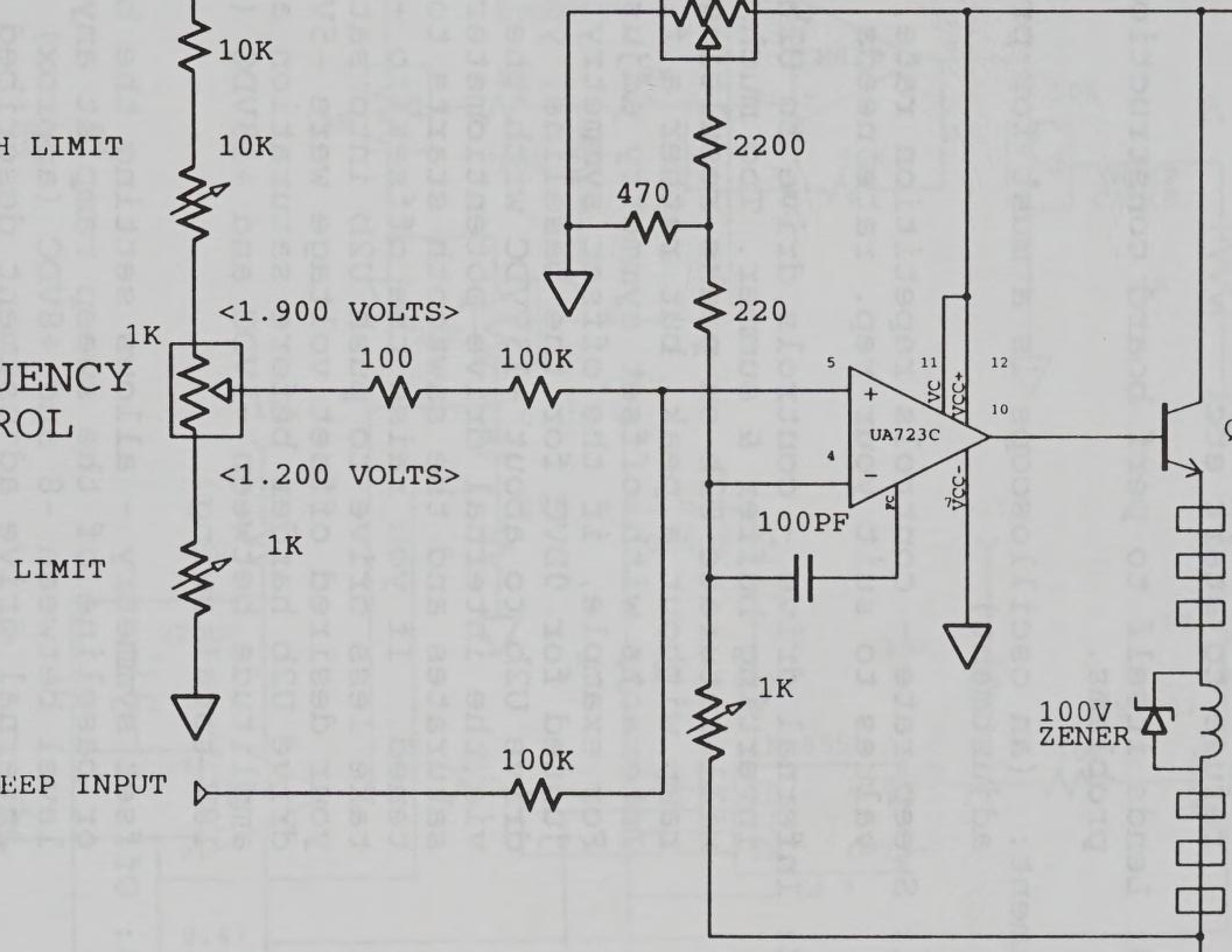
nary application are as resonant structur
tunable filters and tunable oscillators.
 - 100 ma current at the lowest frequency
ighest frequency. A programmable current
ble control of the YIG frequency as well
 it is possible to microwave oscillators
pectrum analyzers and swept signal genera
rcuit is one that works and is easy to se
keep straight is that the low and hi
 simply establish the range of volt
control. They are to place the voltage
ge of the OP amplifier and forgotten.
 adjustments.
collaboration adjustments are the off
on potentiometers, which establish the l
nd the high current high frequency range

