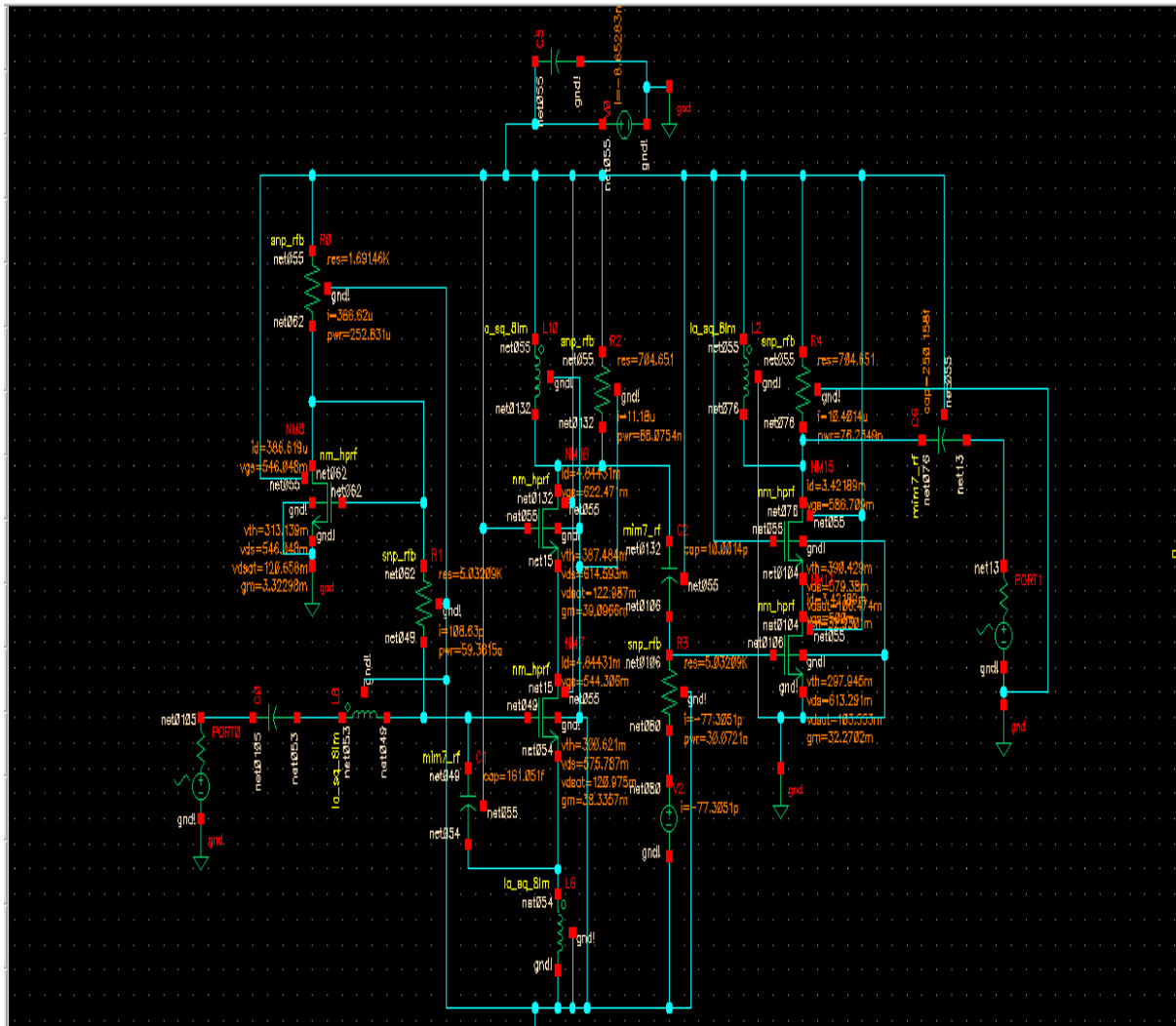


Schematic



Setting for PSS Analyses

Choosing Analyses – Virtuoso® Analog Design Environment

OK Cancel Defaults Apply Help

Analysis

☐ tran
 ☐ dc
 ☐ ac
 ☐ noise
 ☐ xf
 ☐ sens
 ☐ dcmatch
 ☐ stb
 ☐ pz
 ☐ sp
 ☐ envlp
 ☒ pss
 ☐ pac
 ☐ pnoise
 ☐ pxf
 ☐ psp
 ☐ qpss
 ☐ qpac
 ☐ qpnoise
 ☐ qpxf
 ☐ qpssp

