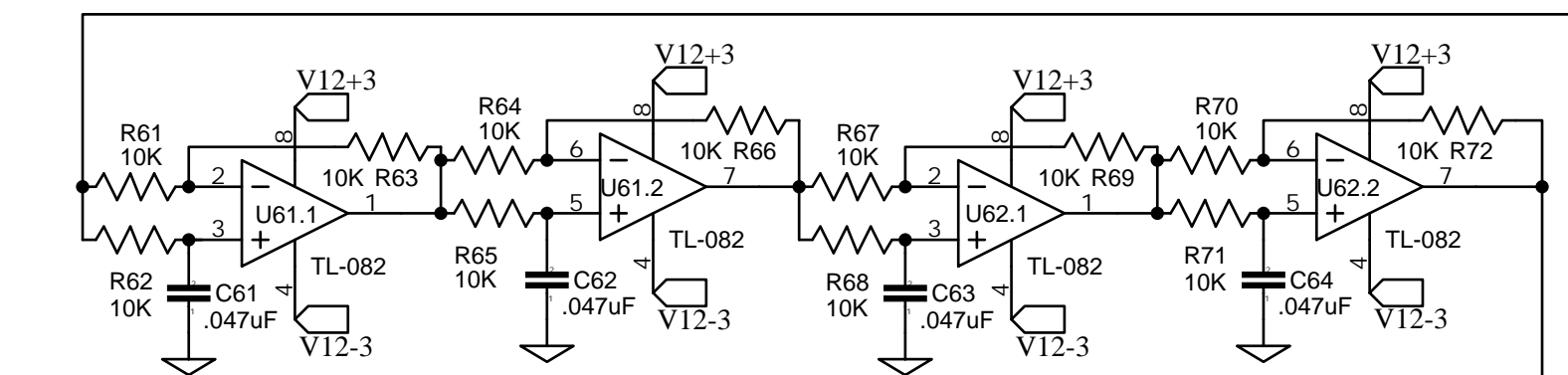
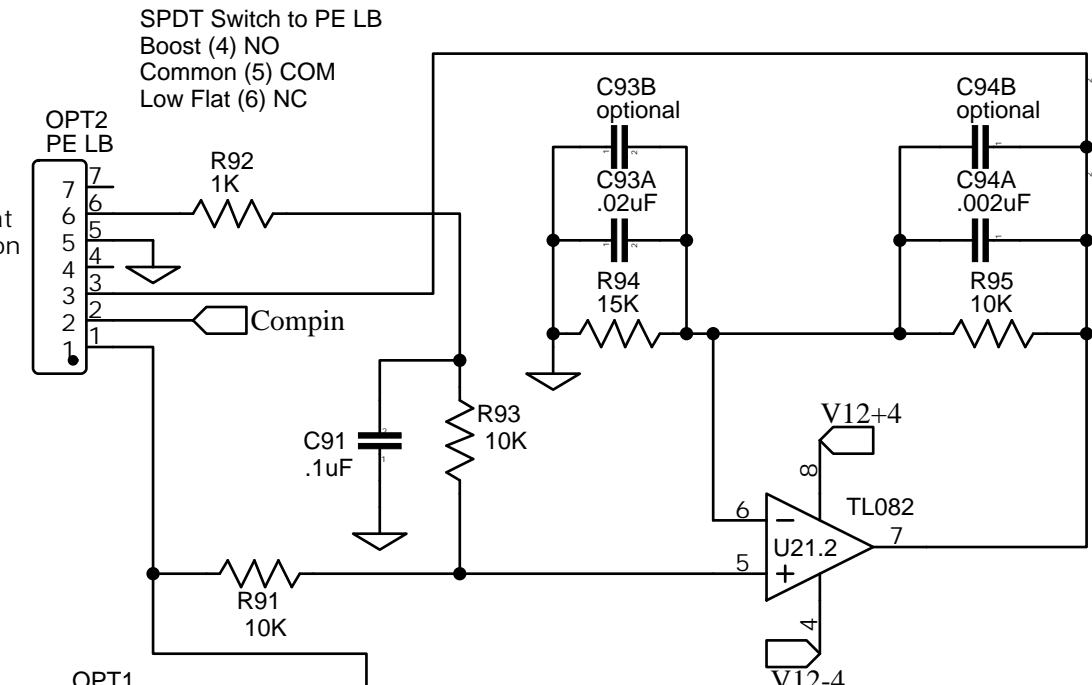
R11 and R16 notes:
 For Variable Mic Gain Trim:
 R11 = 10 fixed, R16 = 500 variable
 For Line or fixed Mic Gain:
 R11 = 68 ohm fixed, R16 = Jumper
 Jumper R16 pin 1 to 2 (open) line input
 Jumper R16 pin 2 to 3 (closed) mic input

