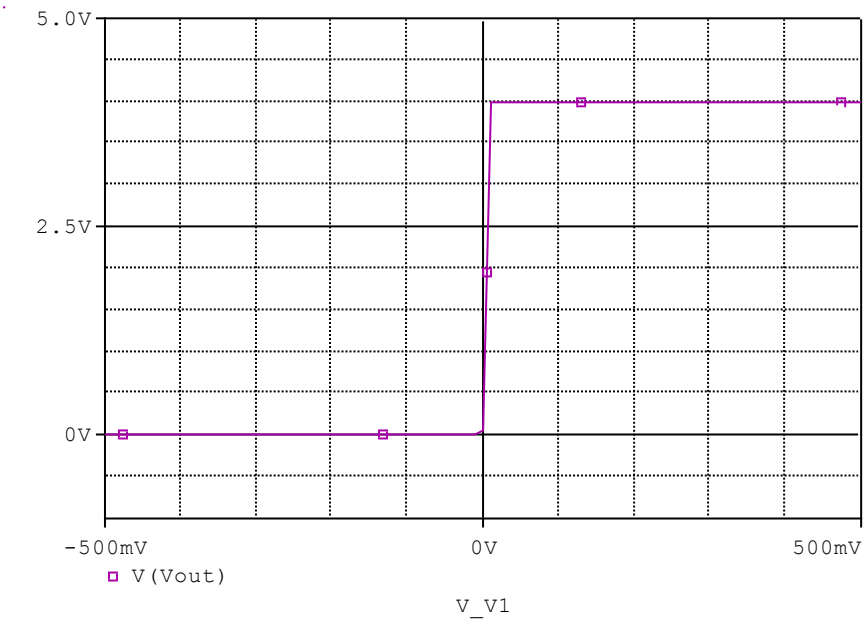
# Device Modeling Report

COMPONENTS: OPERATIONAL AMPLIFIER
PART NUMBER:NJM2119
MANUFACTURER: NEW JAPAN RADIO CO.,LTD

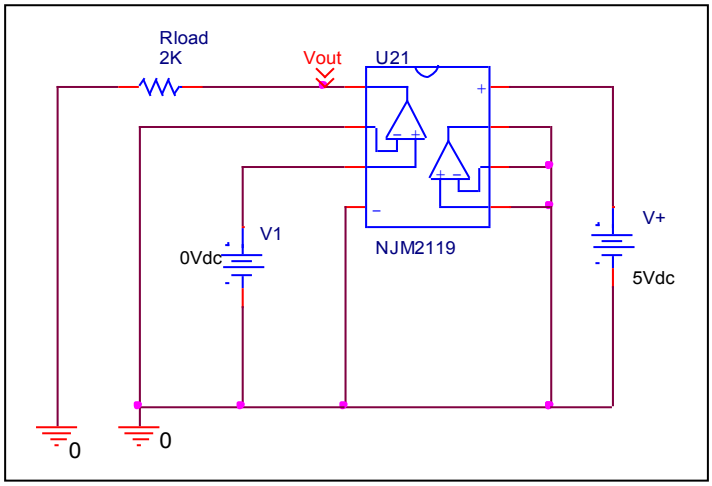
Bee Technologies Inc.