Periodic Steady State Analysis

Engine ☐ Shooting ☐ Flexible Balance

Fundamental Tones

#	Name	Expr	Value	Signal	SrcId
1	frf1	frf	5G	Large	PORT0

☒ Beat Frequency
 ☐ Beat Period

☐ Auto Calculate

Output harmonics

Accuracy Defaults (empreset)

☐ conservative
 ☒ moderate
 ☐ liberal

Number of harmonics	127
---------------------	-----

Accuracy Defaults (empreset)

☐ conservative ☒ moderate ☐ liberal

Additional Time for Stabilization (tstab)

Save Initial Transient Results (saveinit) ☐ no ☐ yes

Oscillator ☐

Sweep ☒

Frequency Variable? ☒ no ☐ yes

Variable

Variable Name

Select Design Variable

Sweep Range

☒ Start-Stop Start Stop

☐ Center-Span

Sweep Type

☒ Linear ☐ Step Size

☐ Logarithmic ☒ Number of Steps

Add Specific Points ☐

Enabled ☒

Options...

Setting for RF voltage source

Edit Object Properties

OK Cancel Apply Defaults Previous Next Help

Instance Name: PORT0 off

User Property	Master Value	Local Value	Display
IvsIgnore	TRUE		off

CDF Parameter	Value	Display
Frequency name	frf1	off
Second frequency name	frf2	off
Noise file name		off
Number of noise/freq pairs	0	off
Number of FM Files	◆ none ◇ one ◇ two	off
Resistance	50 Ohms	off
Port number	1	off
DC voltage		off
Source type	sine	off
Delay time		off
Sine DC level		off
Amplitude		off
Amplitude (dBm)	prf	off
Initial phase for Sinusoid		off
Frequency	frf Hz	off
Amplitude 2		off
Amplitude 2 (dBm)	prf	off
Initial phase for Sinusoid 2		off

