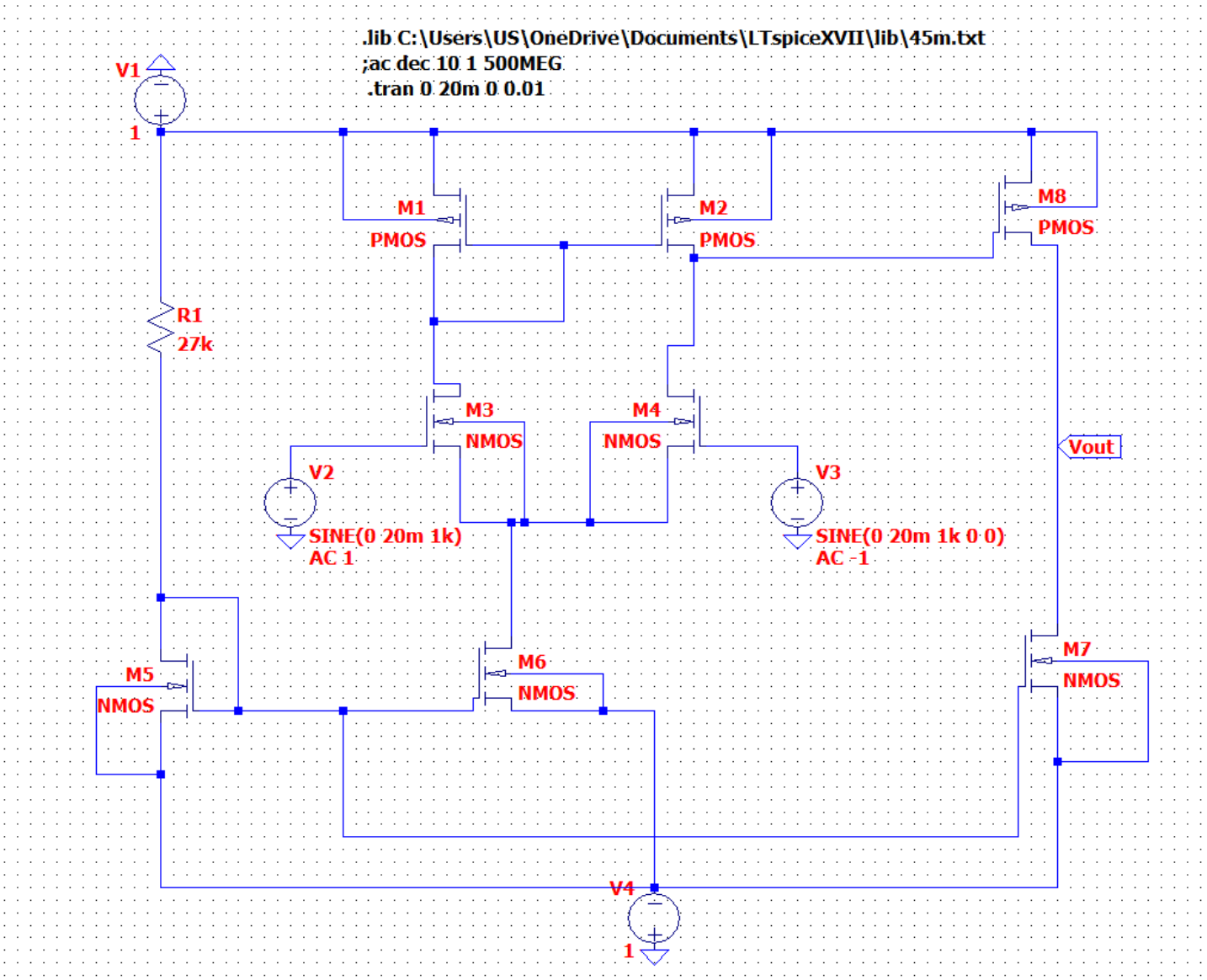
EXP-3
VLSI ENGINEERING
ANALOG
OTA

SWAGATA NASKAR
19EC30047

Aim :

