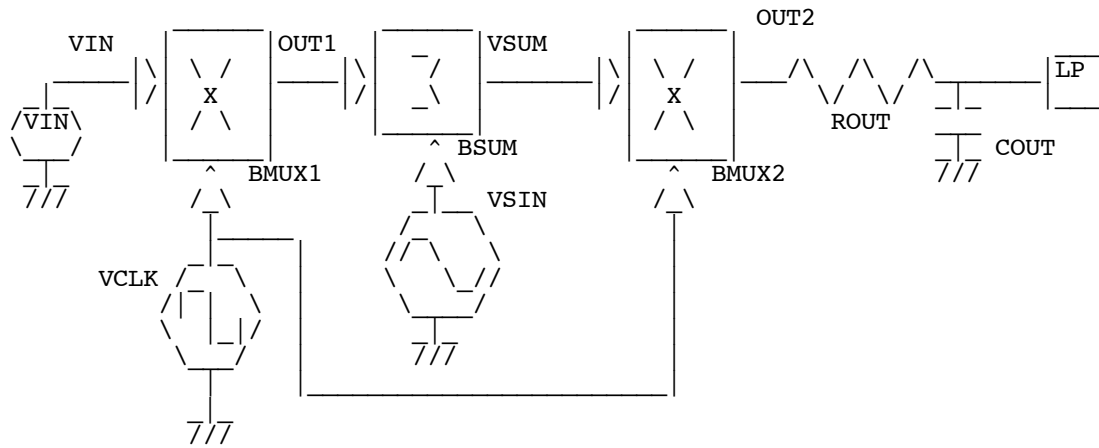
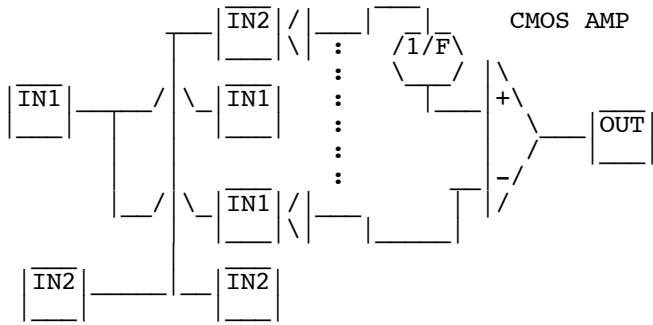


# Chopper\_Amp\_Alias

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

## CMOS SWITCHES



```

VSIN      VSIN  0    SIN( 0 1.3u 4900)
VCLK      VCLK  0    PULSE( -.7 .7 1n 1n 1n .1m .2m)
VIN1      VIN1  0    DC    1.1u
BMUX1     OUT1  0    V = u(V(VCLK))*V(VIN1) -1*u(-1*V(VCLK))*V(VIN1)
BSUM      VSUM  0    V = V(OUT1) + V(VSIN)
BMUX2     OUT2  0    V = u(V(VCLK))*V(VSUM) -1*u(-1*V(VCLK))*V(VSUM)
ROUT      LP    OUT2 3k
COUT      LP    0    3u
  
```

```

.control
set pensize = 2
  
```

```
tran      1u  10m  0  1u
plot      v(vin1) v(vsin)
plot      v(vsum)
plot      v(out2)

plot      v(vin1) v(vsin) v(lp)

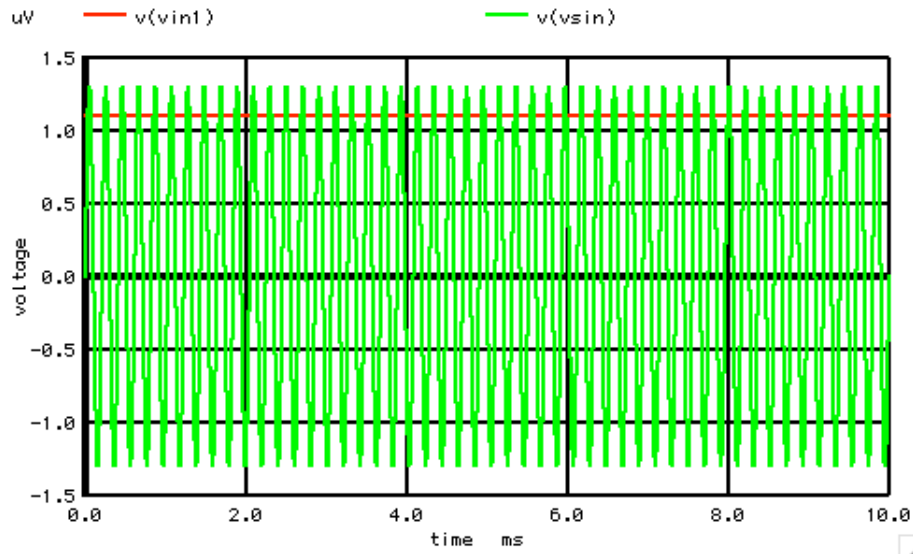
.endc

.end
```

