NGSPICE_CTRL

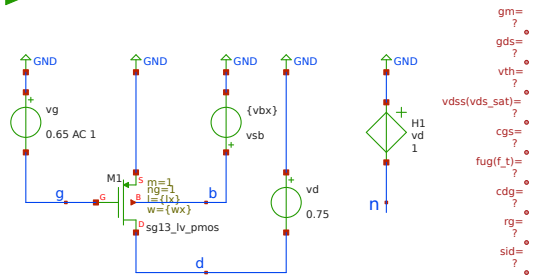
```
.option sparse
.param temp=27
.param wx=5u lx=0.13u vbx=0
.noise v(n) vg lin 1 1 1 1
.control
option numdgt=3
set wr_singlescale
set wr_vecnames

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_pmos.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_pmos.raw
.endc
```

NGSPICE_SAVE

```
.save b d g n
.save @n.xm1.nsg13_lv_pmos[cgsol]
.save @n.xm1.nsg13_lv_pmos[cgdol]
.save @n.xm1.nsg13_lv_pmos[cdd]
.save @n.xm1.nsg13_lv_pmos[cgb]
.save @n.xm1.nsg13_lv_pmos[cgd]
.save @n.xm1.nsg13_lv_pmos[cgg]
.save @n.xm1.nsg13_lv_pmos[cgs]
.save @n.xm1.nsg13_lv_pmos[css]
.save @n.xm1.nsg13_lv_pmos[gds]
.save @n.xm1.nsg13_lv_pmos[gm]
.save @n.xm1.nsg13_lv_pmos[gmb]
.save @n.xm1.nsg13_lv_pmos[ids]
.save @n.xm1.nsg13_lv_pmos[l]
.save @n.xm1.nsg13_lv_pmos[vgs]
.save @n.xm1.nsg13_lv_pmos[vds]
.save @n.xm1.nsg13_lv_pmos[vsb]
.save @n.xm1.nsg13_lv_pmos[vth]
.save @n.xm1.nsg13_lv_pmos[vdss]
.save @n.xm1.nsg13_lv_pmos[fug]
.save @n.xm1.nsg13_lv_pmos[sid]
.save @n.xm1.nsg13_lv_pmos[sfl]
.save @n.xm1.nsg13_lv_pmos[cjd]
.save @n.xm1.nsg13_lv_pmos[cjs]
.save @n.xm1.nsg13_lv_pmos[rg]
```

simulate

annotate OP



MODEL

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