ytooth or Ramp Generator

This is my adaptation o fa circuit which
the QST article November '85 pg 23-29.
 been duplicated at least five times and
 reliable. The components have been c
erations so don't get too free with the

output wave form = ramp + going

offset adjustable from 8vdc to +8 vdc


10K
H LIMIT
10K
2200
470
<1.900 VOLTS>
220
1K
JENCY
ROL
100
100K
5
11
12
VC
VCC+
10
UA723C
4
VCC-
7
<1.200 VOLTS>
100PF
1K
LIMIT
1K
100V
ZENER
100K
EEP INPUT

refuse to start etc.

: Lends itself to perf board constructio
problems.

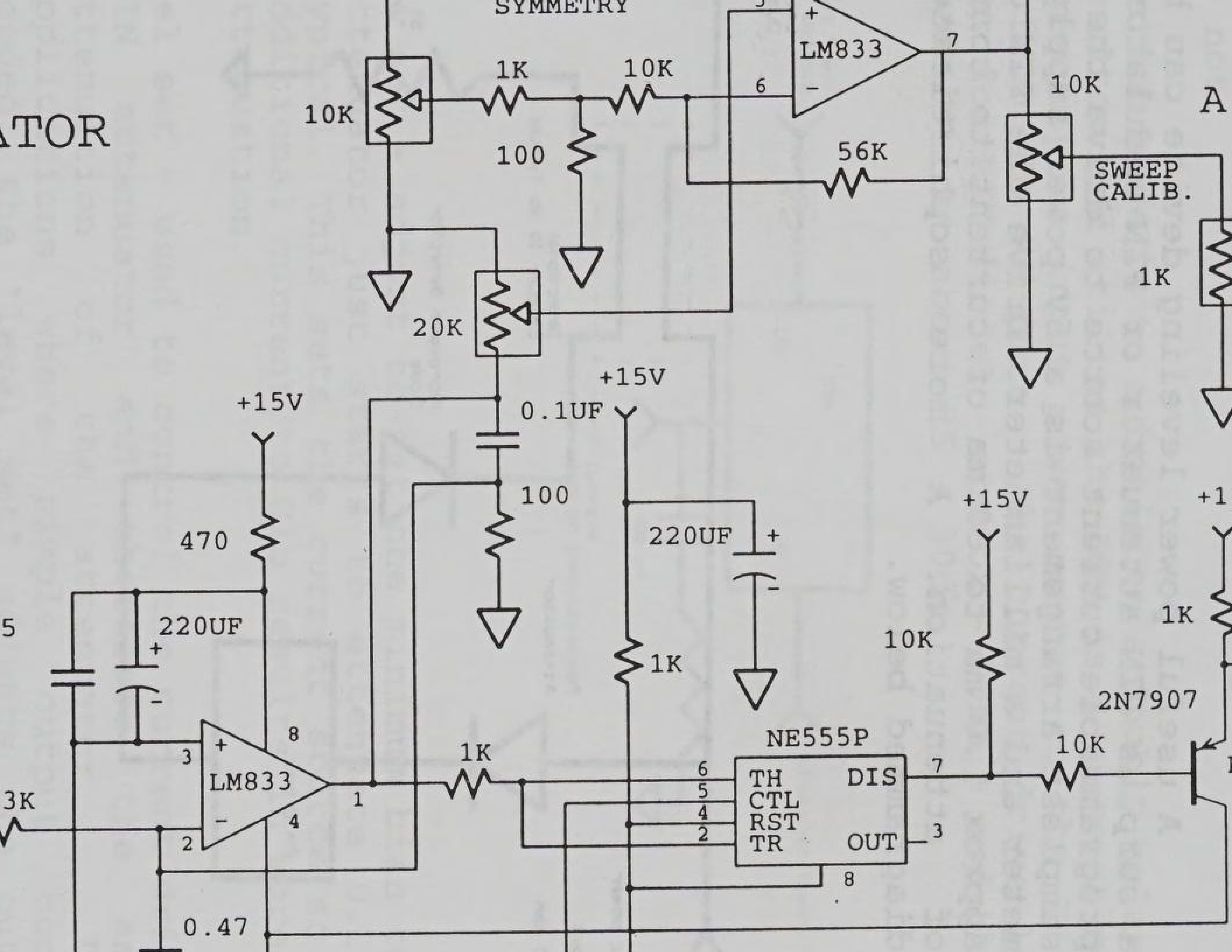
ment: (an oscilloscope is a must for pr
adjustment)

