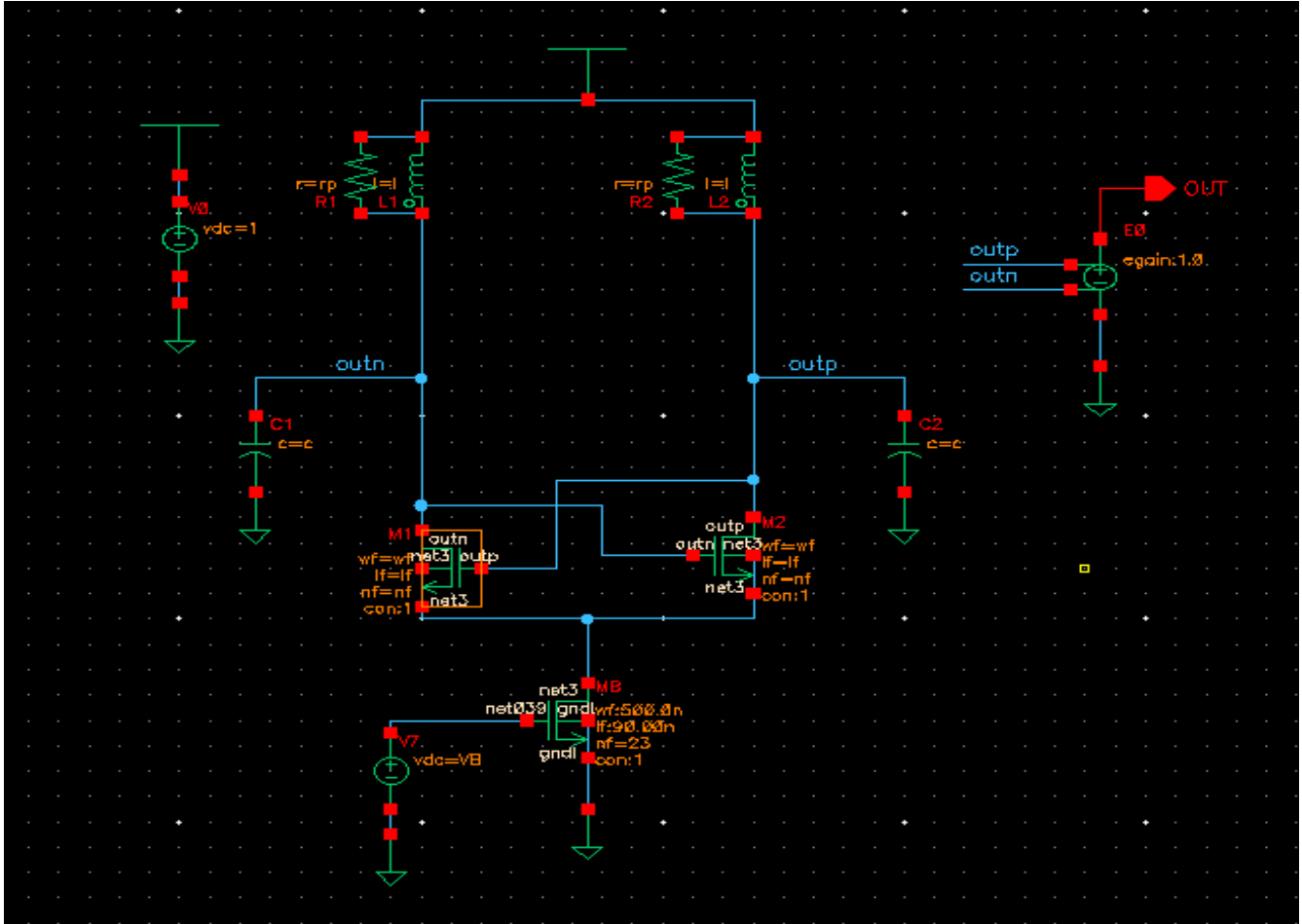




Working Cell

```
// Generated for: spectre
// Generated on: Oct 30 12:18:37 2012
// Design library name: OscillatorsLib
// Design cell name: DiffOsci_MOSIB
// Design view name: schematic
simulator lang=spectre
global 0 vdd!
parameters VB=0.477 lf=90n nf=8 wf=500n rp=600 IB=1m rs=0 c=15.9n l=1.59u \
f=10K
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_25IO_NVT_V021.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_25IO_V111.lib.scs" section=tt
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_NCAP25_V113.lib.scs"
```

```
section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_varmis_25_rf_V011.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_33IO_GOX52_VT21.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_25IO_RF_V021.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90-resistor-control-V041.scs"
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_BJT_V111.lib.scs"
section=tt_bip
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_DIODE_V101.mdl.scs"
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_LL12_RF_V021.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_LLLVT12_RF_VTAB.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_LL12_V102.lib.scs" section=tt
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_LLHVT12_V101.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_LLLVT12_V102.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_LLNV12_V011.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90SP_NCAP10_V112.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_NCAP12_LL_V102.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_SP10_V061.lib.scs" section=tt
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_SPHVT10_V111.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_SPLVT10_V102.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_SPNVT10_V011.lib.scs"
section=tt
include
"/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_mimcaps_20f_kf_V011.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_momcaps_V041.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_vardiop_rf_v011.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_varmis_12_llrf_V021.lib.scs"
