Haroutun Haroutunian
Professor Berhe
ECE 443L
5 March 2022

Lab 3: CMOS Transistor Level Utility Amplifier Design

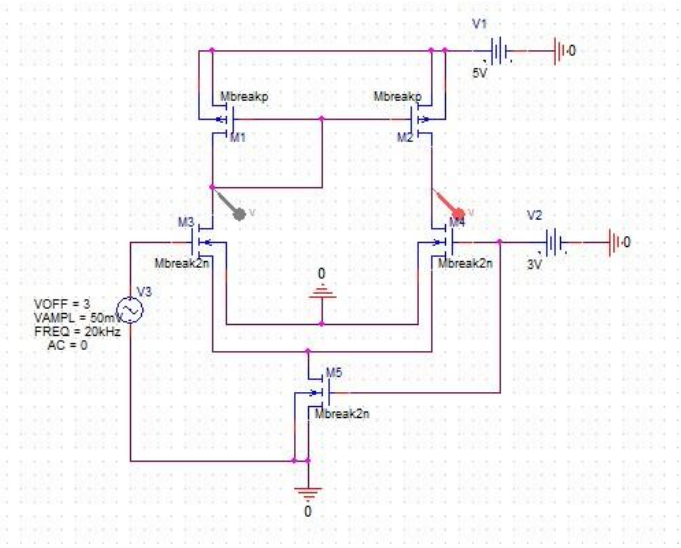
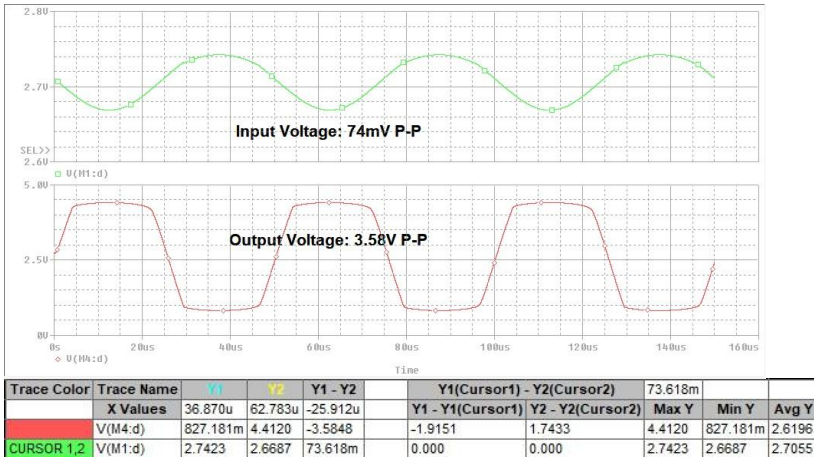


Figure 3.1: CMOS Transistor Amplifier Design with Double Sizing and V(m) @ 50mV and Freq @ 20kHz



Trace Color	Trace Name	Y1	Y2	Y1 - Y2		Y1(Cursor1) - Y2(Cursor2)		73.618m		
	X Values	36.870u	62.783u	-25.912u		Y1 - Y1(Cursor1)	Y2 - Y2(Cursor2)	Max Y	Min Y	Avg Y
	V(M4:d)	827.181m	4.4120	-3.5848		-1.9151	1.7433	4.4120	827.181m	2.6196
CURSOR 1,2	V(M1:d)	2.7423	2.6687	73.618m		0.000	0.000	2.7423	2.6687	2.7055

Figure 3.2: CMOS Transistor Amplifier Waveform and Cursor with Double Sizing and A(v) @ 48.38V

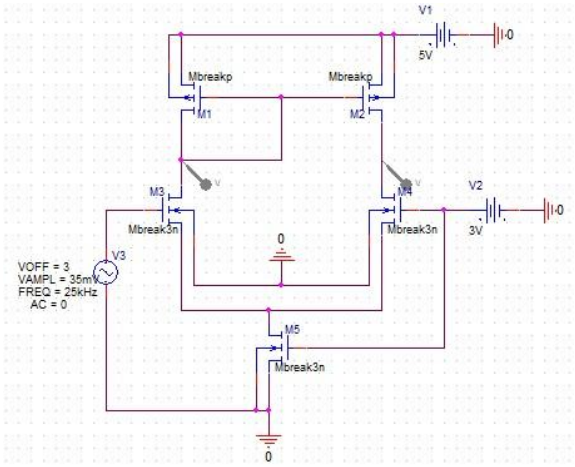
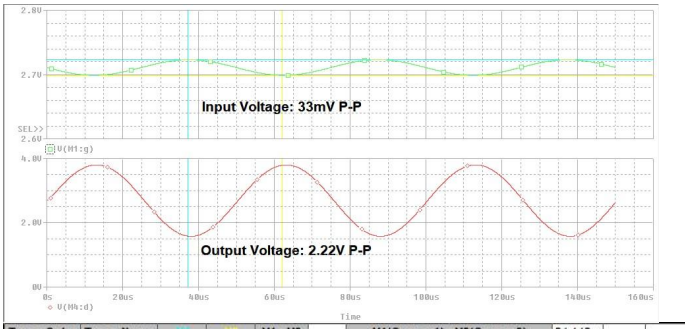