: Sweep rate - controls repetition rate,
values to suit your rep. rate needs

: Infernal drive - controls drive to U2b
inverting buffer & summer. Too much
will saturate U2b on peaks resulting
ramp without a peak, but rather a fl
Interacts with offset symmetry adjus
For example, if the offset symmetry
justed for 0DVC for the baseline, yo
drive U2b to about +13 VDC with the
via the internal drive potentiometer
saturates and the sawtooth starts to
tened. If you raise the offset to +
take less drive to push U2b into sat
your desired offset voltage were -5V
drive U2b harder before saturation a
amplitude between -5VDC and +13VDC (
18V total swing.

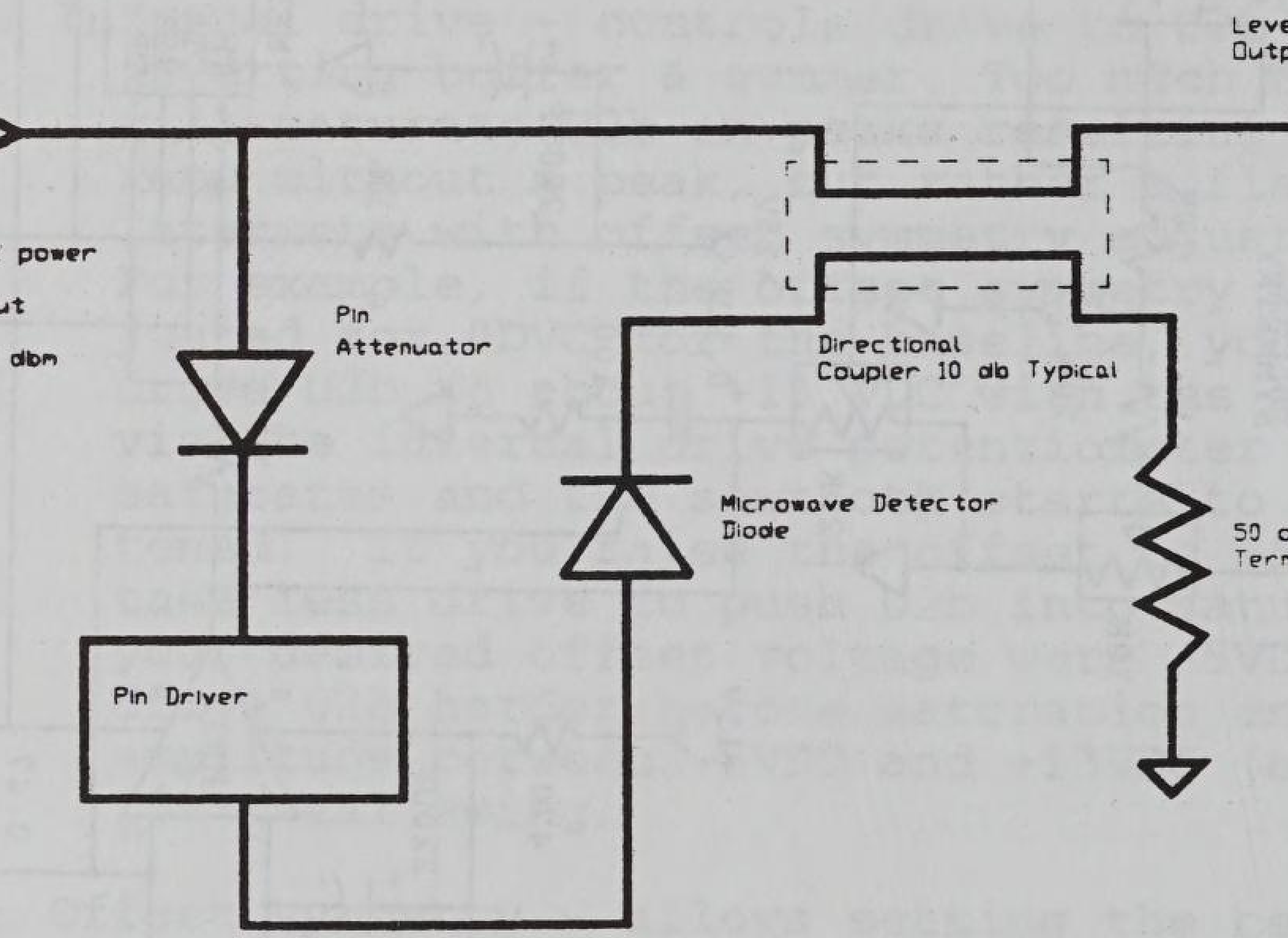
: Offset symmetry - allows setting the b
or baseline of the sweep ramp at any
level between -8 and +8VDC (approx)
internal drive adjustment described