section=typ
include
"/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/momcaps_array_vp3_rfvcl_V011.lib.scs"
section=typ
include
"/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/momcaps_array_vp4_rfvcl_V011.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/rnhr_rf_V011.lib.scs" section=typ
```

```

include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/rnnpo_rf_V011.lib.scs" section=typ
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/rnppo_rf_V011.lib.scs" section=typ
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_varmis_10_sprf_V011.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/bond_pad_v011.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_SP10_RF_V021.lib.scs"
section=tt

// Library name: OscillatorsLib
// Cell name: DiffOsci_MOSIB
// View name: schematic
MB (net3 net039 0 0) n_10_sprf wf=500.0n lf=90.00n nf=23 con=1 m=1
M2 (outp outn net3 net3) n_10_sprf wf=wf lf=lf nf=nf con=1 m=1
M1 (outn outp net3 net3) n_10_sprf wf=wf lf=lf nf=nf con=1 m=1
C2 (outp 0) capacitor c=c
C1 (outn 0) capacitor c=c
V7 (net039 0) vsource dc=VB type=dc
V0 (vdd! 0) vsource dc=1 type=dc
R1 (outn vdd!) resistor r=rp
R2 (outp vdd!) resistor r=rp
L1 (outn vdd!) inductor l=l r=rs
L2 (outp vdd!) inductor l=l r=rs
E0 (OUT 0 outp outn) vcvs gain=1.0
ic outn=0.5 outp=1.5
simulatorOptions options reltol=1e-3 vabstol=1e-6 iabstol=1e-12 temp=27 \
    tn timer=27 scalem=1.0 scale=1.0 gmin=1e-12 rforce=1 maxnotes=5 maxwarns=5 \
    digits=5 cols=80 pivrel=1e-3 sensfile="../psf/sens.output" \
    checklimitdest=psf
tran tran stop=2m errpreset=moderate step=10n maxstep=10n \
    write="spectre.ic" writefinal="spectre.fc" method=traponly \
    annotate=status maxiters=5
finalTimeOP info what=oppoint where=rawfile
modelParameter info what=models where=rawfile
element info what=inst where=rawfile
outputParameter info what=output where=rawfile
designParamVals info what=parameters where=rawfile
primitives info what=primitives where=rawfile
subckts info what=subckts where=rawfile
save R1:1 L1:1 C1:1 M1:1 MB:1 R2:1 L2:1 C2:1 M2:1 M2:2 M2:4 M2:3 M1:4 M1:3 \
    M1:2
saveOptions options save=allpub