## Output Voltage Swing

Simulation result




Evaluation circuit

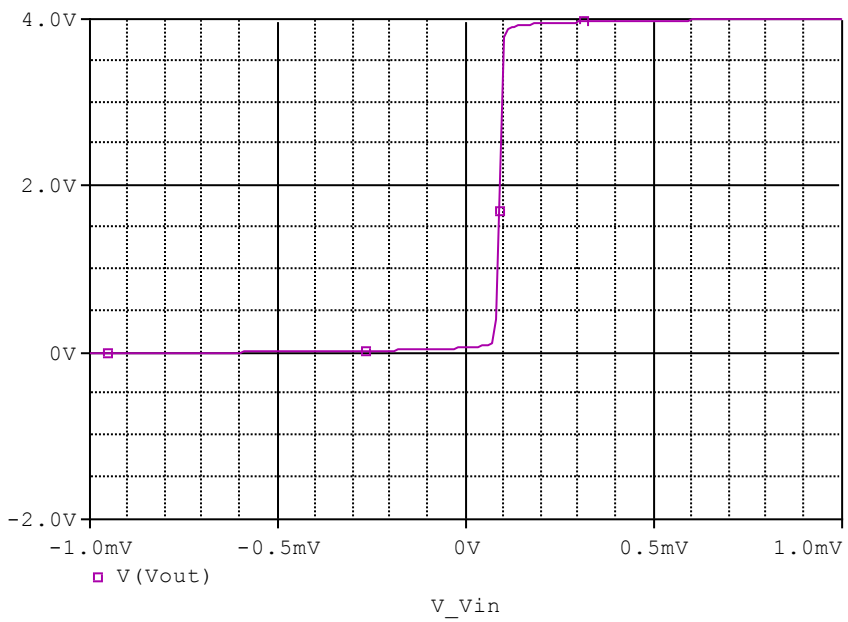



Comparison table

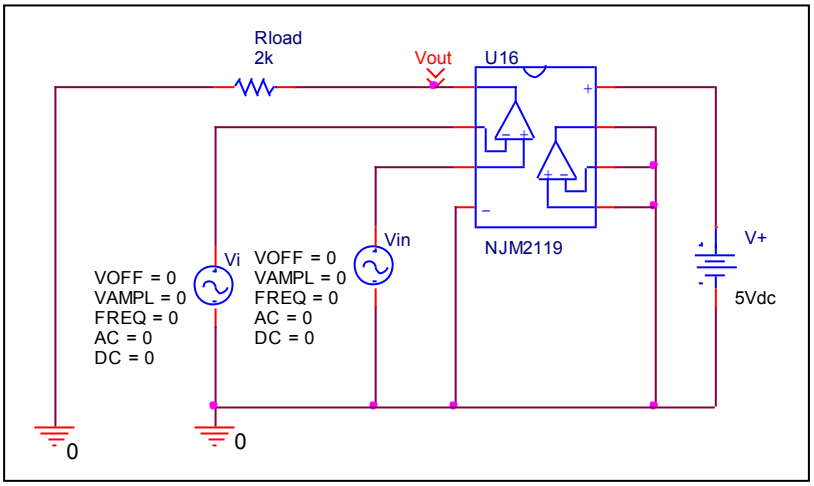
| Output Voltage Swing | Data sheet | Simulation | %Error |
|---|---|---|---|
| **VOM** | 4 | 3.992 | -0.2 |