ATOR



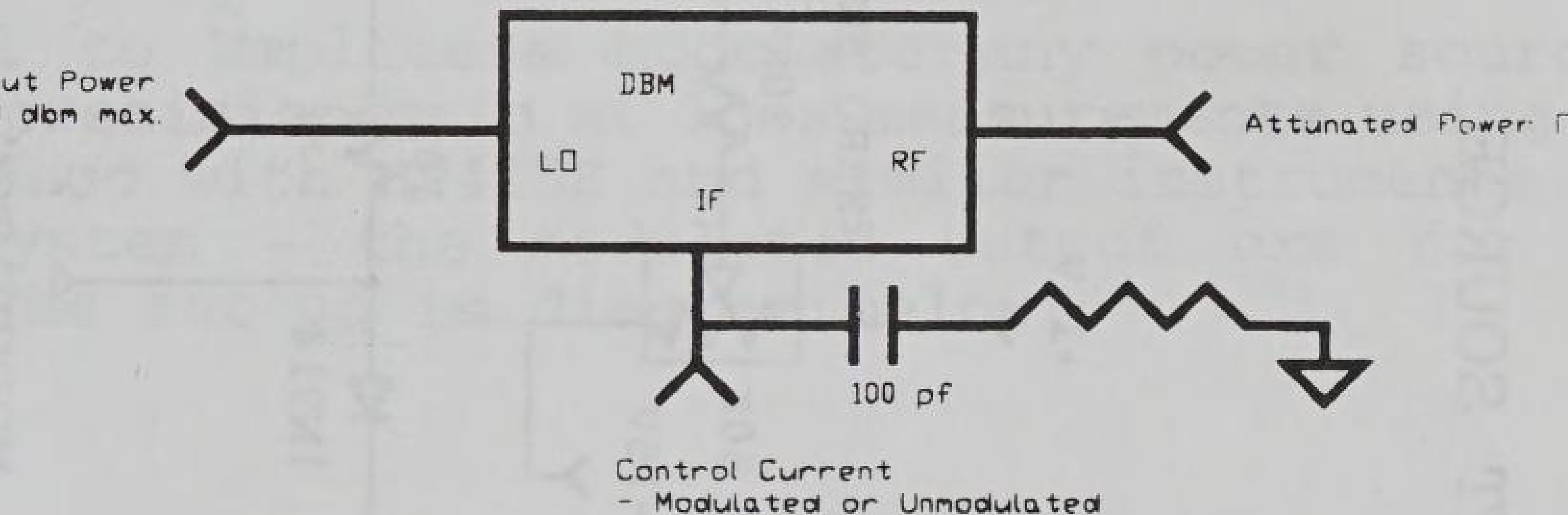
SYMMETRY
10K
1K
10K
100
LM833
7
6
3
56K
10K
A
SWEEP
CALIB.
1K
20K
+15V
0.1UF
+15V
100
470
220UF
5
220UF
1K
+15V
10K
+1
1K
2N7907
NE555P
TH
CTL
RST
TR
DIS
OUT
6
5
4
2
7
3
8
10K
3K
LM833
8
3
1
4
2
1K
0.47