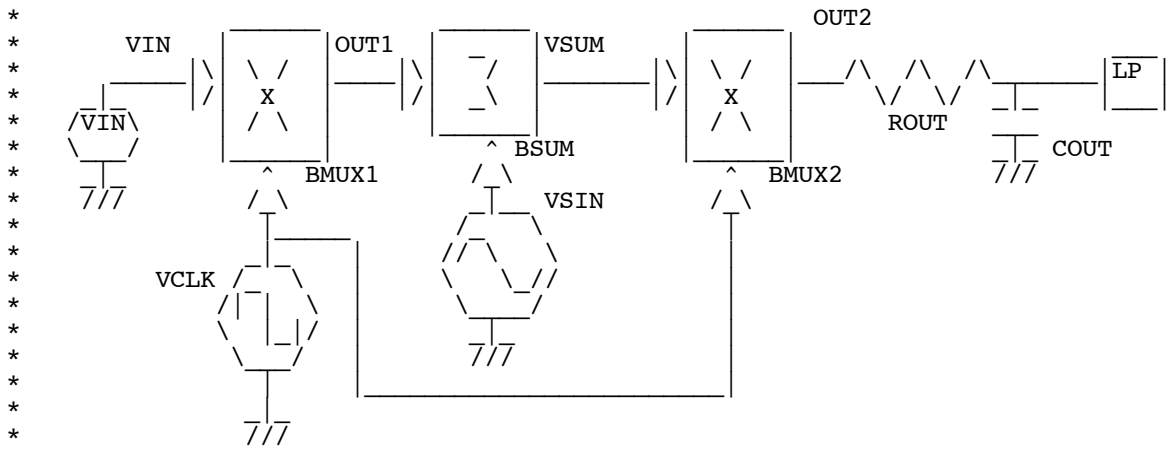
=====END\_OF\_SPICE=====

To Covert PDF to plain text click below  
<http://www.fileformat.info/convert/doc/pdf2txt.htm>

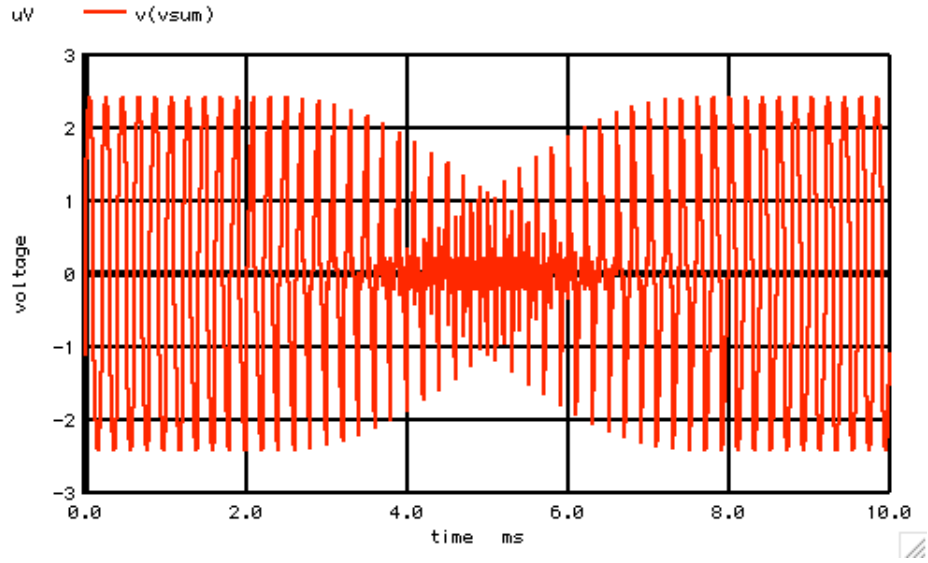
**The Chopper Amplifier has an aliasing problem when there are signals present which come close to the chopping frequency.**

