\*\* sch\_path: /home/comp/Desktop/chip\_design/nfetsym.sch

\*\*.subckt nfetsym

Xnfet1 nfet\_out nfet\_in GND GND asap\_7nm\_nfet l=7e-009 nfin=14

R1 VDD nfet\_out 1k m=1

V1 nfet\_in GND 0

V2 VDD GND 3

\*\*\*\* begin user architecture code

.dc v1 0 0.7 1m v2 0 0.7 0.2

.control

run

set xbrushwidth=3

let vd = vdd-nfet\_out

let id=vd/1000

plot id

.endc

.save all

\*\*\*\* end user architecture code

\*\*.ends

.GLOBAL GND

.GLOBAL VDD

\*\*\*\* begin user architecture code

.subckt asap\_7nm\_nfet S G D B l=7e-009 nfin=14

nnmos\_finfet S G D B BSIMCMG\_osdi\_N l=7e-009 nfin=14

.ends asap\_7nm\_nfet

.model BSIMCMG\_osdi\_N BSIMCMG\_va (

+ TYPE = 1

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\* general \*

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+version = 107 bulkmod = 1 igcmod = 1 igbmod = 0

+gidlmod = 1 iimod = 0 geomod = 1 rdsmod = 0

+rgatemod= 0 rgeomod = 0 shmod = 0 nqsmod = 0

+coremod = 0 cgeomod = 0 capmod = 0 tnom = 25

+eot = 1e-009 eotbox = 1.4e-007 eotacc = 1e-010 tfin = 6.5e-009

+toxp = 2.1e-009 nbody = 1e+022 phig = 4.2466 epsrox = 3.9

+epsrsub = 11.9 easub = 4.05 ni0sub = 1.1e+016 bg0sub = 1.17

+nc0sub = 2.86e+025 nsd = 2e+026 ngate = 0 nseg = 5

+l = 2.1e-008 xl = 1e-009 lint = -2e-009 dlc = 0

+dlbin = 0 hfin = 3.2e-008 deltaw = 0 deltawcv= 0

+sdterm = 0 epsrsp = 3.9 nfin = 1

+toxg = 1.80e-009

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\* dc \*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

+cit = 0 cdsc = 0.01 cdscd = 0.01 dvt0 = 0.05

+dvt1 = 0.47 phin = 0.05 eta0 = 0.07 dsub = 0.35

+k1rsce = 0 lpe0 = 0 dvtshift= 0 qmfactor= 2.5

+etaqm = 0.54 qm0 = 0.001 pqm = 0.66 u0 = 0.0303

+etamob = 2 up = 0 ua = 0.55 eu = 1.2

+ud = 0 ucs = 1 rdswmin = 0 rdsw = 200

+wr = 1 rswmin = 0 rdwmin = 0 rshs = 0

+rshd = 0 vsat = 70000 deltavsat= 0.2 ksativ = 2

+mexp = 4 ptwg = 30 pclm = 0.05 pclmg = 0

+pdibl1 = 0 pdibl2 = 0.002 drout = 1 pvag = 0

+fpitch = 2.7e-008 rth0 = 0.225 cth0 = 1.243e-006 wth0 = 2.6e-007

+lcdscd = 5e-005 lcdscdr = 5e-005 lrdsw = 0.2 lvsat = 0

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\* leakage \*

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+aigc = 0.014 bigc = 0.005 cigc = 0.25 dlcigs = 1e-009

+dlcigd = 1e-009 aigs = 0.0115 aigd = 0.0115 bigs = 0.00332

+bigd = 0.00332 cigs = 0.35 cigd = 0.35 poxedge = 1.1

+agidl = 1e-012 agisl = 1e-012 bgidl = 10000000 bgisl = 10000000

+egidl = 0.35 egisl = 0.35

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\* rf \*

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\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\* junction \*

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\* capacitance \*

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+cfs = 0 cfd = 0 cgso = 1.6e-010 cgdo = 1.6e-010

+cgsl = 0 cgdl = 0 ckappas = 0.6 ckappad = 0.6

+cgbo = 0 cgbl = 0

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\* temperature \*

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+tbgasub = 0.000473 tbgbsub = 636 kt1 = 0 kt1l = 0

+ute = -0.7 utl = 0 ua1 = 0.001032 ud1 = 0

+ucste = -0.004775 at = 0.001 ptwgt = 0.004 tmexp = 0

+prt = 0 tgidl = -0.007 igt = 2.5

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\* noise \*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*\*)

.control

pre\_osdi /home/comp/Desktop/chip\_design/asap\_7nm\_Xshem/bsimcmg.osdi

.endc

\*\*\*\* end user architecture code

.end