```
Title        SSUPREM 3 Example 1. NMOS Silicon Gate
Comment      Gate Region
$            File p3ghex1b

Comment      Initialize silicon substrate
Initilaixe   Structure=s3e1as

Comment      Implant Arsenic for source/drain regions
Implant      Arsenic      Dose=5E15 Energy=150

Comment      Drive-in Arsenic and re-oxidize source/drain regions
Diffusion    Temperature=1000     Time=30    DryO2

Comment      Deposit Phosphorus doped SiO2 using CVD
Deposit      Oxide Thickness=.7500 Phosphorus Concentration=1.E21

Comment      Increase the diffusivity of phosphorus in oxide by two
order of magnitude
Phosphorus Oxide Dix.0=4.56E7

Comment      Reflow glass to smooth surface and dops contact holes.
Diffusion    Temperature=1000     Time=30
Comment      Reopen contact holes.
Etch         Oxide
Comment      Deposit Aluminum
Deposit      Aluminum  Thickness=1.2    Spaces=10
Comment      Plot the chemical impurity distributions at this point
Print        Layer
Plot         Chemical Boron   Xmax=2.5  Clear Axis   Linetype=2
  +          title=Example-1b
Plot         Chemical Arsenic Xmax=2.5  ^Clear        ^Axis
             Linetype=3
Plot         Chemical Phosphorus   Xmax=2.5  ^Clear        ^Axis
             Linetype=6
Plot         Chemical Net          Xmax=2.5  ^Clear        ^Axis
Comment      Save the structure.
Save         Structure    File=s3e1bs

Stop         End of SSUPREM 3 Example 1.
```

```
Title          SSUPREM 3 Example 2. Bipolar Ploy doped emitter.
$              Initial active region formation.
$              File p3ghex2a

Comment    Initialize silicon substrate
Initilaixe     <100> Silicon, Boron   Concentration=5e14
+              Thickness=5.     dX=.01     XdX=.05     Spaces=100

Comment    Grow masking oxide for non-active regions.
Diffusion      Temperature=1150 Time=100 WetO2
Comment    Etch the oxide over the buried layer regions.
Etch           Oxide
Comment    Implant and drive-in the antimony buried layer.
Implant        Antimony    Dose=5E14 Energy=120
Diffusion      Temperature=1150      Time=15      DryO2
Diffusion      Temperature=1150      Time=300
Print          Layer
Plot           Net    Chemical    Xmax=5
   +           title=Example-2a1

Comment    Etch off the oxide
Etch           Oxide
Comment    Grow 1.6 micron  of arsenic doped epi.
Epitaxy        Temperature=1050     Time=4      Growth.Rate=.4
   +           Arsenic       Gas.Conc=5E15
Comment    Grow a 400A pad oxide.
Diffusion      Temperature=1060      time=20      DryO2
Comment    Deposit     nitride to mask the field oxidation.
Deposit        Nitride       Thickness=.08
Comment    Plot the chemical impurity distributions at this point
Print          Layer
Plot           Chemical Boron   Xmax=5     Clear Axis  Linetype=2
   +           title=Example-2a2
Plot           Chemical Arsenic Xmax=5     Clear Axis  Linetype=4
Plot           Chemical Antimony  Xmax=5 Clear Axis   Linetype=5
Plot           Chemical Net      Xmax=5     Clear Axis

Comment    Save the simulation structure at this point for use in
subsequent processing.
Savefile              Structure    File=s3e2as

Stop
```

Listing Program Mencari Doping Profile Diode dengan Pices
****
****

Date and time = 23-Mei-99 7:21:14

  1... Title PN diode transient simulation
  2... $ Grid of the structure and doping distribution
  3... $ SILVACO International 1991
  4... mesh   rect nx=100 ny=10 smooth=1 diag.flip
  5... x.m   n=1   l=0.0 r=1.0
  6... x.m   n=100 l=10500.0 r=1.0
  7... y.m   n=1   l=0.0 r=1.0
  8... y.m   n=10 l=8.0 r=1.0
  9... $ Regions and Electrodes
 10... region   num=1 silicon
 11... elec   num=1 x.min=0.0 length=999.0
 12... elec   num=2 bottom
 13... $ Doping profile
 14... doping   uniform conc=1.2e15 n.type outf=dd1dio
 15... doping   gauss   conc=1.2e17 p.type junc=0.922 x.r=10000.0
ratio=0.7
 16... regrid   doping ratio=4 log smooth.k=1
dopfile=dd1dio
 17... regrid   doping ratio=4 log smooth.k=1 outf=mesh.dd1
dopfile=dd1dio
 18... $
 19... plot.1d   x.s=0.0 x.e=5.0 y.s=0.0 y.e=0.0 doping abs log pa
 20... plot.1d   x.s=1.0 x.e=1.0 y.s=0.0 y.e=5.0 doping abs log pa
 21... plot.2d   x.min=9950 x.max=10000 grid boundary no.top
no.fill pa
 22... plot.2d   x/min=9950 x.max=10000 junction boundary
l.elect=2 l.bound=3 l.junct=6 no.fill pa
 23... end

```
* * * * * * * * * * * * * * * * * * * * * * * * * * *
PN diode transient simulation
* * * * * * * * * * * * * * * * * * * * * * * * * * *


Mesh statistics :
    Total grid points =  1000
    Total no. of triangles =  1782
    Obtuse triangles =    0  ( 0.0%)


Mesh statistics :
    Total grid points =  1385
    Total no. of triangles =  2550
    Obtuse triangles =    1332  ( 52.2%)



Mesh statistics :
    Total grid points =  2430
    Total no. of triangles = 4545
    Obtuse triangles =   2182  ( 48.0%)

Grid written to mesh.dd1
```