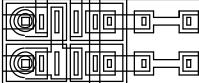
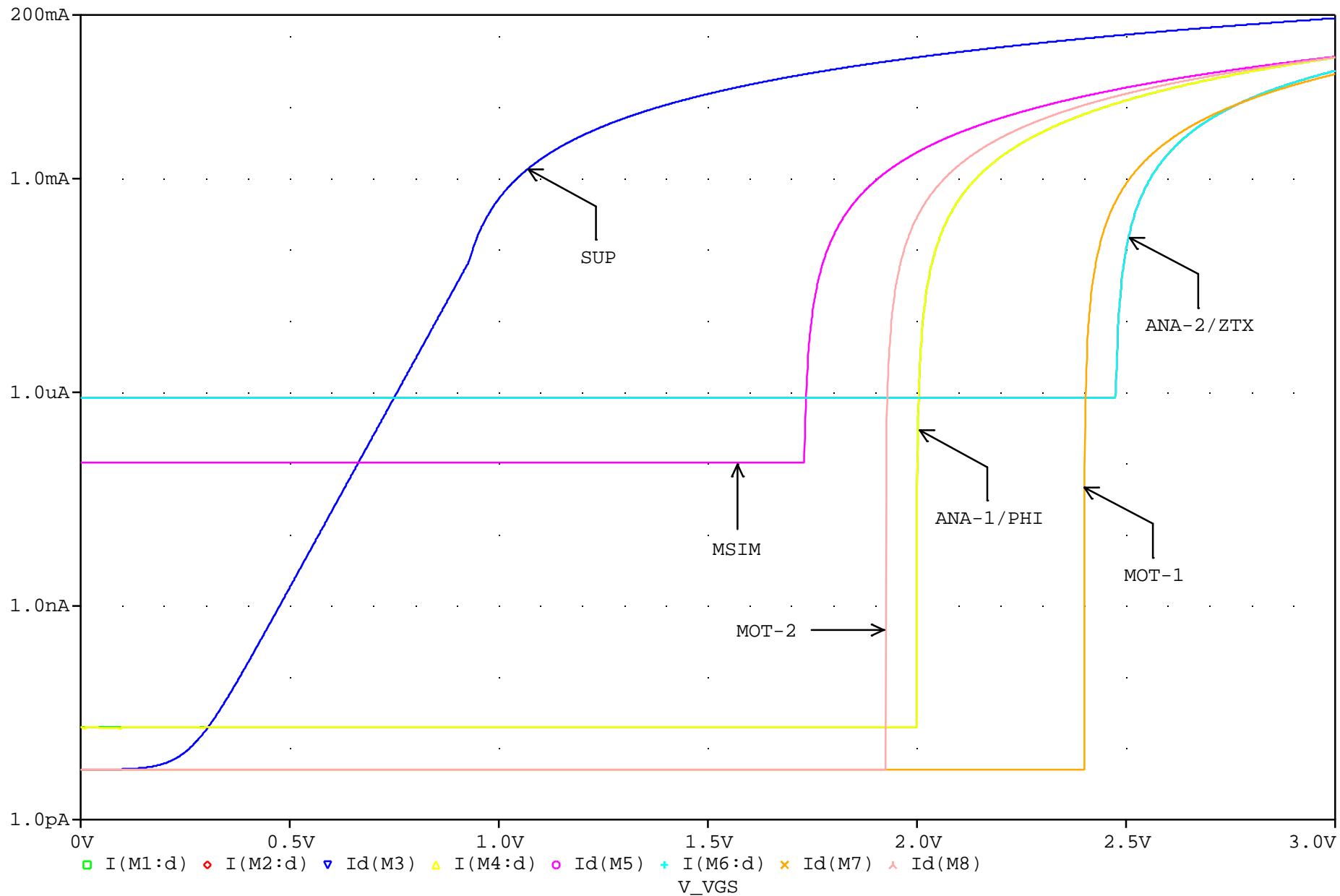


LIBRARY: C:\PSpice\DeviceLib\PowerMOS\2N7000-Comparison.lib

		ANALOG INNOVATIONS, Inc. 824 E. CATHEDRAL ROCK DRIVE PHOENIX, AZ 85048-6300 (480) 460-2350 FAX: (480) 460-2142	
Title: Comparing 2N7000 Models			
Size A	FileName: D:\Projects\Expments\MOS-GateCharge\Compare2N7000Models.sch		REV A
April 6, 2005, 4:15 PM		Sheet 1 of 1	

