ABSTRACT

A differential amplifier is actually a electronic amplifier which amplifies the difference between two input voltages and suppresses any voltage common to the two inputs. Differential type amplifier is a analog circuit in which there is two input terminal and one output terminal. The input is actually the difference between the value of two input terminals. The differential amplifier is a vast used circuit building block in analog integrated circuits, principally op-amps.

The differential amplifier can be implemented with BJTs or MOSFETs. Here we have got high gain of 61 dB .

It was seen that two stage amplifier gives better amplification because of the multiplying factor. Here we have taken some specification based on which we derived the results theoretically and then simulated in the order to get the results. Here in our proposed circuit we have got very good CMRR of 75dB.

PROBLEM STATEMENT

- *The gain and CMRR obtained by using a single stage differential amplifier does not match the requirements of the practical applications.*
- *Hence we go for a two stage differential amplifier where the first stage will be a differential pair Which is used to reduce the noise in the signal to be amplified and the second stage will be used for the purpose of increasing the gain of the amplifier*
- *The problem with the actual two stage operational amplifier is that is has least phase margin which is not suitable for practical applications*

An operational amplifier is said to be good if it has following specifications

- *High Gain and CMRR*
- *High input impedance*
- *Good phase margin ($40^0 - 60^0$)*