```

Not Working Cell

```
// Generated for: spectre
// Generated on: Oct 30 12:18:37 2012
// Design library name: OscillatorsLib
// Design cell name: DiffOsci_MOSIB
// Design view name: schematic
simulator lang=spectre
global 0 vdd!
parameters VB=0.477 lf=90n nf=8 wf=500n rp=600 IB=1m rs=0 c=17.67p \
    l=1.767n f=10K
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_25IO_NVT_V021.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_25IO_V111.lib.scs" section=tt
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_NCAP25_V113.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_varmis_25_rf_V011.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_33IO_GOX52_VT21.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_25IO_RF_V021.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90-resistor-control-V041.scs"
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_BJT_V111.lib.scs"
section=tt_bip
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_DIODE_V101.mdl.scs"
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_LL12_RF_V021.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_LLLVT12_RF_VTAB.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_LL12_V102.lib.scs" section=tt
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_LLHVT12_V101.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_LLLVT12_V102.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_LLNV12_V011.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90SP_NCAP10_V112.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_NCAP12_LL_V102.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_SP10_V061.lib.scs" section=tt
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_SPHVT10_V111.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_SPLVT10_V102.lib.scs"
section=tt
include "/home/srk/cwd/umc90nmisp6/umc90nm/./Models/Spectre/L90_SPNV10_V011.lib.scs"
section=tt
include
```

```

"/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_mimcaps_20f_kf_V011.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_momcaps_V041.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_vardiop_rf_v011.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_varmis_12_llrf_V021.lib.scs"
section=typ
include
"/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/momcaps_array_vp3_rfvcl_V011.lib.scs"
section=typ
include
"/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/momcaps_array_vp4_rfvcl_V011.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/rnhr_rf_V011.lib.scs" section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/rnnpo_rf_V011.lib.scs" section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/rnppo_rf_V011.lib.scs" section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_varmis_10_sprf_V011.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/bond_pad_v011.lib.scs"
section=typ
include "/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/L90_SP10_RF_V021.lib.scs"
section=tt

```

```

// Library name: OscillatorsLib
// Cell name: DiffOsci_MOSIB
// View name: schematic
MB (net3 net039 0 0) n_10_sprf wf=500.0n lf=90.00n nf=23 con=1 m=1
M2 (outp outn net3 net3) n_10_sprf wf=wf lf=lf nf=nf con=1 m=1
M1 (outn outp net3 net3) n_10_sprf wf=wf lf=lf nf=nf con=1 m=1
C2 (outp 0) capacitor c=c
C1 (outn 0) capacitor c=c
V7 (net039 0) vsource dc=VB type=dc
V0 (vdd! 0) vsource dc=1 type=dc
R1 (outn vdd!) resistor r=rp
R2 (outp vdd!) resistor r=rp
L1 (outn vdd!) inductor l=l r=rs
L2 (outp vdd!) inductor l=l r=rs
E0 (OUT 0 outp outn) vcvs gain=1.0
ic outn=0.5 outp=1.5
simulatorOptions options reltol=1e-3 vabstol=1e-6 iabstol=1e-12 temp=27 \
    tnom=27 scalem=1.0 scale=1.0 gmin=1e-12 rforce=1 maxnotes=5 maxwarns=5 \
    digits=5 cols=80 pivrel=1e-3 sensfile="../psf/sens.output" \
    checklimitdest=psf
tran tran stop=2m errpreset=moderate step=10n maxstep=10n \
    write="spectre.ic" writefinal="spectre.fc" method=traponly \
    annotate=status maxiters=5
finalTimeOP info what=oppoint where=rawfile
modelParameter info what=models where=rawfile

```

element info what=inst where=rawfile
outputParameter info what=output where=rawfile
designParamVals info what=parameters where=rawfile
primitives info what=primitives where=rawfile
subckts info what=subckts where=rawfile
save R1:1 L1:1 C1:1 M1:1 MB:1 R2:1 L2:1 C2:1 M2:1 M2:2 M2:4 M2:3 M1:4 M1:3 \
M1:2
saveOptions options save=allpub

Output Log

Cadence (R) Virtuoso (R) Spectre (R) Circuit Simulator
Version 10.1.0.204 32bit -- 14 Sep 2010
Copyright (C) 1989-2010 Cadence Design Systems, Inc. All rights reserved worldwide. Cadence, Virtuoso and Spectre are registered trademarks of Cadence Design Systems, Inc. All others are the property of their respective holders.

Protected by U.S. Patents:

5,610,847; 5,790,436; 5,812,431; 5,859,785; 5,949,992; 5,987,238;
6,088,523; 6,101,323; 6,151,698; 6,181,754; 6,260,176; 6,278,964;
6,349,272; 6,374,390; 6,493,849; 6,504,885; 6,618,837; 6,636,839;
6,778,025; 6,832,358; 6,851,097; 6,928,626; 7,024,652; 7,035,782;
7,085,700; 7,143,021; 7,493,240; 7,571,401.

Includes RSA BSAFE(R) Cryptographic or Security Protocol Software from RSA Security, Inc.