PR LCF Jumper configuration:
 Connect 1 to 2 and 2 to 3 to enable Phase Rotator, 2 to 3 to bypass
 Connect connect 5 to 6 to disable Low Cut Filter, open to enable

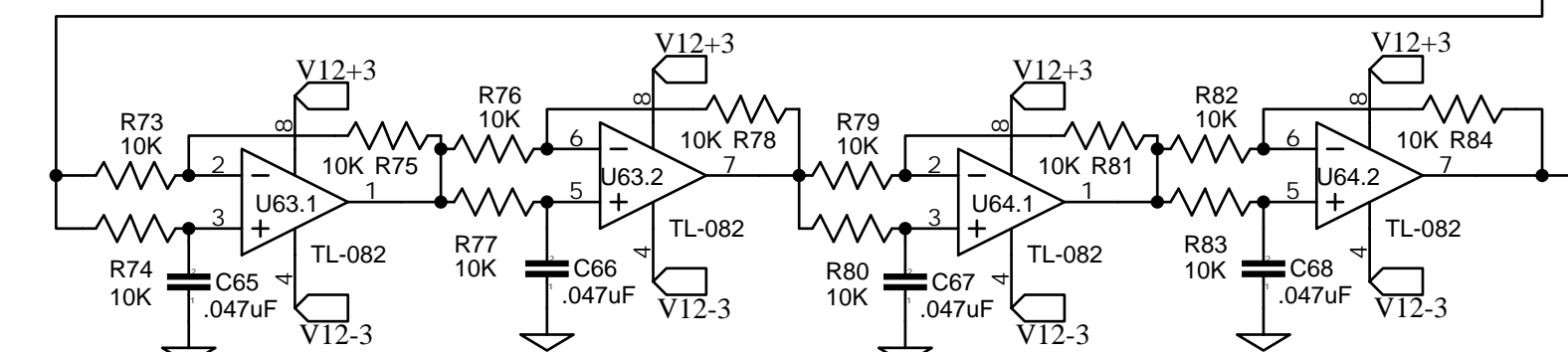
PE LB Jumper configuration:
 Connect 1 to 2 and 3 to 4 to enable Pre-Emphasis, 2 to 3 to bypass
 Connect 5 to 6 to enable Bass Boost. 6 to 7 for Flat Bass Response



Low Flat
 Common
 Boost



Compin connector appears on sheet 2
 LVLin connector appears on sheet 4



Master File AP20230314V500

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Updated component values for production
 2023-09-03 R. Maxwell File Suffix "REF"