# Input Offset Voltage

## Simulation result




## Evaluation circuit

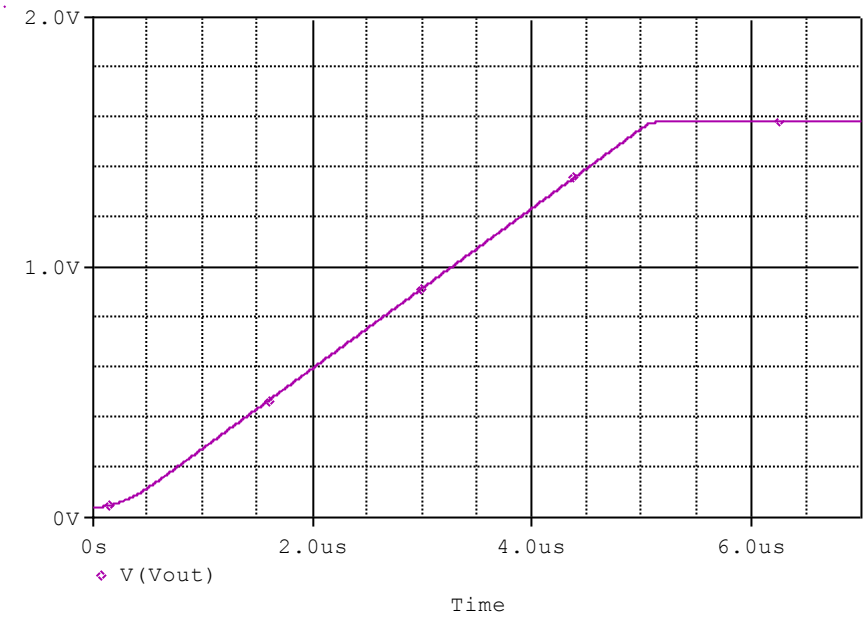



## Comparison table

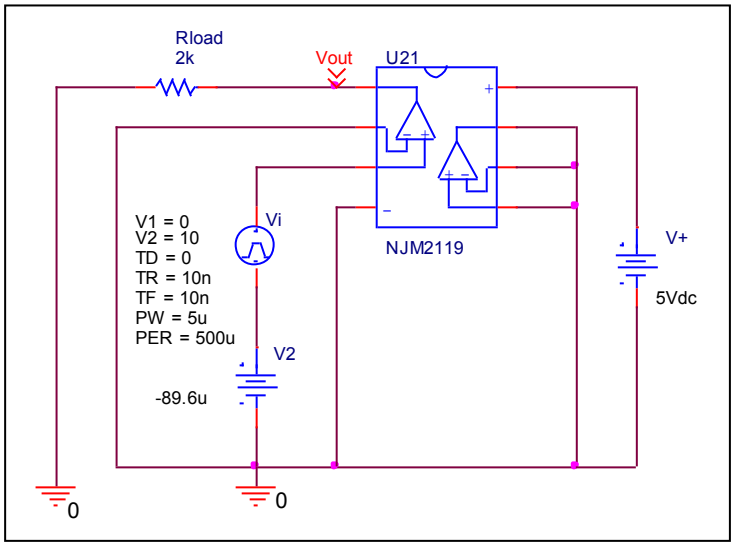
| Vio | Measurement | | Simulation | | Error | |
|---|---|---|---|---|---|---|
| | 90 | uV | 89.6 | uV | -0.444 | % |