User: srk Host: arjuna HostID: 7F0101 PID: 727
Memory available: 1.7064 GB physical: 8.2776 GB
CPU Type: Intel(R) Core(TM) i7-2600 CPU @ 3.40GHz

Processor PhysicalID CoreID Frequency

0	0	0	1600.0
1	0	1	3401.0
2	0	2	1600.0
3	0	3	1600.0
4	0	0	1600.0
5	0	1	1600.0
6	0	2	1600.0
7	0	3	1600.0

Simulating `input.scs' on arjuna at 12:19:25 PM, Tue Oct 30, 2012 (process id: 727).

Environment variable:

SPECTRE_DEFAULTS=-E

Command line:

/cad/MMSIM101/tools.lnx86/spectre/bin/32bit/spectre input.scs \
+escchars +log ../psf/spectre.out +inter=mpsc \

```
+mpssession=spectre0_27752_29 -format sst2 -raw ../psf \
+lqtimeout 900 -maxw 5 -maxn 5
spectre pid = 727
```

```
Loading /cad/MMSIM101/tools.lnx86/cmi/lib/5.0/libinfineon_sh.so ...
Loading /cad/MMSIM101/tools.lnx86/cmi/lib/5.0/libphilips_sh.so ...
Loading /cad/MMSIM101/tools.lnx86/cmi/lib/5.0/libsparm_sh.so ...
Loading /cad/MMSIM101/tools.lnx86/cmi/lib/5.0/libstmodels_sh.so ...
```

Time for NDB Parsing: CPU = 136.008 ms, elapsed = 170.071 ms.
Time accumulated: CPU = 136.008 ms, elapsed = 170.071 ms.
Peak resident memory used = 27.1 Mbytes.

Warning from spectre in `n_10_sprf', during circuit read-in.

WARNING (SFE-31):

"/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/./L90_SP10_RF_V021.mdl.scs" 60:
`n\_10\_sprf': Parameter `nf' redefines parameter of same name defined at higher level.

WARNING (SFE-31):

"/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/./L90_SP10_RF_V021.mdl.scs" 60:
`n\_10\_sprf': Parameter `lf' redefines parameter of same name defined at higher level.

WARNING (SFE-31):

"/home/srk/cwd/umc90nmsp6/umc90nm/./Models/Spectre/./L90_SP10_RF_V021.mdl.scs" 60:
`n\_10\_sprf': Parameter `wf' redefines parameter of same name defined at higher level.

Time for Elaboration: CPU = 20.001 ms, elapsed = 19.9821 ms.
Time accumulated: CPU = 156.009 ms, elapsed = 190.19 ms.
Peak resident memory used = 34.4 Mbytes.

Time for EDB Visiting: CPU = 0 s, elapsed = 437.021 us.
Time accumulated: CPU = 156.009 ms, elapsed = 190.731 ms.
Peak resident memory used = 34.7 Mbytes.

Notice from spectre during topology check.
Only one connection to node `OUT'.

Circuit inventory:

- nodes 6
- bsim4 3
- capacitor 2
- inductor 2
- resistor 2
- vcvs 1
- vsource 2

Time for parsing: CPU = 0 s, elapsed = 125.67 ms.
Time accumulated: CPU = 156.009 ms, elapsed = 316.494 ms.
Peak resident memory used = 35.3 Mbytes.

Entering remote command mode using MPSC service (spectre, ipi, v0.0, spectre0_27752_29,).

Transient Analysis `tran': time = (0 s -> 2 ms)

Notice from spectre during IC analysis, during transient analysis `tran'.
There are 2 IC nodes defined.

Trying `homotopy = gmin' for nodesets.

Notice from spectre during IC analysis, during transient analysis `tran'.

Initial condition computed for node outp is in error by 500 mV (33.3333 %).

Initial condition computed for node outn is in error by 500 mV (100 %).

Decrease `rforce' to reduce error in computed initial conditions. However, setting rforce too small may result in convergence difficulties or in the matrix becoming singular.

Important parameter values:

start = 0 s
outputstart = 0 s
stop = 2 ms
step = 10 ns
maxstep = 10 ns
ic = all
skipdc = no
reltol = 1e-03
abstol(V) = 1 uV
abstol(I) = 1 pA
temp = 27 C
tnom = 27 C
tempeffects = all
errpreset = moderate
method = traponly
lteratio = 3.5
relref = sigglobal
cmin = 0 F
gmin = 1 pS

tran: time = 56.33 ps (2.82 u%), step = 822.3e-21 s (41.1 f%)

tran: time = 56.4 ps (2.82 u%), step = 109.1e-21 s (5.45 f%)

Warning from spectre at time = 56.4039 ps during transient analysis `tran'.