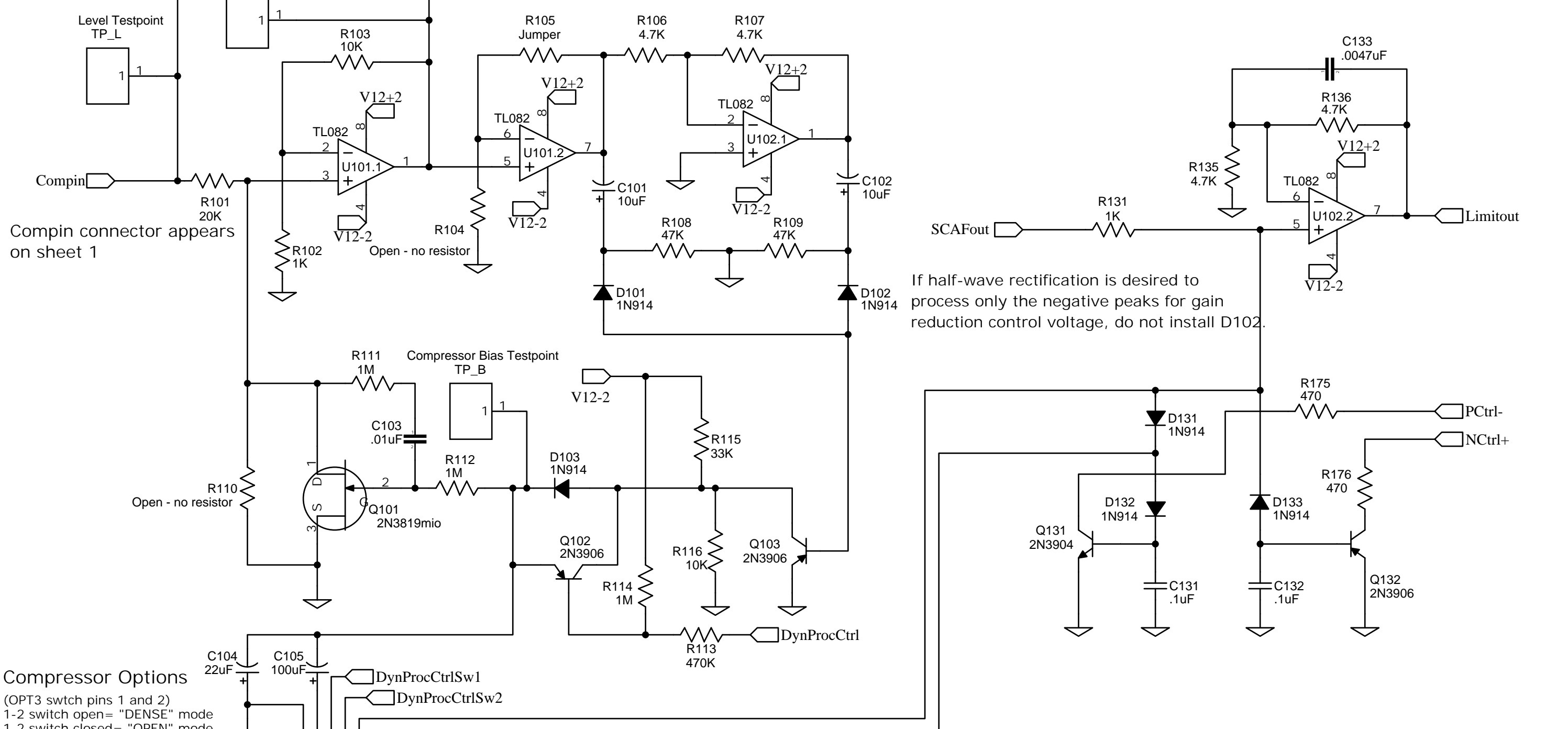
TITLE: W8KHK N1BCG The "MAX" Audio Processor		REV: 5.00
Date: 2023-03-14	Sheet: 1/5	
EasyEDA V5.8.22	Drawn By: W8KHK	

Compressor and Peak Control

CMP header configuration
Connect 2 to 3 to enable function, 1 to 2 to bypass

R104 and R105 values may be altered
to increase gain at U101.2, providing
control of the compressor threshold.

SCAFin, SCAfOut, Limitout connectors appear on sheet 3



Compin connector appears on sheet 1

If half-wave rectification is desired to process only the negative peaks for gain reduction control voltage, do not install D102.

Compressor Options
(OPT3 switch pins 1 and 2)
1-2 switch open= "DENSE" mode
1-2 switch closed= "OPEN" mode
(OPT3 switch pins 3 and 4)
3-4 switch open= Dynamic Processing ON
3-4 switch closed= Dynamic Processing OFF

Peak Limit
(OPT3 switch pins 6 and 7)
Open: +140
Closed: +100

To provide middle setting between open and dense:
Install a center-off switch for open - dense mode.
Add a 4.7K resistor between OPT3 pins 1 and 2
On the main board or between NC and NO contacts of the dense/open switch on the back side of the front panel interface printed circuit board.

DynProcCtrl, DynProcCtrlSw1, DynProcCtrlSw2, NCtrl+ and PCtrl- connectors appear on sheet 4