## Slew Rate

Simulation result




Evaluation circuit

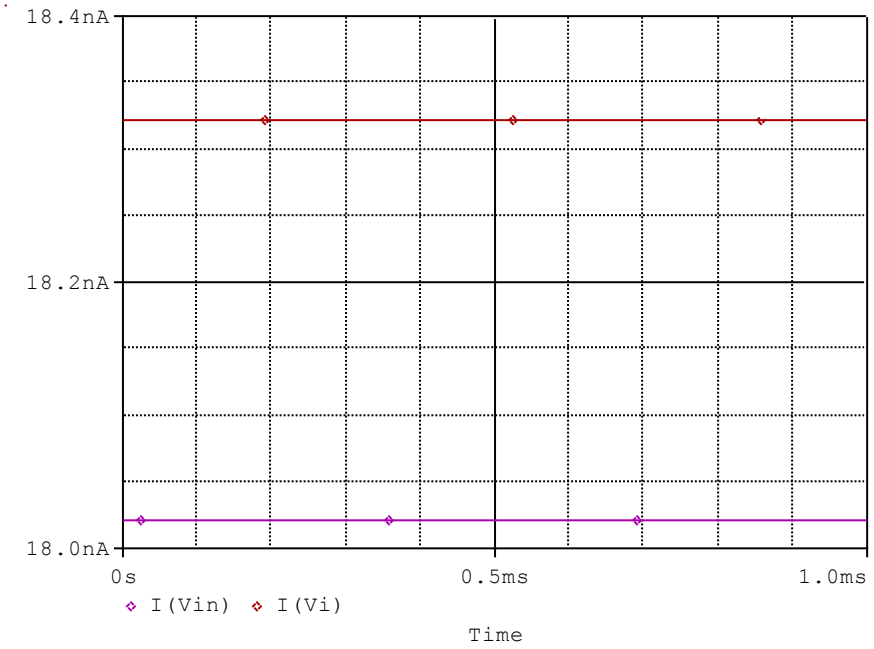



Comparison table

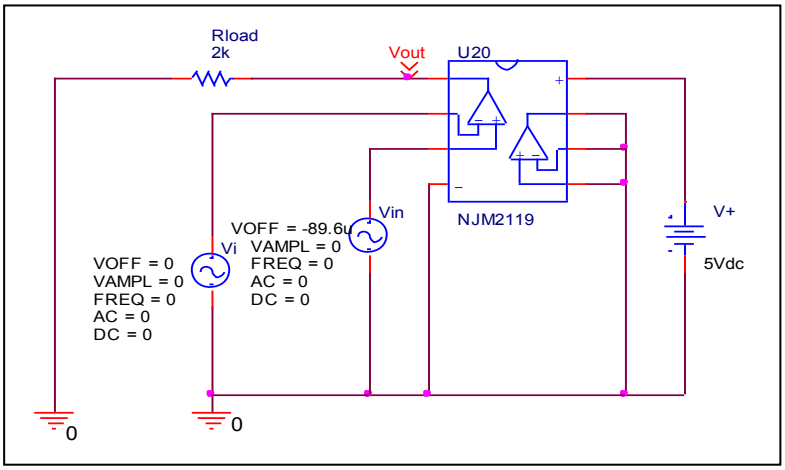
| Slew Rate(v/us) | Data sheet | Simulation | %Error |
|---|---|---|---|
| | 0.3 | 0.31 | 3.333 |

## Input current

Simulation result




Evaluation circuit

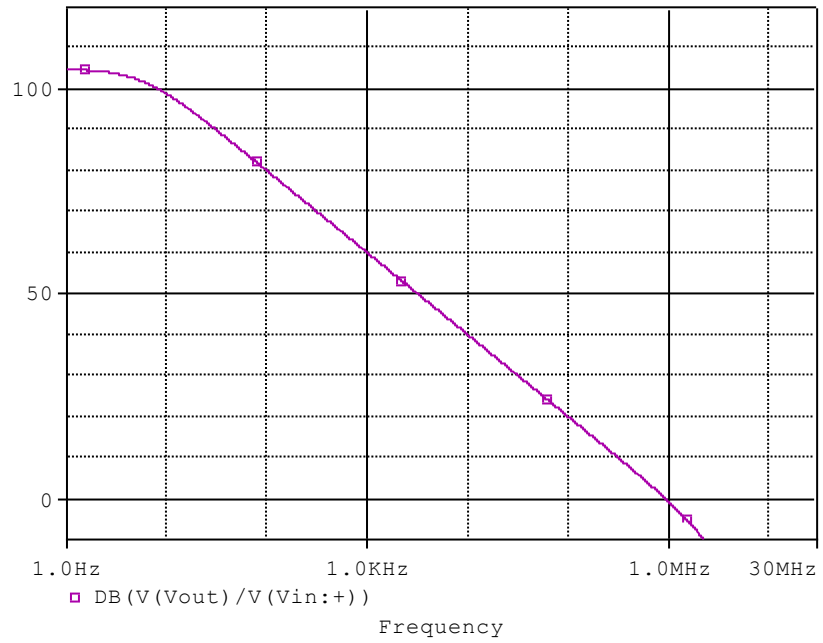



Comparison table

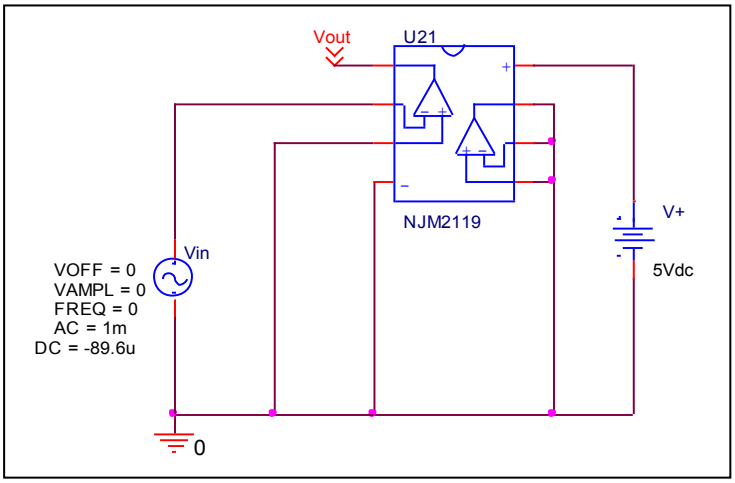
| | Data sheet | Simulation | %Error |
|---|---|---|---|
| **Ib(nA)** | 18 | 18.175 | 0.972 |
| **Iio(nA)** | 0.3 | 0.3 | 0 |

