Design Project 1 Report Template

Names:

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Analytical | Simulated | Measured |
| Gain |  |  |  |
| Input Resistance |  |  |  |
| Output Resistance |  |  |  |
| Output Voltage Swing |  |  |  |
| THD at 5V Output Swing |  |  |  |
| Low Frequency Corner |  |  |  |
| High Frequency Corner |  |  |  |
| Power Consumption |  |  |  |
| Stage 1 Collector Current |  |  |  |
| Stage 2 Collector Current |  |  |  |
| Stage 3 Collector Current |  |  |  |
| Stage 4 Collector Current |  |  |  |

(You may fill in N/A for any measurements that are no applicable to your circuit – eg: no 4th stage)

Screenshot of LTSpice schematic

Explanatory schematic of your circuit with labeled component values   
(Draw by hand or use circuit program because LTSpice schematics are too hard to read. Take care making this since you will refer to it in later parts of the report: follow schematic convention, give each component a reference designator and label each node. Break this into subfigures if needed. See pages.hmc.edu/mspencer/instructions/Draw.pdf for more information.)

Picture of circuit

Input and output traces showing normal amplifying operation

Input and output traces showing maximum output voltage swing that meets THD spec

FFT of maximum output swing (be sure to include enough cycles of your wave that you have good resolution between harmonics)

Bode plots, simulated and measured, showing fhigh and flow

-- page break here and between each of the following sections --

Analytical calculation for rin, schematic of rin test setup, brief explanation of test, calculations showing how to get from data to rin. Explanations of discrepancies between analysis, simulation and measurement. Reference earlier schematics or results and use equations as necessary. (1 page)

Analytical calculation for rout, schematic of rout test setup, brief explanation of test, calculations showing how to get from data to rout. Explanations of discrepancies between analysis, simulation and measurement. Reference earlier schematics or results and use equations as necessary. (1 page)

Analytical calculation for av, schematic of av test setup, brief explanation of test, calculations showing how to get from data to av. . Explanations of discrepancies between analysis, simulation and measurement. Reference earlier schematics or results and use equations as necessary. (1 page)

Analytical calculation for Vsw, schematic of Vsw test setup, brief explanation of test, calculations showing how to get from data to Vsw. Explanations of discrepancies between analysis, simulation and measurement. Reference earlier schematics or results and use equations as necessary. (1 page)

Description of how you calculated P. Also, Description of how you simulated and measured P, flow and fhigh. Reference earlier schematics or results and use equations as necessary. (1 page)

Explanation of design process. Reference earlier schematics and use equations as necessary. (~1 page)

Be sure to be as quantitative as possible describing your design process and any discrepancies between calculated, simulated, and measured values