Simulation log

```

/home/bjking.wetery/simulation/myspectre/schematic_009/psf/spectre.out
File Help 1
Command line:
/cadence/MMSIM60USR2/tools.lnx86/spectre/bin/32bit/spectre -env \
  artist5.1.0 +escchars +log ../psf/spectre.out +inter=mpsc \
  +mpsession=spectre3_18291_22 -format sst2 -raw ../psf \
  +lifetime 900 -maxw 5 -maxn 5 input.scs
spectre pid = 4746

Loading /cadence/MMSIM60USR2/tools.lnx86/cmi/lib/4.0/libinfineon_sh.so ...
Loading /cadence/MMSIM60USR2/tools.lnx86/cmi/lib/4.0/libnortel_sh.so ...
Loading /cadence/MMSIM60USR2/tools.lnx86/cmi/lib/4.0/libphilips_sh.so ...
Loading /cadence/MMSIM60USR2/tools.lnx86/cmi/lib/4.0/libsparm_sh.so ...
Loading /cadence/MMSIM60USR2/tools.lnx86/cmi/lib/4.0/libstmodels_sh.so ...
spectre (ver. 6.0.2.119 -- 10 Nov 2005).
Includes RSA BSAFE(R) Cryptographic or Security Protocol Software from RSA Security, Inc.

Simulating 'input.scs' on CEDECUSMEE at 11:01:49 AM, Sat May 3, 2014.
Using new Spectre Parser.
Auto-loading AHDL component.
Finished loading AHDL component in 0 s (elapsed).
Installed AHDL simulation interface.
Opening directory input_ahdlSimDB/ (770)
Opening directory input_ahdlSimDB/input_ahdlcmi/ (770)
Installed compiled interface for bsource_1.
Installed compiled interface for bsource_2.
Installed compiled interface for bsource_3.
Installed compiled interface for bsource_4.
Installed compiled interface for bsource_5.
Installed compiled interface for bsource_6.
Installed compiled interface for bsource_7.
Installed compiled interface for bsource_8.
Installed compiled interface for bsource_9.

Circuit inventory:
  nodes 112
  equations 166
  ahdl simulator 1
    bsim4 5
    bsource_2 57
    capacitor 153
    diode 5
    inductor 22
    port 2
    resistor 37
    vsource 2

Entering remote command mode using MPSC service (spectre, ipi, v0.0, spectre3 18291 22, ).
*****
Sweep Analysis 'sweepss': prf = (-30 -> 10)
*****

*****
sweepss: prf = -30 (0 %)
*****

*****
Periodic Steady-State Analysis 'sweepss-000_pss': fund = 40 MHz
*****

*****
'sweepss-000_pss': time = (0 s -> 25 ns)
*****
Important parameter values in tstab integration:
  start = 0 s
  outputstart = 0 s
  stop = 25 ns
  period = 25 ns
  step = 25 ps
  maxstep = 1 ns
  ic = all
  skipdc = no
  reltol = 1e-03
  abstol(I) = 1 pA
  abstol(V) = 1 uV
  temp = 27 C
  tnom = 27 C
  tempeffects = all
  method = traponly
  lteratio = 3.5
  relref = sigglobal
  cmin = 0 F
  gmin = 1 pS
  maxrsd = 0 Ohm
  mos_method = s
  mos_vres = 50 mV

Warning from spectre at time = 485.867 ps during periodic steady state analysis 'sweepss-000_pss', during Sweep analysis 'sweepss'.
NM10.main: Vgs has exceeded the oxide breakdown voltage of 'vbox' = 2.28 V.
Warning from spectre at time = 486.192 ps during periodic steady state analysis 'sweepss-000_pss', during Sweep analysis 'sweepss'.
NM7.main: Vgs has exceeded the oxide breakdown voltage of 'vbox' = 2.28 V.
Warning from spectre at time = 486.357 ps during periodic steady state analysis 'sweepss-000_pss', during Sweep analysis 'sweepss'.
```

[illegible]

Solution at last successful step (at 486.977 ps), and last Newton iteration (at 503.644 ps):