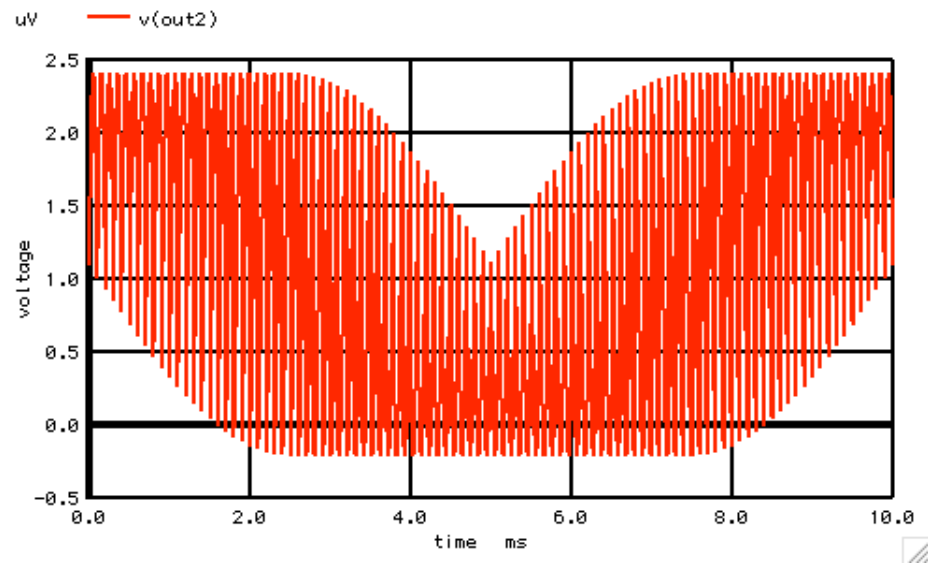


**Having a signal present at VIN which is close to the clock frequency is not good either.**

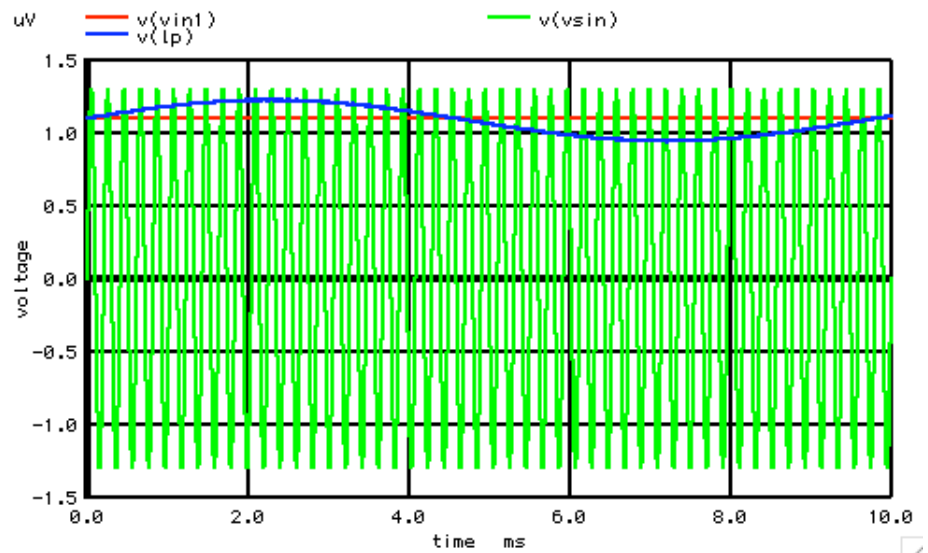


The outputs signals are shown below.





In this case the VSIN signal is set to be slightly off of the clock signal. Now a little of this VSIN signal is getting aliased and is appearing at the lowpass output.



A common way avoid this problem is to spread spectrum

the clock frequency by a random signal.