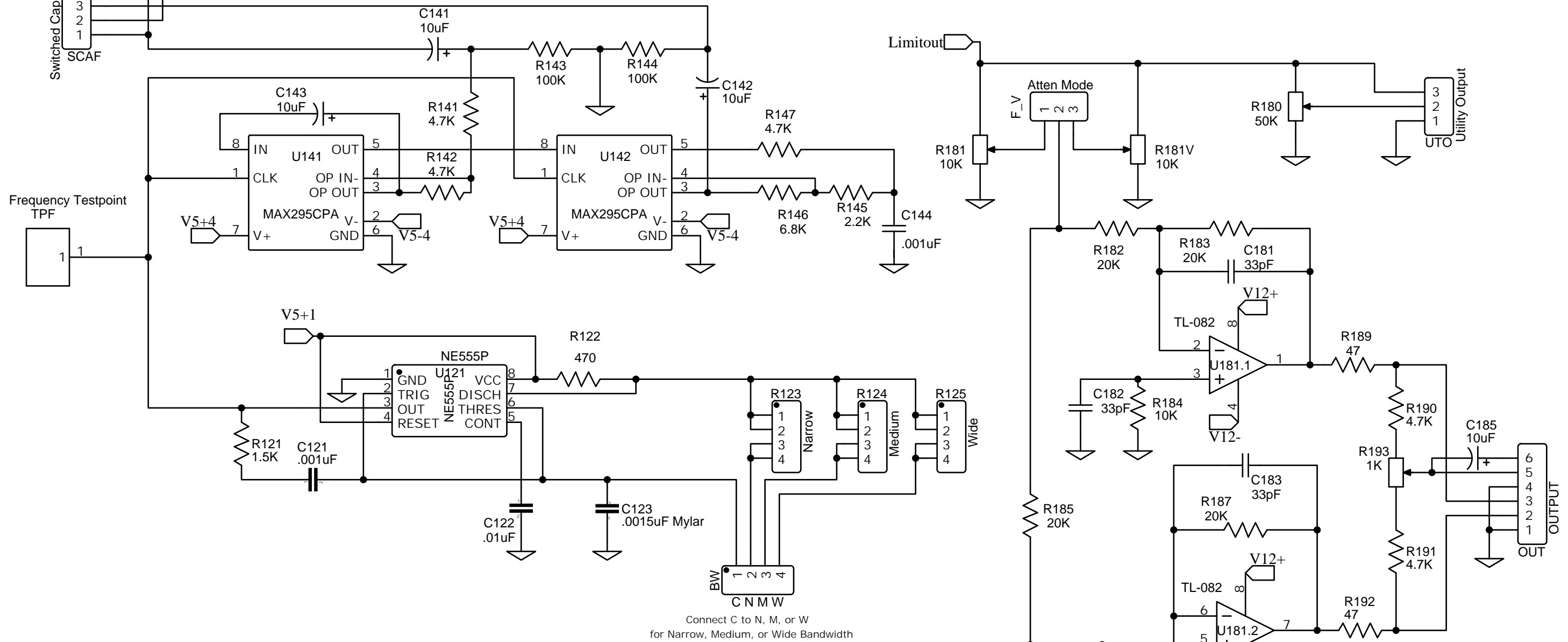
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Bandwidth Clock, SCAF Filter, and Differential Output Amplifier

SCAF header configuration
Connect 2 to 3 to enable function, 1 to 2 to bypass

SCAFin, SCAFOut, Limitout connectors appear on sheet 2



SCAF Clock Specifications:

Audio Response	AM Bandwidth	Clock Frequency
3 KHz	6 KHz	129 KHz
4 KHz	8 KHz	171 KHz
5 KHz	10 KHz	215 KHz
6 KHz	12 KHz	238 KHz
7 KHz	14 KHz	280 KHz

Preferred, most accurate calibration method:

Clock frequency is adjusted such that SCAF output signal level is reduced 20 dB (1/10 level) from the 1 KHz reference level, when the signal frequency is raised to the desired audio response frequency.

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Values for R124 or R125 resistor:

For only two bandwidths	For three bandwidth settings	
Clock Timing Resistance	Resistance in Parallel with R123	Fixed
R123 Resistor: 8.2K ohms	Variable (calibrate)	Fixed
	14.36K ohms	15 K ohms
	6.11 K ohms	6.2 K ohms
	4.51 K ohms	4.7 K ohms
	2.95 K ohms	3.0 K ohms

Resistance in parallel with 8.2K R123 when using a center-off bandwidth while 8.2K R123 is always in circuit.

For "close-enough" clock frequency, you will be in the ball park if you use the fixed values above.