V(net13):	214.123 mV	29.0122 kV
V(net15):	13.9267 V	-17.6607 kV
V(net049):	19.3767 V	11.6157 kV
V(net053):	5.6826 V	11.0859 kV
V(net054):	22.8473 V	-6.56623 kV
V(net055):	1.2 V	1.2 V
V(net062):	545.839 mV	245.883 mV
V(net076):	1.62839 V	1.55982 V
V(net080):	500 mV	500 mV
V(net0104):	772.28 mV	1.74351 V
V(net0105):	5.13655 V	11.0864 kV
V(net0106):	1.11172 V	11.0454 kV
V(net0132):	4.25333 V	-6.97914 kV
V(R0_1_sil_0):	981.949 mV	-19.4731 V
V(R0_2_sil_0):	763.894 mV	20.894 V
V(R1_1_sil_0):	545.388 mV	-12.466 V
V(R1_2_sil_0):	545.032 mV	-13.7582 V
V(R1_3_sil_0):	544.919 mV	10.408 V
V(R1_4_sil_0):	545.34 mV	-7.40798 V
V(R1_5_sil_0):	547.348 mV	1.921 V
V(R1_6_sil_0):	559.46 mV	12.2607 V
V(R1_7_sil_0):	664.765 mV	11.4244 V
V(R1_8_sil_0):	1.54839 V	-11.0083 kV
V(R2_1_sil_0):	1.21052 V	20.1238 V
V(R2_2_sil_0):	1.22194 V	-2.29982 V
V(R2_3_sil_0):	1.23521 V	-2.25726 V
V(R2_4_sil_0):	1.2514 V	-2.22491 V
V(R2_5_sil_0):	1.27175 V	-2.20266 V
V(R2_6_sil_0):	1.29772 V	-4.99149 V
V(R2_7_sil_0):	1.33112 V	8.09834 V
V(R2_8_sil_0):	1.37418 V	-41.5568 V
V(R2_9_sil_0):	1.42968 V	-39.5131 V
V(R2_10_sil_0):	1.50112 V	45.8603 V
V(R2_11_sil_0):	1.59298 V	37.1262 V
V(R2_12_sil_0):	1.71106 V	4.04696 V
V(R2_13_sil_0):	1.86315 V	-1.76954 V
V(R2_14_sil_0):	2.06006 V	1.92022 V
V(R2_15_sil_0):	2.31797 V	3.19744 V
V(R2_16_sil_0):	2.66357 V	32.1555 V
V(R2_17_sil_0):	3.15071 V	-13.3563 kV
V(R3_1_sil_0):	513.707 mV	-11.0015 kV
V(R3_2_sil_0):	495.494 mV	-11.0006 kV
V(R3_3_sil_0):	509.249 mV	8.29348 V
V(R3_4_sil_0):	515.598 mV	-9.74647 V
V(R3_5_sil_0):	515.658 mV	17.328 V
V(R3_2_sil_0):	495.494 mV	-11.0006 kV
V(R3_3_sil_0):	509.249 mV	8.29348 V
V(R3_4_sil_0):	515.598 mV	-9.74647 V
V(R3_5_sil_0):	515.658 mV	17.328 V
V(R3_6_sil_0):	512.591 mV	-15.2372 V
V(R3_7_sil_0):	508.439 mV	4.15405 V
V(R3_8_sil_0):	504.162 mV	1.90051 V
V(R4_1_sil_0):	1.22079 V	7.32353 V
V(R4_2_sil_0):	1.24162 V	4.57356 V
V(R4_3_sil_0):	1.26255 V	-21.2035 V
V(R4_4_sil_0):	1.28363 V	296.187 mV
V(R4_5_sil_0):	1.3049 V	5.83147 V
V(R4_6_sil_0):	1.32642 V	3.7132 V
V(R4_7_sil_0):	1.34823 V	-126.35 V
V(R4_8_sil_0):	1.3704 V	-126.843 V
V(R4_9_sil_0):	1.39299 V	-115.474 V
V(R4_10_sil_0):	1.41607 V	-90.1292 V
V(R4_11_sil_0):	1.43969 V	-37.6748 V
V(R4_12_sil_0):	1.46395 V	51.4761 V
V(R4_13_sil_0):	1.48893 V	171.433 V
V(R4_14_sil_0):	1.51471 V	283.428 V
V(R4_15_sil_0):	1.54142 V	1.96414 V
V(R4_16_sil_0):	1.56917 V	3.17688 V
V(R4_17_sil_0):	1.5981 V	-6.06316 kV
I(V0.p):	-4.85854 A	476.406 mA
I(V2.p):	7.44472 uA	2.46247 mA
V(C1.b):	19.363 V	11.8527 kV
V(C1.c):	19.6091 V	11.8524 kV
V(C1.d):	22.6767 V	12.0082 kV
V(C1.e):	22.9358 V	12.0027 kV
V(C1.g):	4.32075 V	11.1407 kV
V(C2.b):	2.37212 V	11.093 kV
V(C2.c):	2.35954 V	11.0919 kV
V(C2.d):	1.65732 V	11.089 kV
V(C2.e):	1.65272 V	11.0887 kV
V(C2.g):	1.24697 V	11.0072 kV
V(C6.b):	1.62839 V	29.0583 kV
V(C6.c):	1.62619 V	29.0582 kV
V(C6.d):	216.312 mV	29.0124 kV
V(C6.e):	214.125 mV	29.0123 kV
V(C6.g):	1.20684 V	29.0334 kV
I(c1.l.s1:1):	-472.201 mA	-313.468 mA
I(c1.l.s2:1):	-497.132 mA	-314.576 mA
I(c2.l.s1:1):	152.596 mA	-3.53284 GA
I(c2.l.s2:1):	55.7584 mA	-2.38345 GA
I(c6.l.s1:1):	4.31292 mA	67.9653 mA

