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(sde:clear)
(define Ltot (* 1 1e3))
(define Htot (* 1 1e3))
(define depth 0.5)
(define H0xide 1)
(define Lanode (* Ltot 0.6))
(define Xmax (/ Ltot 2))
(define Ymax (* Htot -1))
(define Xanode (/ Lanode 2))
(sde:set-process-up-direction "+z")
(sdegeo:create-rectangle
(position (* Xmax -1.0) 0.0 0.0)
(position Xmax Ymax 0.0)
"Silicon" "EPI")
(sdegeo:create-rectangle
(position (* Xmax 0.5) Ymax 0.0)
(position (* Xmax 1.0) (- Ymax H0xide) 0.0)
"SiO2" "SiO21")
(sdegeo:create-rectangle
(position (* Xmax -0.5) Ymax 0.0)
(position (* Xmax -1.0) (- Ymax H0xide) 0.0)
"SiO2" "SiO22")

(sdegeo:define-contact-set "anode" 4.0 (color:rgb 1.0 0.0 0.0) "##")
(sdegeo:define-contact-set "cathode" 4.0 (color:rgb 0.0 0.0 1.0) "##")
(sdegeo:define-2d-contact
(find-edge-id (position 0.0 Ymax 0.0)) "anode")
(sdegeo:define-2d-contact
(find-edge-id (position 0.0 0.0 0.0)) "cathode")

(sdedr:define-constant-profile "Const.EPI"
"BoronActiveConcentration" 1e11)
(sdedr:define-constant-profile-material "PL.EPI"
"Const.EPI" "Silicon")

(sdedr:define-gaussian-profile "DD.cathode" "BoronActiveConcentration" "PeakPos" 0 "PeakVal" 1e19 "ValueAtDepth")

(sdedr:define-refeval-window "Baseline.cathode"
"Line"
(position (* Xmax -1) 0 0)
(position (* Xmax 1) 0 0))
(sdedr:define-analytical-profile-placement "PL.cathode"
"DD.cathode" "Baseline.cathode"
"Negative" "NoReplace" "Eval")

(sdedr:define-gaussian-profile "DD.anode" "PhosphorusActiveConcentration" "PeakPos" 0 "PeakVal" 1e19 "ValueAtDepth")

(sdedr:define-refeval-window "Baseline.anode"
"Line"
(position (* Xanode -1) Ymax 0)
(position (* Xanode 1) Ymax 0))
(sdedr:define-analytical-profile-placement "PL.anode"
"DD.anode" "Baseline.anode"
"Positive" "NoReplace" "Eval")

(sdedr:define-gaussian-profile "DD.jte" "PhosphorusActiveConcentration" "PeakPos" 0 "PeakVal" 1e16 "ValueAtDepth")

(sdedr:define-refeval-window "Baseline.jtel"
"Line"
(position (* Xanode -1.2) Ymax 0)
(position (* Xanode -1) Ymax 0))

```



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}

Math {
  RelErrControl
  Digits=5
  ErrRef(electron)=1.e10
  ErrRef(hole)=1.e10
  Iterations=500
  Notdamped=200
  Method=Blocked
  SubMethod=Super
  ACMethod=Blocked
  ACSubMethod=Super
  ImplicitACSystem
}

Solve {Poisson
  Coupled{ Poisson Electron Hole }
}
Solve {NewCurrentPrefix="IV_"
  Quasistationary (
    InitialStep=0.1 Increment=1.3
    MaxStep=0.1 Minstep=1.e-5
    Goal { name=cathode Voltage=100}
  ){ Coupled { Poisson Electron Hole }
    CurrentPlot(Time = (Range = (0 1) Intervals = 500))
    Plot(FilePrefix = "n@node@_IV_IMG_"
  Time = (Range = (0 1) Intervals = 100)
  NoOverwrite)}}
}

```