NGSPICE .param temp=27 .options savecurrents reltol=1e-3 abstol=1e-12 gmin=1e-15 .control save all * Operating Point Analysis remzerovec write ota-improved tb-loopgain.raw set appendwrite * AC Analysis ac dec 101 1 100G remzerovec write ota-improved_tb-loopgain.raw set appendwrite * Middlebrook's Method let tv=-v(vr1)/v(vf1) let ti=-i(vir1)/i(vif1) let tmb=(tv*ti - 1)/(tv + ti + 2)plot db(tmb) ylabel 'Magnitude - Middlebrook' plot 180/pi*cphase(tmb) ylabel 'Phase - Middlebrook' * Tian's Method * vtest=0, itest=1: let A=i(Vimeas2) let C=v(vmeas2) * vtest=1, itest=0: let B=i(Vimeas1) let D=v(vmeas1) let ttian=(A*D-B*C-A)/(2*(B*C-A*D)+A-D+1)Simulate plot db(ttian) ylabel 'Magnitude - Tian' plot 180/pi*cphase(ttian) ylabel 'Phase - Tian' Annotate OP * Middlebrook vs. Tian plot db(tmb) db(ttian) ylabel 'Magnitude' plot 180/pi*cphase(tmb) 180/pi*cphase(ttian) ylabel 'Phase' write ota-improved_tb-loopgain.raw *quit .endc V_SS • V_SS • **MODEL** .lib cornerMOSlv.lib mos_tt





