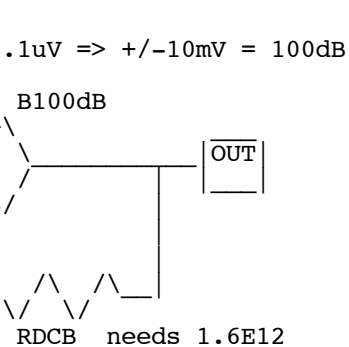
FM_Limiter_Circuit

* dsauersanjose@aol.com 1/15/09
* www.idea2ic.com




```
.OPTIONS     GMIN = 1e-18
VIN          VIN   0     SIN( 0 .1u 10k) AC .1u
VOS          VIN   INP   DC    1m
B100dB       OUT   0     V  = (V(INP) -V(INN))*100000
RDCB         OUT   INN   1.6e12
CDCB         INN   0     10p

.control
set pensize = 2

tran         1u    1m     0   1u
plot         v(vin)
plot         v(out)
ac           dec       30        1m       100k
plot         db(vin) db(out)

.endc

.end
```

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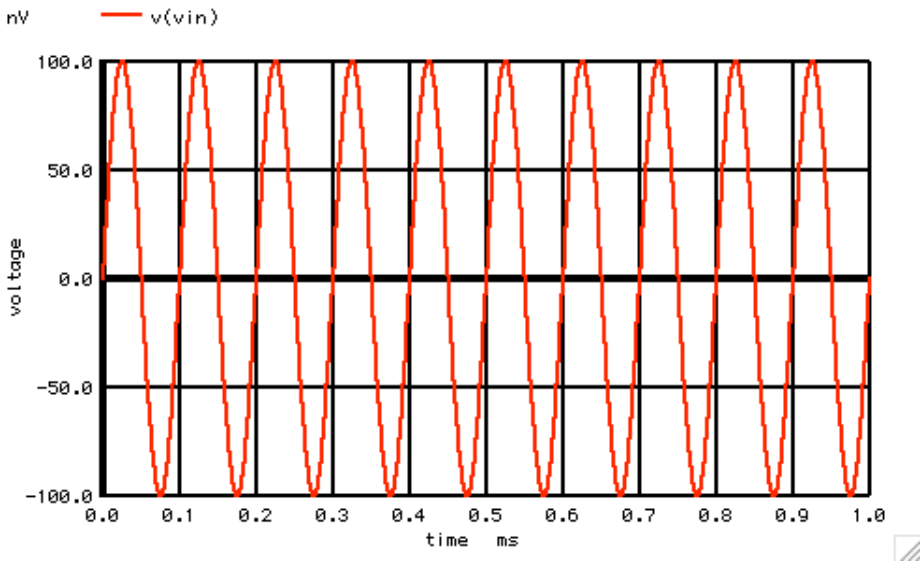
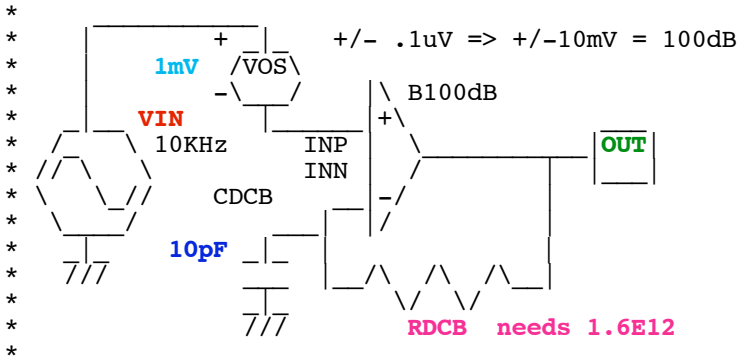
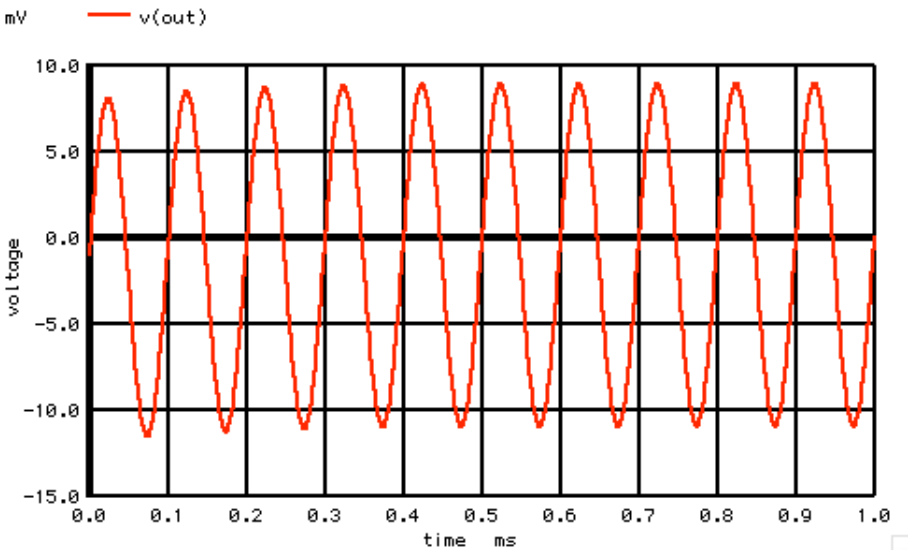
Taking AC voltages from the sub microvolt level to the millivolt level requires the ability to take around 100dB of AC gain.