WARNING (SPECTRE-16191): Minimum time step used. Solution might be in error.

Zero diagonal found in Jacobian at `M1:int\_d' and `M1:int_d'.

tran: time = 56.42 ps (2.82 u%), step = 101.4e-21 s (5.07 f%)

Warning from spectre at time = 56.4288 ps during transient analysis `tran'.

WARNING (SPECTRE-16191): Minimum time step used. Solution might be in error.

Warning from spectre at time = 56.4326 ps during transient analysis `tran'.

WARNING (SPECTRE-16191): Minimum time step used. Solution might be in error.

tran: time = 56.43 ps (2.82 u%), step = 82.07e-21 s (4.1 f%)

Warning from spectre at time = 56.4377 ps during transient analysis `tran'.

WARNING (SPECTRE-16191): Minimum time step used. Solution might be in error.

tran: time = 56.45 ps (2.82 u%), step = 421e-21 s (21 f%)

tran: time = 56.46 ps (2.82 u%), step = 128.4e-21 s (6.42 f%)

Warning from spectre at time = 56.4732 ps during transient analysis `tran'.

WARNING (SPECTRE-16191): Minimum time step used. Solution might be in error.

Further occurrences of this warning will be suppressed.

tran: time = 56.48 ps (2.82 u%), step = 75.78e-21 s (3.79 f%)

tran: time = 56.49 ps (2.82 u%), step = 340.8e-21 s (17 f%)

tran: time = 56.5 ps (2.82 u%), step = 307.9e-21 s (15.4 f%)

Zero diagonal found in Jacobian at `M1:int\_d' and `M1:int_d'.

tran: time = 56.51 ps (2.83 u%), step = 146e-21 s (7.3 f%)

Zero diagonal found in Jacobian at `M1:int\_s' and `M1:int_s'.

Zero diagonal found in Jacobian at `M1:int\_s' and `M1:int_s'.

Zero diagonal found in Jacobian at `M1:int\_s' and `M1:int_s'.

Error found by spectre at time = 56.511 ps during transient analysis `tran'.

ERROR (SPECTRE-16192): No convergence achieved with the minimum time step specified. Last acceptable solution computed at 56.511 ps.

The values for those nodes that did not converge on the last Newton iteration are given below. The manner in which the convergence criteria were not satisfied is also given.

Failed test: $| \text{Value} | > \text{RelTol} * \text{Ref} + \text{AbsTol}$

Top 10 Solution too large Convergence failure:

I(V7:p) = -19.0466 kA, previously -48.9642 uA.

update too large: $| -462.82 \text{ kA} | > 19.0467 \text{ A} + 1 \text{ pA}$

V(MB:int_b) = -6.51701 MV, previously -45.7515 mV.

update too large: $| -63.2658 \text{ MV} | > 6.51701 \text{ kV} + 1 \text{ uV}$

V(MB:gmnnode) = -88.7152 kV, previously 476.772 mV.

update too large: $| -192.807 \text{ kV} | > 88.7184 \text{ V} + 1 \text{ uV}$

V(MB:int_g) = -88.7148 kV, previously 476.462 mV.

update too large: $| -192.806 \text{ kV} | > 88.7179 \text{ V} + 1 \text{ uV}$

V(MB:sbnnode) = -88.7149 kV, previously -37.397 mV.

update too large: $| -192.806 \text{ kV} | > 88.718 \text{ V} + 1 \text{ uV}$

V(MB:int_d) = -88.7152 kV, previously -214.936 mV.