To design a working two stage Operational Transconductance Amplifier(OTA) using PMOS & NMOS

Circuit Design :

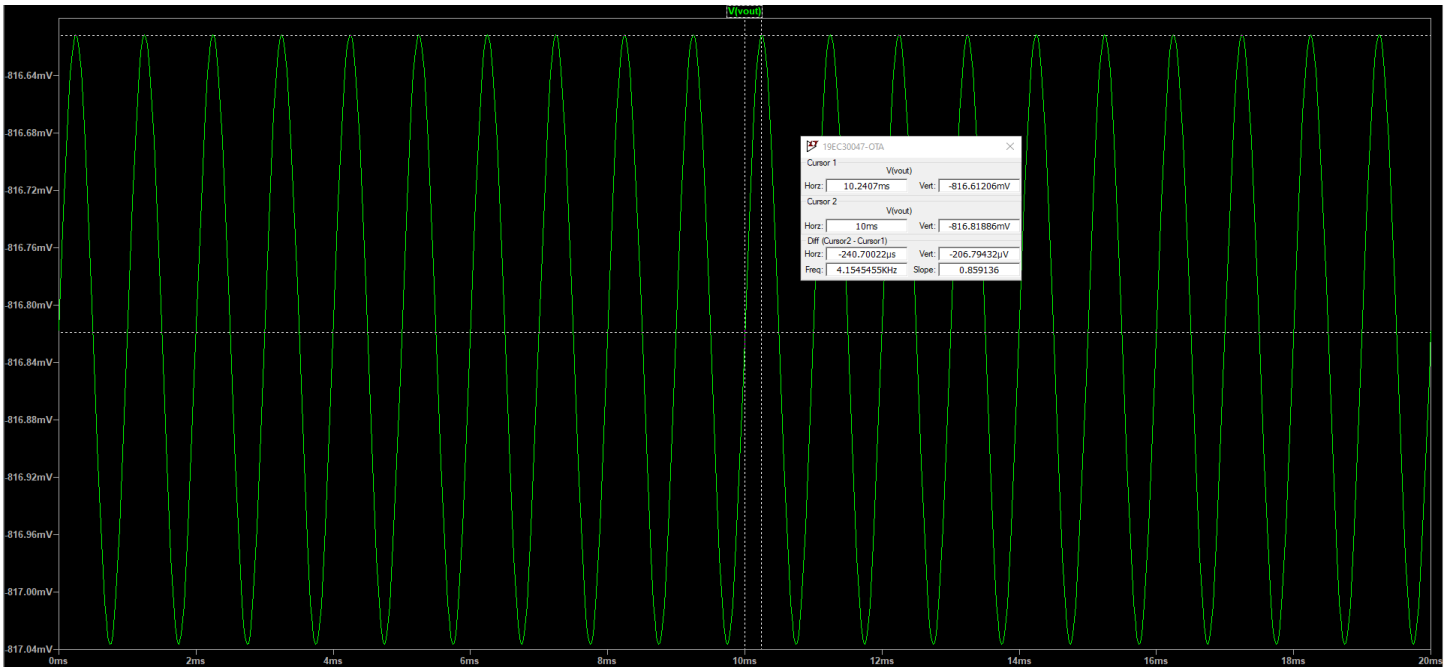


Dimensions :