If you wish to calibrate with trim pots:

R123 = 10K (103)
R124 = 25K (253) or 10K (103)
R125 = 10K (103) or 5K (502)

Output Connections:

Balanced Differential Fixed:

Gnd=1 Pos=2 Neg=3

Single Ended Variable, with DC Coupling:

Gnd=4 Signal=5

Single Ended Variable, with DC Blocking:

when DC is present at the mic connector
Gnd=4 Signal=6

This option is useful when driving mic input

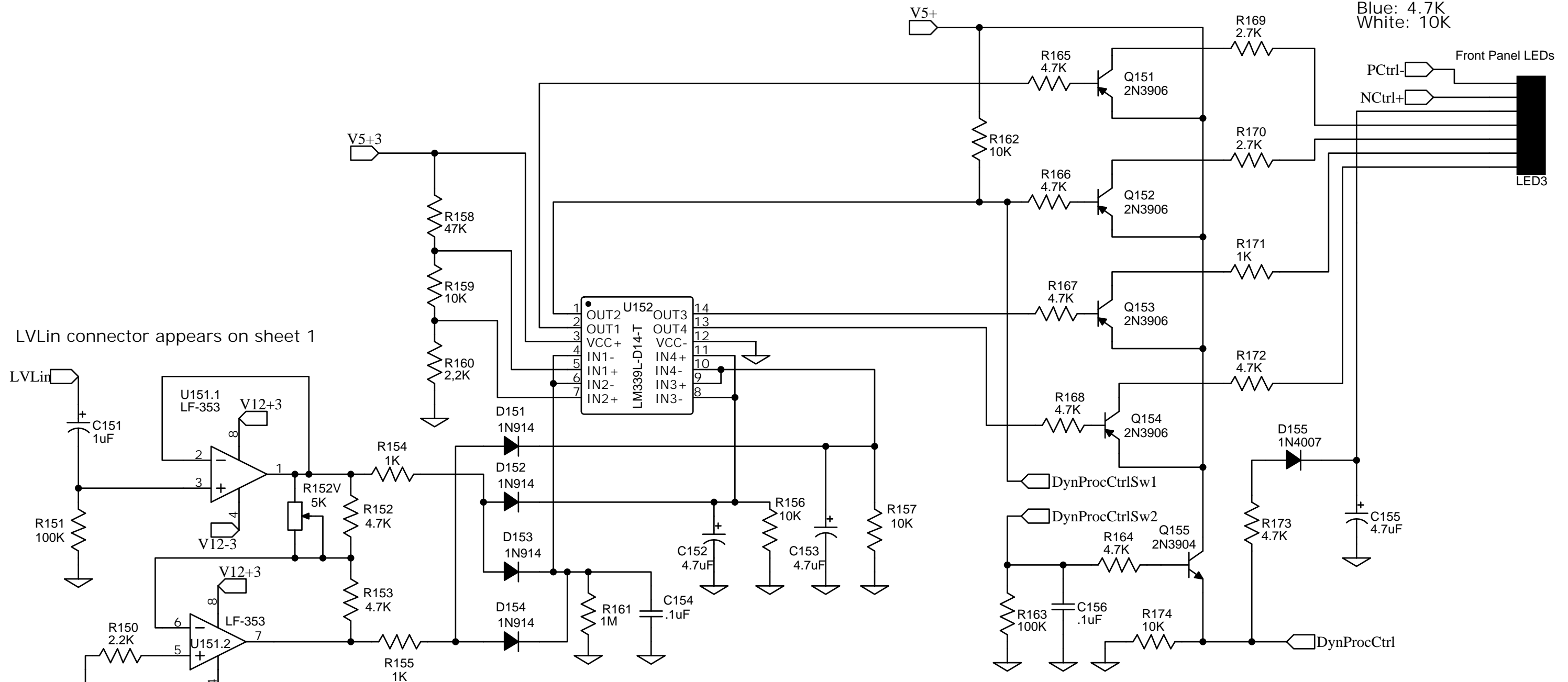
Single ended variable options provide adjustable level with automatic phase reversal, where the phase cross-over point occurs at the center of pot rotation

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Level Indicator and Dynamic Processing Control Logic

R169 through R173 current limiting resistors set LED brilliance
 Various color LEDs require different current for similar brilliance
 At 5 volt supply, the following values are suggested for each color:

Red: 2.7K
 Yellow: 1.5K
 Green: 1K
 Blue: 4.7K
 White: 10K



LVLin connector appears on sheet 1

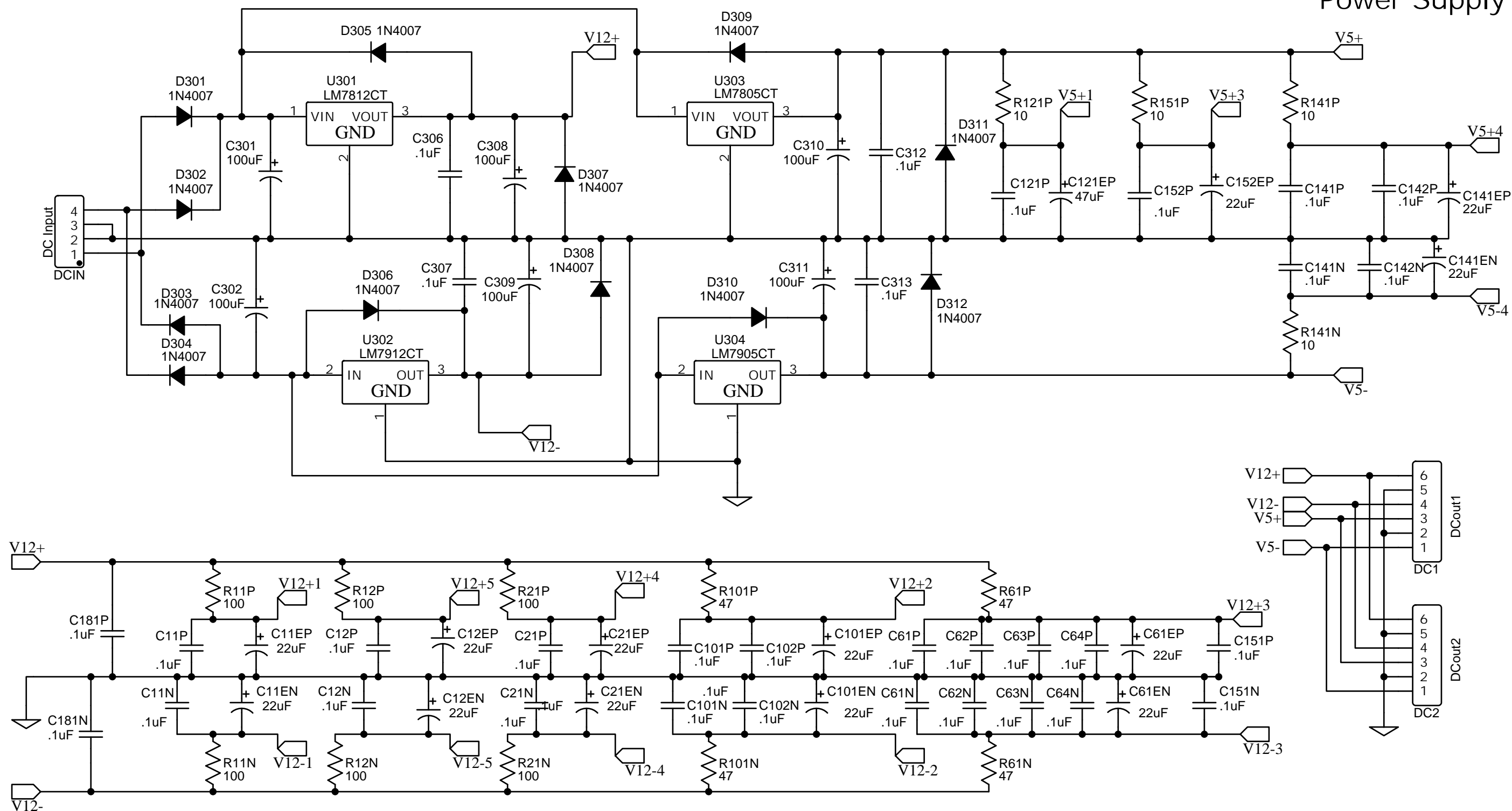
Install either R152 for standard balance,
 Or R152V for adjustable, calibrated balance
 DO NOT install both resistors!

With 0 dBm 1KHz signal at U151 pin 3,
 adjust R152V for equal DC levels at U152 Pins 6 and 7
 or adjust R152V for equal AC voltages at U151 pins 1 and 7.


DynProcCtrl, DynProcCtrlSw1, DynProcCtrlSw2, NCtrl+ and PCtrl- connectors appear on sheet 2

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Power Supply



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	Date: 2023-03-14	Drawn By: W8KHK