update too large: $|-192.806 \text{ kV}| > 88.7184 \text{ V} + 1 \text{ uV}$
 $V(\text{MB:dbnode}) = -88.7154 \text{ kV}$, previously -71.8481 mV .
 update too large: $|-192.806 \text{ kV}| > 88.7185 \text{ V} + 1 \text{ uV}$
 $V(\text{MB:int_s}) = -88.7154 \text{ kV}$, previously -7.29931 mV .
 update too large: $|-192.805 \text{ kV}| > 88.7186 \text{ V} + 1 \text{ uV}$
 $V(\text{net3}) = -10.6755 \text{ kV}$, previously -222.323 mV .
 update too large: $|-20.3511 \text{ kV}| > 10.6787 \text{ V} + 1 \text{ uV}$
 $V(\text{M1:int_b}) = -9.35099 \text{ kV}$, previously 214.647 mV .
 update too large: $|-17.702 \text{ kV}| > 9.35412 \text{ V} + 1 \text{ uV}$
 Top 10 Residue too large Convergence failure:
 $V(\text{M1:dbnode}) = -9.06619 \text{ kV}$, previously -68.4899 mV .
 residue too large: $|-198.225 \text{ kA}| > 5.72244 \text{ A} + 1 \text{ pA}$
 $V(\text{MB:dbnode}) = -88.7154 \text{ kV}$, previously -71.8481 mV .
 residue too large: $|159.434 \text{ kA}| > 111.457 \text{ A} + 1 \text{ pA}$
 $V(\text{M1:int_d}) = -9.06624 \text{ kV}$, previously 2.56672 V .
 residue too large: $|1.45525 \text{ MA}| > 1.05686 \text{ kA} + 1 \text{ pA}$
 $V(\text{M1:gmnode}) = -9.07933 \text{ kV}$, previously -562.627 mV .
 residue too large: $|-2.36421 \text{ MA}| > 2.1287 \text{ kA} + 1 \text{ pA}$
 $V(\text{M1:int_s}) = -9.06654 \text{ kV}$, previously -223.064 mV .
 residue too large: $|1.22248 \text{ MA}| > 1.2062 \text{ kA} + 1 \text{ pA}$
 $V(\text{M2:int_b}) = -620.647 \text{ MV}$, previously -454.742 mV .
 residue too large: $|1.78641\text{e}+15 \text{ A}| > 1.78641 \text{ TA} + 1 \text{ pA}$
 $V(\text{M2:int_g}) = 2.3318 \text{ MV}$, previously 2.56082 V .
 residue too large: $|-1.78641\text{e}+15 \text{ A}| > 1.78641 \text{ TA} + 1 \text{ pA}$
 $V(\text{M1:int_g}) = -9.06654 \text{ kV}$, previously -547.073 mV .
 residue too large: $|-42.3906 \text{ kA}| > 42.3925 \text{ A} + 1 \text{ pA}$
 $V(\text{M1:int_b}) = -9.35099 \text{ kV}$, previously 214.647 mV .
 residue too large: $|14.1466 \text{ kA}| > 14.1496 \text{ A} + 1 \text{ pA}$
 $V(\text{M2:sbnode}) = 2.3318 \text{ MV}$, previously -72.7003 mV .
 residue too large: $|-513.937 \text{ kA}| > 536.972 \text{ A} + 1 \text{ pA}$

The following set of suggestions might help you avoid convergence difficulties.

1. Evaluate and resolve any notice, warning, or error messages.
2. Use realistic device models. Check all component parameters, particularly nonlinear device model parameters, to ensure that they are reasonable.
3. Small floating resistors connected to high impedance nodes might cause convergence difficulties. Avoid very small floating resistors, particularly small parasitic resistors in semiconductors. Instead, use voltage sources or iprobes to measure current.
4. Ensure that a complete set of parasitic capacitors is used on nonlinear devices to avoid jumps in the solution waveforms. On MOS models, specify nonzero source and drain areas.
5. Perform sanity check on the parameter values using the parameter range checker (use ``+param param-limits-file" as a command line argument) and heed any warnings. Print the minimum and maximum parameter value using the `info' analysis. Ensure that the bounds given for instance, model, output, temperature-dependent, and operating-point (if possible) parameters are reasonable.
6. Check the direction of both independent and dependent current sources. Convergence problems might result if current sources are connected such that they force current backward through diodes.

7. Enable diagnostic messages by setting option ``diagnose=yes'`.
8. Use the ``cmin'` parameter to install a small capacitor from every node in the circuit to ground. This usually eliminates any jumps in the solution.
9. Loosen tolerances, particularly absolute tolerances like ``iabstol'` (on options statement). If tolerances are set too tight, they might preclude convergence.
10. Try to simplify the nonlinear component models in order to avoid regions in the model that might contribute to convergence problems.

Analysis ``tran'` was terminated prematurely due to an error.

Notice from spectre.

8 warnings suppressed.

finalTimeOP: writing operating point information to rawfile.

Trying ``homotopy = gmin'`.

modelParameter: writing model parameter values to rawfile.

element: writing instance parameter values to rawfile.

outputParameter: writing output parameter values to rawfile.

designParamVals: writing netlist parameters to rawfile.

primitives: writing primitives to rawfile.

subckts: writing subcircuits to rawfile.