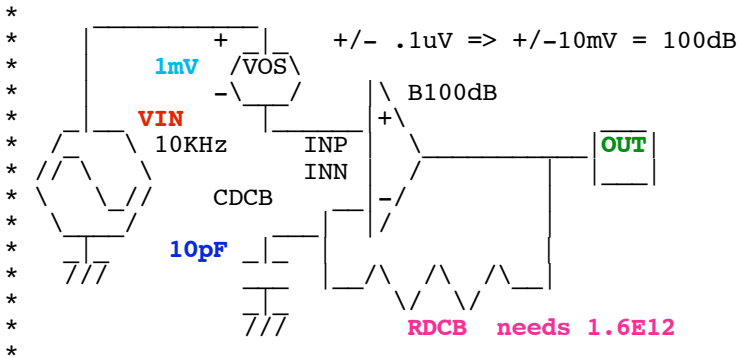
The trouble is that the input to any amplifier is going to have offset of at least a millivolt. Some how a 100dB of gain needs to be taken without having the output clipping at its rails.



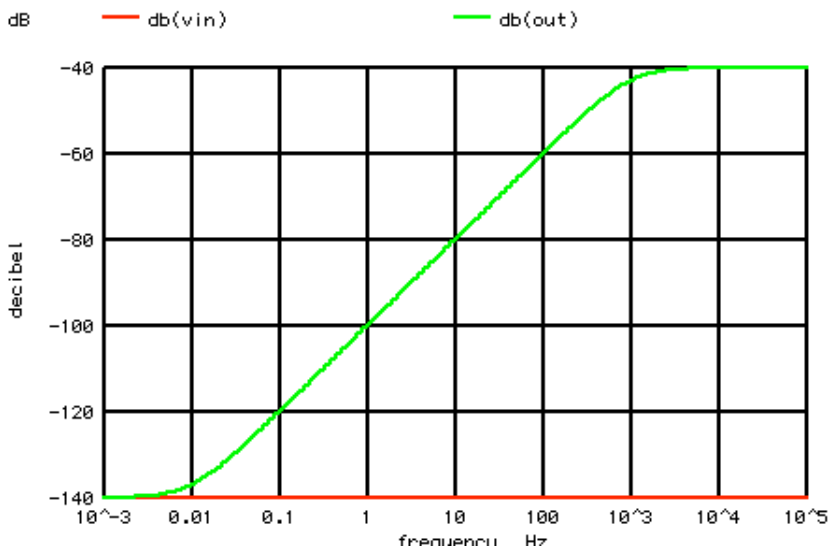
The circuitry used in the limiter circuit of a FM detector had long solved this problem using the circuit above. If the RC values could be made big enough, then the DC feedback could be one while at a high enough signal frequency the amplifier would be operating at open loop gain.



Using this type of feedback, there is going to be a unity gain to the input offset.



To take this 100dB of gain completely inside the chip, one needs to be able to do it using around 10pf capacitor. If it is possible to get something to act like a large enough resistor, then above 1kHz the RC attentuation will be greater than 100dB and the amplifier will be running open loop.


dB
db(vin)
db(out)
-40
-60
-80
-100
-120
-140
decibel
10^-3
0.01
0.1
1
10
100
10^3
10^4
10^5
frequency Hz