

LTspice 24.1.0 for Windows

Circuit: C:\Users\asus\Downloads\230108080\_Shubh\_OTA.net

Start Time: Tue Apr 22 21:59:52 2025

Ignoring BSIM parameter XL

Ignoring BSIM parameter XW

Ignoring BSIM parameter XL

Ignoring BSIM parameter XW

solver = Normal

Maximum thread count: 4

tnom = 27

temp = 27

method = trap

Warning: Pd = 0 is less than W.

Warning: Ps = 0 is less than W.

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Direct Newton iteration failed to find .op point. (Use ".option noopiter" to skip.)

Starting Gmin stepping

Gmin = 10

Gmin = 1.07374

Gmin = 0.115292

**Gmin = 0.0123794**

**Gmin = 0.00132923**

**Gmin = 0.000142725**

**Gmin = 1.5325e-05**

**Gmin = 1.6455e-06**

**Gmin = 1.76685e-07**

**Gmin = 1.89714e-08**

**Gmin = 2.03704e-09**

**Gmin = 2.18725e-10**

**Gmin = 2.34854e-11**

**Gmin = 2.52173e-12**

**Gmin = 2.70769e-13**

**Gmin = 0**

**Gmin stepping succeeded in finding the operating point.**

#### **Semiconductor Device Operating Points:**

**--- BSIM3 MOSFETS ---**

<b>Name:</b>	<b>M1</b>	<b>M2</b>	<b>M0</b>	<b>M6</b>	<b>M7</b>
<b>Model:</b>	<b>cmosn</b>	<b>cmosn</b>	<b>cmosn</b>	<b>cmosn</b>	<b>cmosn</b>
<b>Id:</b>	<b>2.13e-05</b>	<b>2.13e-05</b>	<b>4.26e-05</b>	<b>2.45e-05</b>	<b>4.25e-06</b>
<b>Vgs:</b>	<b>4.78e-01</b>	<b>4.78e-01</b>	<b>5.02e-01</b>	<b>5.02e-01</b>	<b>5.02e-01</b>
<b>Vds:</b>	<b>4.90e-01</b>	<b>4.85e-01</b>	<b>4.22e-01</b>	<b>9.00e-01</b>	<b>5.02e-01</b>
<b>Vbs:</b>	<b>0.00e+00</b>	<b>0.00e+00</b>	<b>0.00e+00</b>	<b>0.00e+00</b>	<b>0.00e+00</b>
<b>Vth:</b>	<b>4.12e-01</b>	<b>4.12e-01</b>	<b>4.13e-01</b>	<b>4.10e-01</b>	<b>4.12e-01</b>
<b>Vdsat:</b>	<b>7.29e-02</b>	<b>7.29e-02</b>	<b>8.54e-02</b>	<b>8.67e-02</b>	<b>8.57e-02</b>
<b>Gm:</b>	<b>4.03e-04</b>	<b>4.03e-04</b>	<b>7.27e-04</b>	<b>4.12e-04</b>	<b>7.21e-05</b>
<b>Gds:</b>	<b>2.90e-06</b>	<b>2.91e-06</b>	<b>5.75e-06</b>	<b>2.62e-06</b>	<b>5.31e-07</b>
<b>Gmb</b>	<b>1.16e-04</b>	<b>1.16e-04</b>	<b>2.08e-04</b>	<b>1.18e-04</b>	<b>2.07e-05</b>
<b>Cbd:</b>	<b>0.00e+00</b>	<b>0.00e+00</b>	<b>0.00e+00</b>	<b>0.00e+00</b>	<b>0.00e+00</b>

Cbs:	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
Cgsov:	2.22e-14	2.22e-14	2.88e-14	1.56e-14	2.80e-15
Cgdov:	2.22e-14	2.22e-14	2.88e-14	1.56e-14	2.80e-15
Cgbov:	8.66e-19	8.66e-19	8.66e-19	8.66e-19	8.66e-19
dQgdVgb:	1.93e-13	1.93e-13	2.60e-13	1.41e-13	2.53e-14
dQgdVdb:	-2.18e-14	-2.18e-14	-2.82e-14	-1.53e-14	-2.74e-15
dQgdVsb:	-1.55e-13	-1.55e-13	-2.14e-13	-1.17e-13	-2.08e-14
dQddVgb:	-7.88e-14	-7.88e-14	-1.08e-13	-5.85e-14	-1.05e-14
dQddVdb:	2.20e-14	2.20e-14	2.85e-14	1.54e-14	2.77e-15
dQddVsb:	7.49e-14	7.49e-14	1.04e-13	5.68e-14	1.01e-14
dQbdVgb:	-3.54e-14	-3.54e-14	-4.44e-14	-2.42e-14	-4.33e-15
dQbdVdb:	3.04e-17	2.93e-17	-4.22e-18	4.18e-17	3.20e-18
dQbdVsb:	-1.69e-14	-1.69e-14	-2.34e-14	-1.27e-14	-2.25e-15

Name:	M3	M4	M5
Model:	cmosp	cmosp	cmosp
Id:	2.13e-05	2.13e-05	2.45e-05
Vgs:	0.00e+00	5.36e-03	7.10e-03
Vds:	8.88e-01	8.93e-01	9.00e-01
Vbs:	8.88e-01	8.93e-01	9.00e-01
Vth:	-4.20e-01	-4.20e-01	-4.20e-01
Vdsat:	-3.53e-01	-3.53e-01	-3.57e-01
Gm:	8.28e-05	8.28e-05	9.40e-05
Gds:	1.05e-06	1.05e-06	1.19e-06
Gmb	2.66e-05	2.66e-05	3.02e-05
Cbd:	0.00e+00	0.00e+00	0.00e+00
Cbs:	0.00e+00	0.00e+00	0.00e+00
Cgsov:	2.03e-15	2.03e-15	2.29e-15
Cgdov:	2.03e-15	2.03e-15	2.29e-15

Cgbov: 8.41e-19 8.41e-19 8.41e-19  
dQgdVgb: 2.29e-14 2.29e-14 2.58e-14  
dQgdVdb: -2.00e-15 -2.00e-15 -2.25e-15  
dQgdVsb: -2.05e-14 -2.05e-14 -2.30e-14  
dQddVgb: -9.60e-15 -9.60e-15 -1.08e-14  
dQddVdb: 2.02e-15 2.02e-15 2.27e-15  
dQddVsb: 9.96e-15 9.96e-15 1.12e-14  
dQbdVgb: -3.70e-15 -3.70e-15 -4.15e-15  
dQbdVdb: -4.31e-18 -4.11e-18 -4.55e-18  
dQbdVsb: -1.50e-15 -1.50e-15 -1.69e-15

Total elapsed time: 0.292 seconds.

Files loaded:

C:\Users\asus\Downloads\230108080\_Shubh\_OTA.net

C:\Users\asus\AppData\Local\LTspice\lib\cmp\standard.mos

C:\Users\asus\OneDrive\Documents\LTspice\tsmc018.lib