V(R3_2_sil_0):	495.494 mV	-11.0006 kV
V(R3_3_sil_0):	509.249 mV	8.29348 V
V(R3_4_sil_0):	515.598 mV	-9.74647 V
V(R3_5_sil_0):	515.658 mV	17.328 V
V(R3_6_sil_0):	512.591 mV	-15.2372 V
V(R3_7_sil_0):	508.439 mV	4.15405 V
V(R3_8_sil_0):	504.162 mV	1.90051 V
V(R4_1_sil_0):	1.22079 V	7.32353 V
V(R4_2_sil_0):	1.24162 V	4.57356 V
V(R4_3_sil_0):	1.26255 V	-21.2035 V
V(R4_4_sil_0):	1.28363 V	296.187 mV
V(R4_5_sil_0):	1.3049 V	5.83147 V
V(R4_6_sil_0):	1.32642 V	3.7132 V
V(R4_7_sil_0):	1.34823 V	-126.35 V
V(R4_8_sil_0):	1.3704 V	-126.843 V
V(R4_9_sil_0):	1.39299 V	-115.474 V
V(R4_10_sil_0):	1.41607 V	-90.1292 V
V(R4_11_sil_0):	1.43969 V	-37.6748 V
V(R4_12_sil_0):	1.46395 V	51.4761 V
V(R4_13_sil_0):	1.48893 V	171.433 V
V(R4_14_sil_0):	1.51471 V	283.428 V
V(R4_15_sil_0):	1.54142 V	1.96414 V
V(R4_16_sil_0):	1.56917 V	3.17688 V
V(R4_17_sil_0):	1.5981 V	-6.06316 kV
I(V0.p):	-4.85854 A	476.406 MA
I(V2.p):	7.44472 uA	2.46247 mA
V(C1.b):	19.363 V	11.8527 kV
V(C1.c):	19.6091 V	11.8524 kV
V(C1.d):	22.6767 V	12.0082 kV
V(C1.e):	22.9358 V	12.0027 kV
V(C1.g):	4.32075 V	11.1407 kV
V(C2.b):	2.37212 V	11.093 kV
V(C2.c):	2.35954 V	11.0919 kV
V(C2.d):	1.65732 V	11.089 kV
V(C2.e):	1.65272 V	11.0887 kV
V(C2.g):	1.24697 V	11.0072 kV
V(C6.b):	1.62839 V	29.0583 kV
V(C6.c):	1.62619 V	29.0582 kV
V(C6.d):	216.312 mV	29.0124 kV
V(C6.e):	214.125 mV	29.0123 kV
V(C6.g):	1.20684 V	29.0334 kV
I(c1.ls1:1):	-472.201 mA	-313.468 MA
I(c1.ls2:1):	-497.132 mA	-314.576 MA
I(c2.ls1:1):	152.596 mA	-3.53284 GA
I(c2.ls2:1):	55.7584 mA	-2.38345 GA
I(c6.ls1:1):	4.31292 mA	67.9653 MA

I(c6.ls2:1):	4.28246 mA	67.5146 MA
V(L2.a1):	1.41671 V	29.0414 kV
V(L2.a2):	1.63777 V	29.0584 kV
V(L2.c1):	1.41471 V	29.0415 kV
V(L2.c2):	1.63612 V	29.0585 kV
V(L2.t1):	1.40683 V	29.0412 kV
V(L2.tsub1):	0 V	0 V
V(L2.tsub2):	219.64 mV	29.0104 kV
V(L2.tsub3):	115.567 mV	29.0035 kV
V(L6.a1):	502.203 V	39.1189 kV
V(L6.a2):	-450.204 mV	11.0084 kV
V(L6.c1):	501.734 V	39.0926 kV
V(L6.c2):	43.0249 mV	11.0024 kV
V(L6.t1):	501.773 V	39.0948 kV
V(L6.tsub1):	2.81257 V	12.0777 kV
V(L6.tsub2):	0 V	0 V
V(L6.tsub3):	548.838 V	-21.2436 kV
V(L8.a1):	1.1736 V	11.0359 kV
V(L8.a2):	19.3521 V	11.6143 kV
V(L8.c1):	1.16739 V	11.0356 kV
V(L8.c2):	19.3766 V	11.6156 kV
V(L8.t1):	1.16721 V	11.0356 kV
V(L8.tsub1):	2.23111 V	11.0413 kV
V(L8.tsub2):	10.4194 V	11.3316 kV
V(L8.tsub3):	307.186 mV	11.0169 kV
V(L10.a1):	1.19195 V	11.0063 kV
V(L10.a2):	4.25398 V	17.9796 kV
V(L10.c1):	1.19234 V	11.0063 kV
V(L10.c2):	4.25666 V	17.9796 kV
V(L10.t1):	1.18902 V	11.0063 kV
V(L10.tsub1):	0 V	0 V
V(L10.tsub2):	1.26416 V	13.9473 kV
V(L10.tsub3):	-4.27199 mV	11.0015 kV
I(12.lp1:1):	3.12153 mA	-4.47412 MA
I(12.lp2:1):	3.05956 mA	-5.20695 MA
I(12.ls1:1):	8.40764 mA	-44.7814 MA
I(12.ls2:1):	-8.07296 mA	52.1163 MA
I(16.lp1:1):	-349.558 mA	495.396 MA
I(16.lp2:1):	385.047 mA	495.396 MA
I(16.ls1:1):	-1.80707 A	495.396 MA
I(16.ls2:1):	-1.91028 A	-495.396 MA
I(18.lp1:1):	69.822 uA	-273.793 MA
I(18.lp2:1):	-54.8857 uA	-274.766 MA
I(18.ls1:1):	3.48265 mA	-306.015 MA
I(18.ls2:1):	13.1913 mA	315.753 MA
I(l10.lp1:1):	1.64243 mA	-276.815 MA