A useful power leveling device can b
a surplus PIN attenuator or PIN modulator
programmable current source to drive the
simplest arrangement is a 5V power supply
meter and a milliammeter. Drive the PIN d
approx 1.0 ma to 60 ma of current to cont
of attenuation. A more sophisticate
diagrammed below.



not.

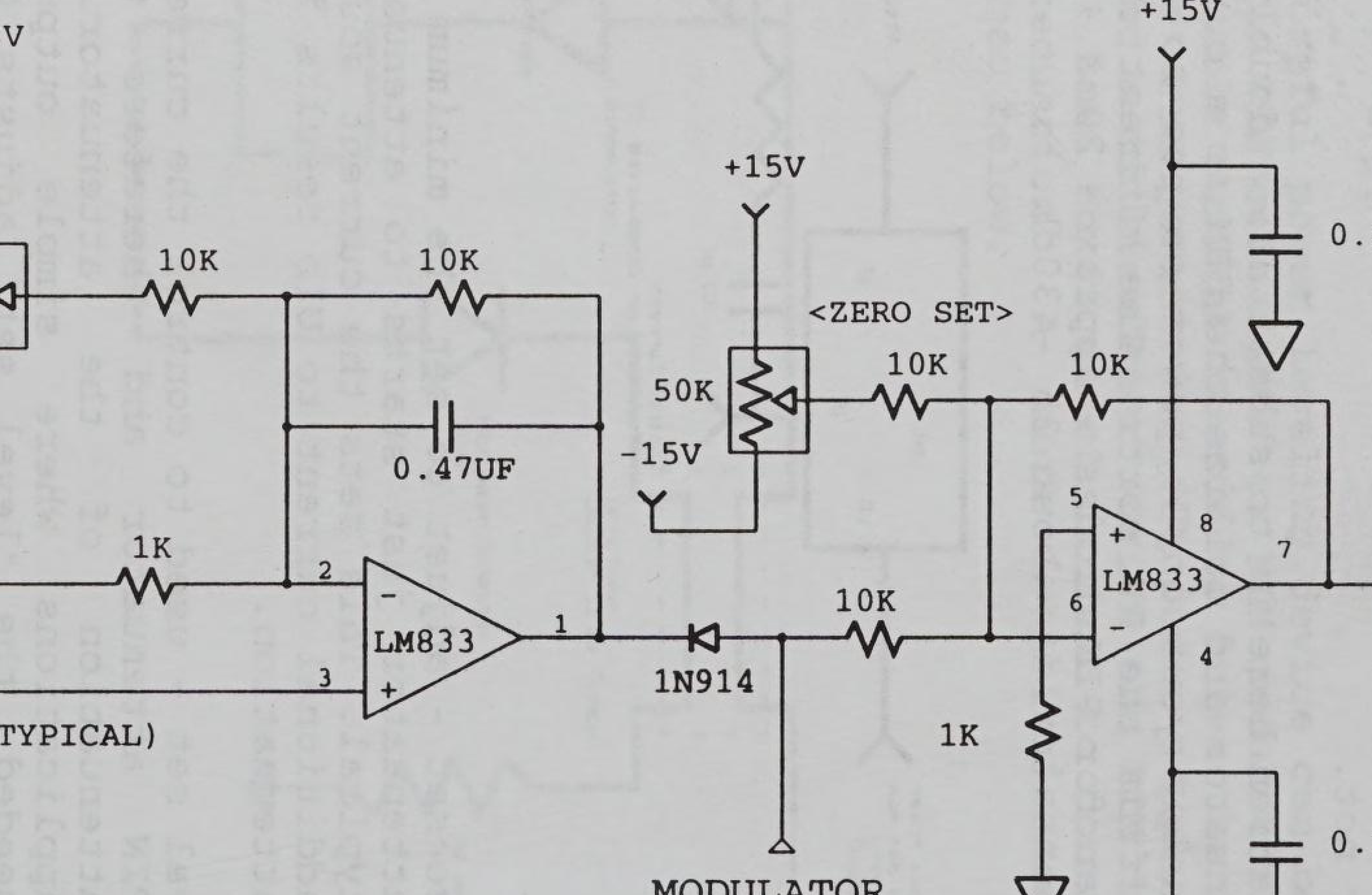
ation here is to substitute a doubly balan
nuator and utilize the DBM as a current c
nect your input power source to the IF
from the RF port. The current drive l
an for PIN diodes - approx - 20ma - and th
enuator at about 25 - 30db.