Compare 2N7000 Models



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* Anasoft-1:
.SUBCKT 2N7000-ANA-1 _ssi_pin0_1 _ssi_pin1_2 _ssi_pin2_3
Cgs 2 3 12.3E-12
V_ssi_pin2 _ssi_pin2_3 3 0
V_ssi_pin1 _ssi_pin1_2 2 0
V_ssi_pin0 _ssi_pin0_1 1 0
Cgd1 2 4 27.4E-12
Cgd2 1 4 6E-12
M1 1 2 3 3 MOST1
M2 4 2 1 3 MOST2
D1 3 1 Dbody
.MODEL MOST1 NMOS(Level=3 Kp=20.78u W=9.7m L=2u Rs=20m Vto=2 Rd=1.186)
.MODEL MOST2 NMOS(VTO=-4.73 Kp=20.78u W=9.7m L=2u Rs=20m)
.MODEL Dbody D(Is=125f N=1.023 Rs=1.281 Ikf=18.01 Cjo=46.3p M=.3423
+ Vj=.4519 Bv=60 Ibv=10u Tt=161.6n)
.ENDS

* Anasoft-2:
.SUBCKT 2N7000-ANA-2 _ssi_pin0_3 _ssi_pin1_4 _ssi_pin2_5
* Nodes
D G S
V_ssi_pin2 _ssi_pin2_5 5 0
V_ssi_pin1 _ssi_pin1_4 4 0
V_ssi_pin0 _ssi_pin0_3 3 0
M1 3 2 5 5 MOD1
RG 4 2 343
RL 3 5 6E6
C1 2 5 23.5P
C2 3 2 4.5P
D1 5 3 DIODE1
*
.MODEL MOD1 NMOS VTO=2.474 RS=1.68 RD=0.0 IS=1E-15 KP=0.296
+ CBD=53.5P PB=1 LAMBDA=267E-6
.MODEL DIODE1 D IS=1.254E-13 N=1.0207 RS=0.222
.ENDS

* Supertex
.MODEL 2N7000-SUP NMOS (LEVEL=3 RS=0.205 NSUB=1.0E15
+ DELTA=0.1 KAPPA=0.0506 TPG=1 CGDO=3.1716E-9
+ RD=0.239 VTO=1.000 VMAX=1.0E7 ETA=0.0223089
+ NFS=6.6E10 TOX=1.0E-7 LD=1.698E-9 UO=862.425
+ XJ=6.4666E-7 THETA=1.0E-5 CGSO=9.09E-9 I=2.5E-6
+ W=0.8E-2)

* Phillips:
.SUBCKT 2N7000-PHI 1 2 3
Cgs 2 3 12.3E-12
Cgd1 2 4 27.4E-12
Cgd2 1 4 6E-12
M1 1 2 3 3 MOST1
M2 4 2 1 3 MOST2
D1 3 1 Dbody
.MODEL MOST1 NMOS(Level=3 Kp=20.78u W=9.7m L=2u Rs=20m Vto=2 Rd=1.186)
.MODEL MOST2 NMOS(VTO=-4.73 Kp=20.78u W=9.7m L=2u Rs=20m)
.MODEL Dbody D(Is=125f N=1.023 Rs=1.281 Ikf=18.01 Cjo=46.3p M=.3423
+ Vj=.4519 Bv=60 Ibv=10u Tt=161.6n)
.ENDS

```

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* Ancient MicroSim:

.model 2N7000-MSIM NMOS(Level=3 Gamma=0 Delta=0 Eta=0 Theta=0 Kappa=0.2
+ Vmax=0 Xj=0 Tox=2u Uo=600 Phi=.6 Kp=1.073u W=.12 L=2u Rs=20m
+ Vto=1.73 Rd=.5489 Rds=48MEG Cgso=73.61p Cgdo=6.487p Cbd=74.46p Mj=.5
+ Pb=.8 Fc=.5 Rg=546.2 Is=10f N=1 Rb=1m)

* Zetex:

.SUBCKT 2N7000-ZTX 3 4 5
* Nodes          D G S
M1 3 2 5 5 MOD1
RG 4 2 343
RL 3 5 6E6
D1 5 3 DIODE1
.MODEL MOD1 NMOS VTO=2.474 RS=1.68 RD=0.0 IS=1E-15 KP=0.296
+CGSO=23.5P CGDO=4.5P CBD=53.5P PB=1 LAMBDA=267E-6
.MODEL DIODE1 D IS=1.254E-13 N=1.0207 RS=0.222
.ENDS

* -----
* I've found two others, from Motorola originally I think.

.MODEL 2N7000-MOT-1 NMOS (LEVEL=1 VTO=2.4 KP=.17 GAMMA=1.76U
+ PHI=.75 LAMBDA=1.25M RD=.35 RS=.448 IS=41.6F PB=.8 MJ=.46
+ CBD=44.4P CBS=53.3P CGSO=24N CGDO=20N CGBO=116N)
* -- Assumes default L=100U W=100U --
* 60 Volt .2 Amp 2.5 ohm Enh-Mode N-Channel MOS-FET 11-19-1990

.MODEL 2N7000-MOT-2 NMOS LEVEL=1 AF=1E-26 CBD=0 CBS=0 CGBO=0
+ CGDO=0 CGSO=0 FC=0.5 GAMMA=3 KF=1.2 KP=0.104475 LAMBDA=0
+ LD=0 MJ=0.5 PB=0.75 PHI=0.554054 RD=0.593226 RS=0.593226
+ VTO=1.92518

```