NGSPICE_CTRL

```
.option sparse
.temp 27
.param wx=5u lx=0.13u vbx=0
.noise v(n) vg lin 1 1 1 1
.control
option numdgt=3
set wr_singlescale
set wr_vecnames

compose l_vec  values 0.13u 0.2u 0.3u 0.4u 0.5u 1u 5u 10u
compose vg_vec start= 0 stop=1.5  step=25m
compose vd_vec start= 0 stop=1.5  step=25m
compose vb_vec values 0 0.4 0.8 1.2

foreach var1 $&l_vec
  alterparam lx=$var1
  reset
  foreach var2 $&vg_vec
    alter vg $var2
    foreach var3 $&vd_vec
      alter vd $var3
      foreach var4 $&vb_vec
        alter vsb $var4
        run
        wrdata techsweep_sg13_lv_nmos.txt noise1.all
        destroy all
        set appendwrite
        unset set wr_vecnames
      end
    end
  end
end

set appendwrite=0

alterparam lx=0.13u
alterparam vbx=0
reset
op
*showmod
show
write techsweep_sg13g2_lv_nmos.raw
.endc
```

MODEL

```
.lib cornerMOSlv.lib mos_tt
```

NGSPICE_SAVE

```
.save b d g n
.save @n.xm1.nsg13_lv_nmos[cgsol]
.save @n.xm1.nsg13_lv_nmos[cgdol]
.save @n.xm1.nsg13_lv_nmos[cdd]
.save @n.xm1.nsg13_lv_nmos[cgb]
.save @n.xm1.nsg13_lv_nmos[cgd]
.save @n.xm1.nsg13_lv_nmos[cgg]
.save @n.xm1.nsg13_lv_nmos[cgs]
.save @n.xm1.nsg13_lv_nmos[css]
.save @n.xm1.nsg13_lv_nmos[gds]
.save @n.xm1.nsg13_lv_nmos[gm]
.save @n.xm1.nsg13_lv_nmos[gmb]
.save @n.xm1.nsg13_lv_nmos[ids]
.save @n.xm1.nsg13_lv_nmos[l]
.save @n.xm1.nsg13_lv_nmos[vgs]
.save @n.xm1.nsg13_lv_nmos[vds]
.save @n.xm1.nsg13_lv_nmos[vsb]
.save @n.xm1.nsg13_lv_nmos[vth]
.save @n.xm1.nsg13_lv_nmos[vdss]
.save @n.xm1.nsg13_lv_nmos[fug]
.save @n.xm1.nsg13_lv_nmos[sid]
.save @n.xm1.nsg13_lv_nmos[sfl]
.save @n.xm1.nsg13_lv_nmos[cjd]
.save @n.xm1.nsg13_lv_nmos[cjs]
.save @n.xm1.nsg13_lv_nmos[rg]
```

simulate

annotate OP