o set - adjust to set the minimum bias t
ttenuator just starts to attenuate 0.1
ypical. This sets the current source so
dditional current to U1b results in more
ttenuation.

el set - used to control the current dri
IN attenuator and therefore the am
ttenuation of the attenuator. I
pplications where simple output con
eeded, the "level set" adjusts the out

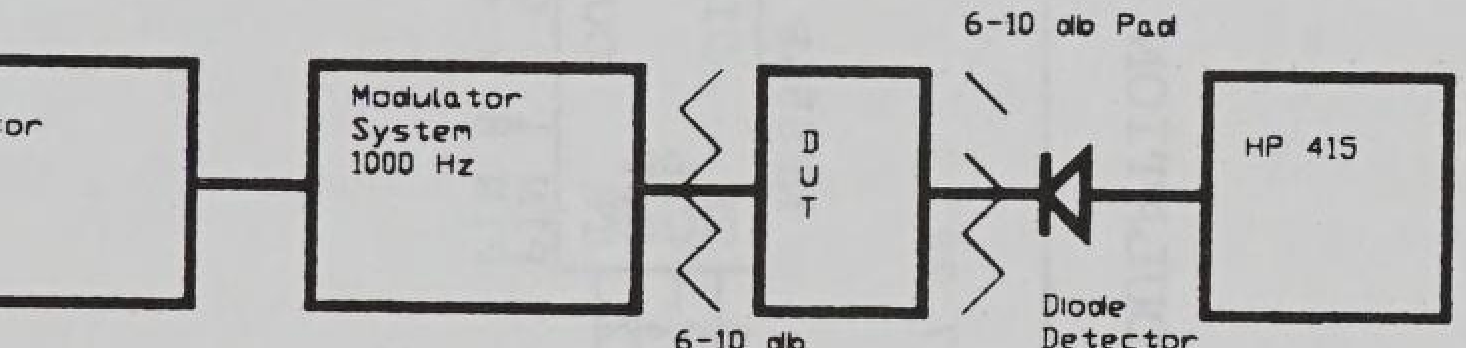
PROGRAMABLE CURRENT SOURCE



de Modulator-

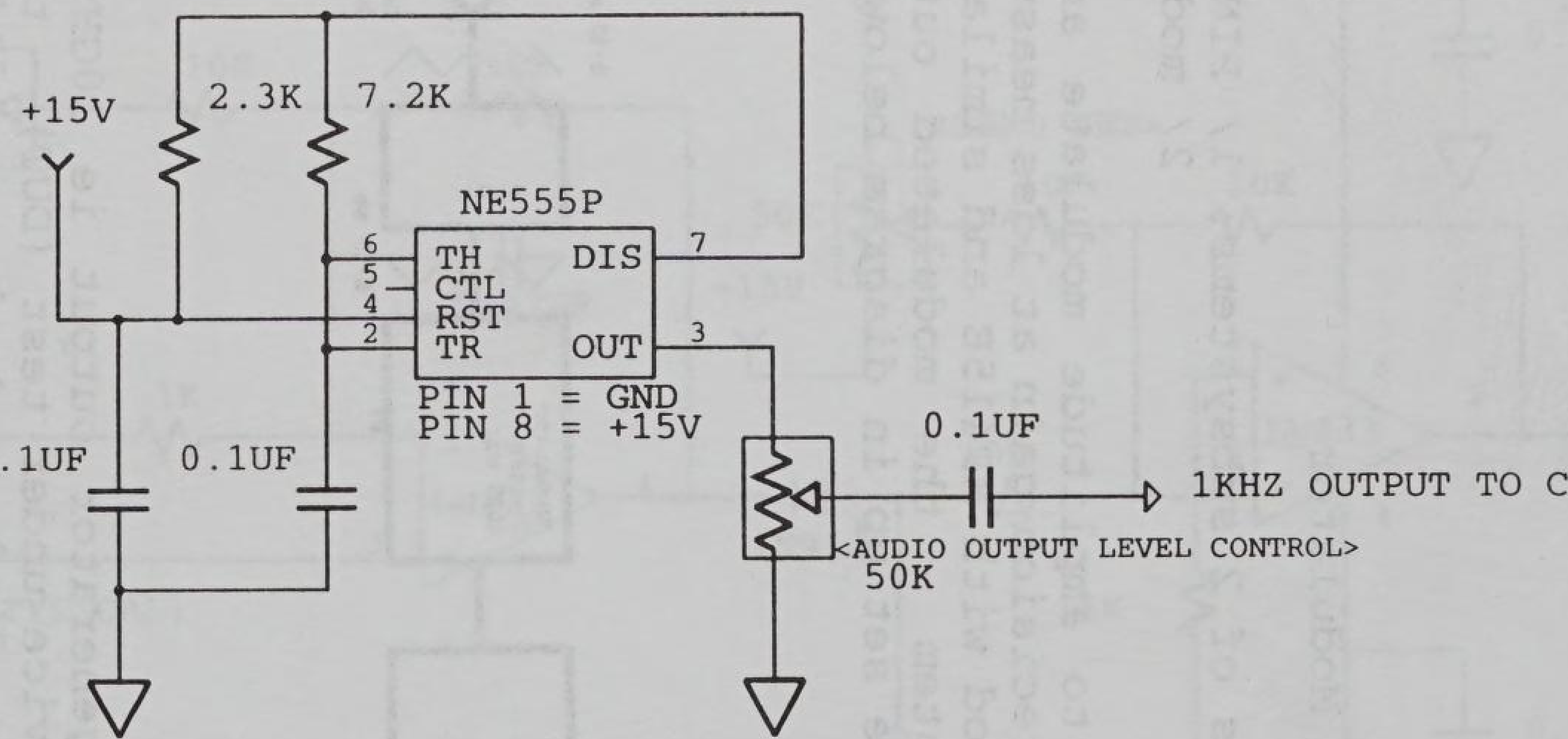
sts of 2 subsystems: 1/ PIN attenuator &
2/ modulation source

l to amplitude modulate any power sourc
precision gain at loss measurements using
thod with HP415E and similar instruments.
ystem - the modulated output are for
The set up in diagram below.



generator output ie 10GHz is modulated
device under test (DUT) - the output dete

UARE WAVE MODULATION SOURCE



t- } Establish voltage drive limits for f
et-} control to drive U1. Low limit is l
frequency, High limit is highest fre
desired. The voltages indicated are
target values that I use.

ntrol - usually a 10 turn precision pot
that permits control of YIG drive

ration - establishes minimum current to Y
"Frequency" Control is at low limit
lowest frequency.

tion - establishes maximum current to YIG
"Frequency" Control is at high limit
Highest frequency. Span and Offset
interact.