Figure 3.3: CMOS Transistor Amplifier Design with Triple Sizing and V(m) @ 35mV and Freq @ 25kHz



Trace Color	Trace Name	Y1	Y2	Y1 - Y2		Y1(Cursor1) - Y2(Cursor2)		24.142m		
	X Values	37.218u	62.088u	-24.869u		Y1 - Y1(Cursor1)	Y2 - Y2(Cursor2)	Max Y	Min Y	Avg Y
	V(M4:d)	1.5866	3.7930	-2.2064		-1.1364	1.0942	3.7930	1.5866	2.6898
CURSOR 1,2	V(M1:g)	2.7230	2.6988	24.142m		0.000	0.000	2.7230	2.6988	2.7109

Figure 3.4: CMOS Transistor Amplifier Waveform and Cursor with Triple Sizing and A(v) @ 67.27V

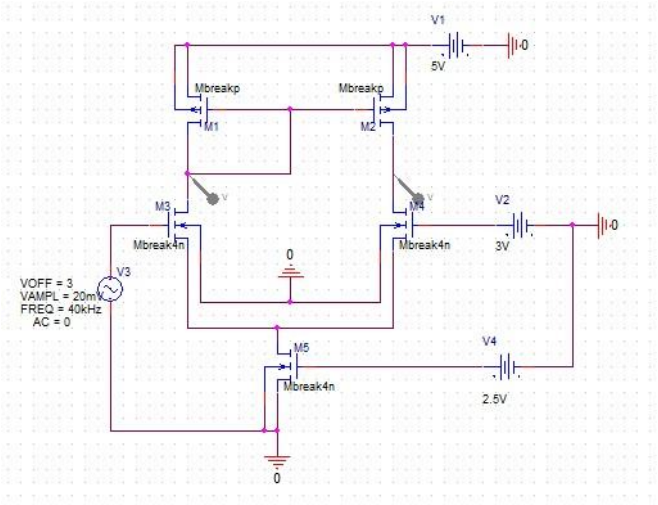
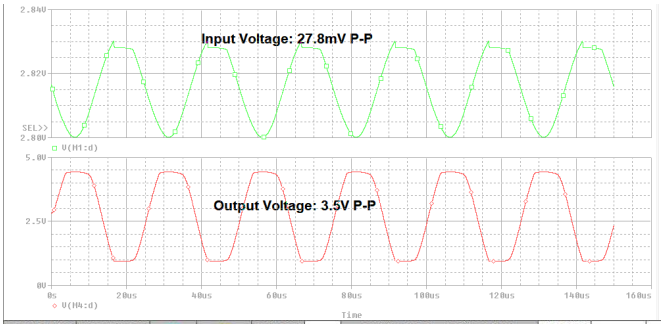


Figure 3.5: CMOS Transistor Amplifier Design with Quadruple Sizing and V(m) @ 20mV and Freq @ 40kHz



Trace Color	Trace Name	V1	V2	Y1 - Y2		Y1(Cursor1) - Y2(Cursor2)		-27.912m		
	X Values	56.348u	69.044u	-12.696u		Y1 - Y1(Cursor1)	Y2 - Y2(Cursor2)	Max Y	Min Y	Avg Y
CURSOR 1,2	V(M1:d)	2.8002	2.8281	-27.912m		0.000	0.000	2.8281	2.8002	2.8141
	V(M4:d)	4.4330	940.765m	3.4922		1.6328	-1.8873	4.4330	940.765m	2.6869

Figure 3.6: CMOS Transistor Amplifier Waveform and Cursor with Quadruple Sizing and A(v) @ 125.9V