I(18.lp2:1):	-54.8857 uA	-274.766 MA
I(18.ls1:1):	3.48265 mA	-306.015 MA
I(18.ls2:1):	13.1913 mA	315.753 MA
I(110.lp1:1):	1.64243 mA	-276.815 MA
I(110.lp2:1):	1.64919 mA	-278.088 MA
I(110.ls1:1):	3.78121 mA	-348.928 MA
I(110.ls2:1):	-2.12471 mA	364.121 MA
V(run7.dsub:int_a):	1.22523 nV	1.22524 nV
V(run7.main:dbnode):	14.1878 V	-5.99017 kV
V(run7.main:gmnode):	18.6483 V	23.4553 kV
V(run7.main:int_b):	1.26367 kV	-19.3652 TV
V(run7.main:int_g):	18.1603 V	-86.7699 kV
V(run7.main:sbnode):	19.2286 V	9.49779 kV
V(run8.dsub:int_a):	16.6965 nV	16.6965 nV
V(run8.main:dbnode):	2.11872 uV	-29.6011 mV
V(run8.main:gmnode):	545.839 mV	232.556 mV
V(run8.main:int_b):	785.247 nV	-11.4776 mV
V(run8.main:int_g):	545.838 mV	845.853 mV
V(run8.main:sbnode):	616.468 nV	-10.7213 mV
V(run10.dsub:int_a):	1.22523 nV	1.22524 nV
V(run10.main:dbnode):	4.75582 V	-6.97579 kV
V(run10.main:gmnode):	4.56221 V	22.9793 kV
V(run10.main:int_b):	5.03774 V	14.229 kV
V(run10.main:int_g):	5.10224 V	-8.44358 kV
V(run10.main:sbnode):	10.3615 V	-17.6604 kV
V(run13.dsub:int_a):	1.08912 nV	1.08912 nV
V(run13.main:dbnode):	80.3886 mV	745.703 mV
V(run13.main:gmnode):	829.212 mV	11.0264 kV
V(run13.main:int_b):	59.8453 mV	-727.619 kV
V(run13.main:int_g):	726.027 mV	6.97879 V
V(run13.main:sbnode):	33.0094 mV	60.043 mV
V(run15.dsub:int_a):	1.08912 nV	1.08912 nV
V(run15.main:dbnode):	131.964 mV	1.90982 V
V(run15.main:gmnode):	1.22536 V	-17.0137 kV
V(run15.main:int_b):	128.753 mV	29.0211 kV
V(run15.main:int_g):	1.23736 V	1.08678 V
V(run15.main:sbnode):	153.033 mV	1.90982 V

Analysis `sweepss-000_pss' terminated prematurely due to error.

Warning from spectre during periodic steady state analysis `sweepss-000_pss', during Sweep analysis `sweepss'.
4 warnings suppressed.

sweepss: prf = -28 (5 %)