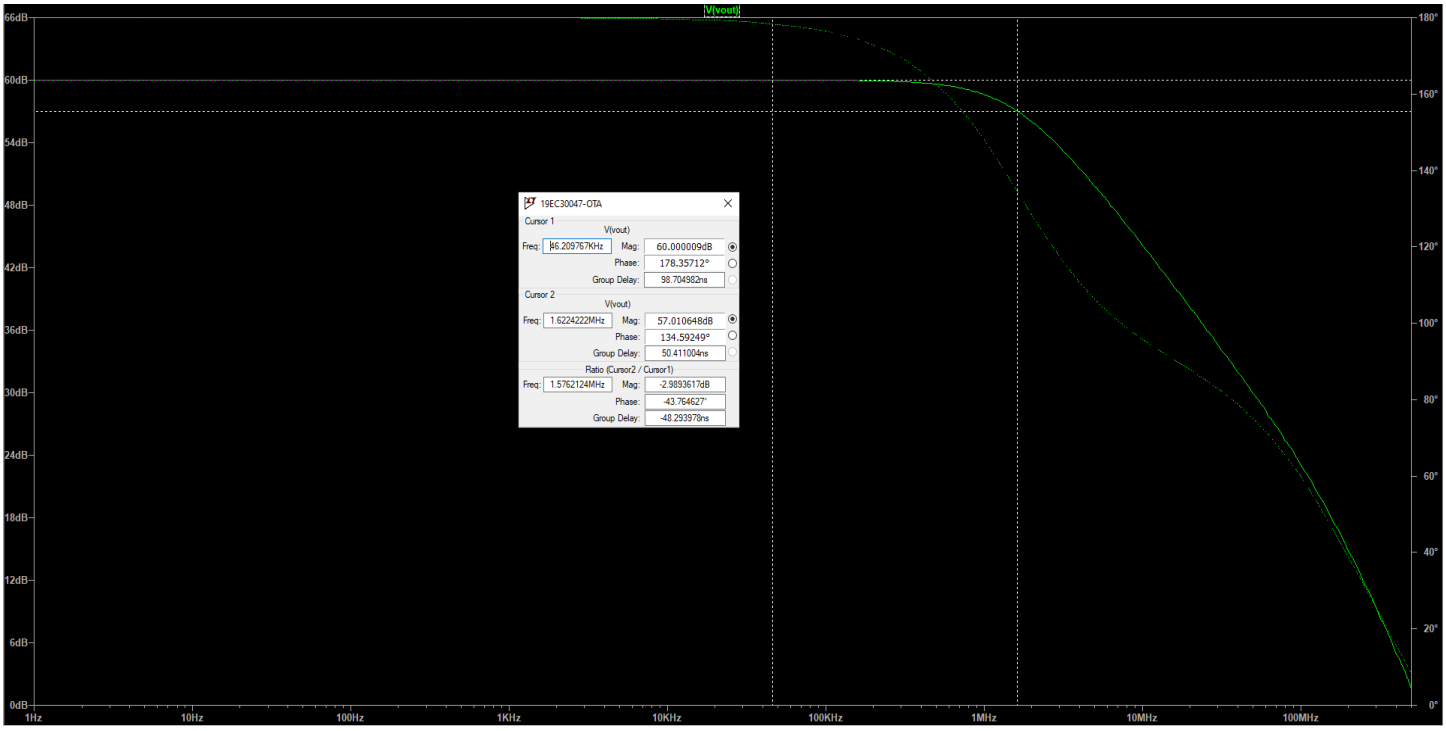
M1 & M2	PMOS	L=500n	W=9u
M3 & M4	NMOS	L=500n	W=3u
M5 &M6	NMOS	L=500n	W=6u
M7	NMOS	L=500n	W=38.5u
M8	PMOS	L=500n	W=90u

Graph :

Plot of Ad:



Gain Plot:



Gain = 60.000009dB
Gain bandwidth = 1.5762124MHz
Take the Value of R1 is 27k. Cause in 27k the graph shown exact value.
Our Target Values are,
Ad = 60dB
Gain Bandwidth = 1MHz.

Discussion :

- The maximum Gain Value depends on the values of M2 & M8 (both W/L values).
- If we increase the value of both M7 & M8 then we can see the gain will decrease. But if we increase the Width(w) value of the PMOS (M7) and decrease the Width (w) value of the NMOS (M8) then the gain value is increasing and we get a good gain value to follow this path.
- The resistance's output depends on the width and length of the transistors.
- If we increase the current through the current mirror then the amplifier's gain will be decrease.