## Open Loop Voltage Gain vs. Frequency

Simulation result




Evaluation circuit

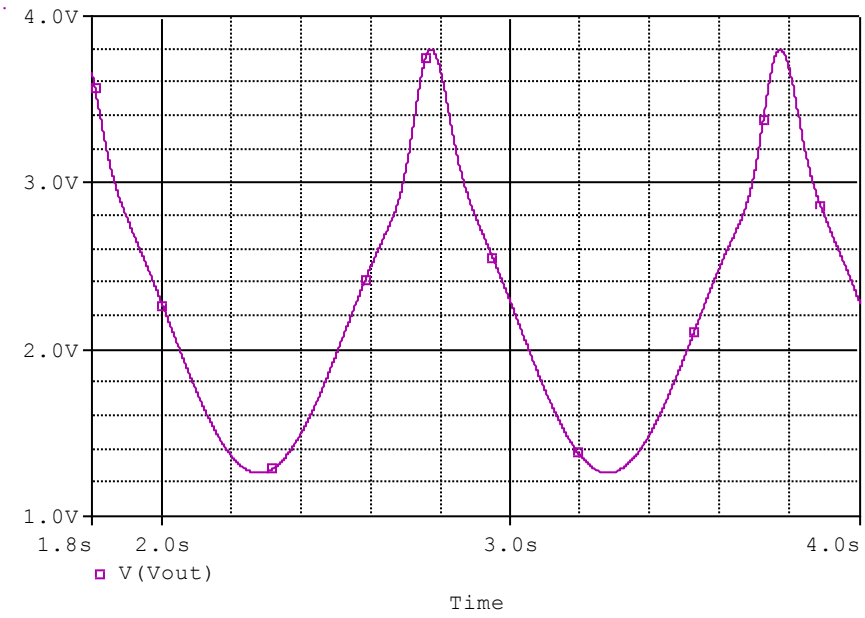



Comparison table

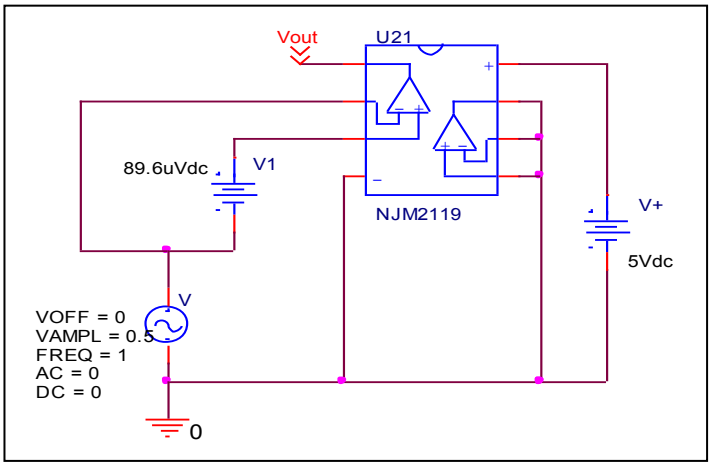
| | Data sheet | Simulation | %Error |
|---|---|---|---|
| **f-0dB(MHz)** | 1 | 0.958 | -4.2 |
| **Av-dc** | 105 | 104.8 | -0.19 |

## Common-Mode Rejection Voltage gain

Simulation result




Evaluation circuit




Common Mode Reject Ratio=173780.082/2.54 = 68417= 96.703dB

Comparison table

| CMRR(dB) | Data sheet | Simulation | %Error |
|---|---|---|---|
| | 100 | 96.703 | 3.297 |