

# LTspice Model

## OPAMP

### NISSHINBO

### NJM4250M

#### Model Information

<b>Model</b>	A macro model
<b>Call Name</b>	MDC_NJM4250M_LT
<b>Pin Assign</b>	1:VIO_Trim1 2:IN- 3:IN+ 4:V- 5:VIO_Trim2 6:OUT 7:V+ 8:Iset
<b>File List</b>	Model Library MDC_NJM4250M_LT.lib Model Report MDC_NJM4250M_LT.pdf(this file)

**Verified Simulator Version** LTspiceXVII

**Note** Functionless for PIN1, PIN5 and PIN8

#### References

The information which was used for modeling is as follow:

[Data Sheet]

- Date/Version Ver.2013-10-29
- Product name NJM4250M
- Company name Nisshinbo Holdings Inc.

[Characteristics listed]

- Characteristics Input Offset Voltage, Input Offset Current, Input Bias Current, Open-loop Gain, Maximum Output(VOH, VOL)

#### Simulation Condition

This table shows the range of evaluated simulation range that was not occurs any convergence problems in this area.

Item	Condition	Unit
Temperature	25	deg C

## OpAmp

○ : Implemented  
× : Not Implemented  
— : Not applicable

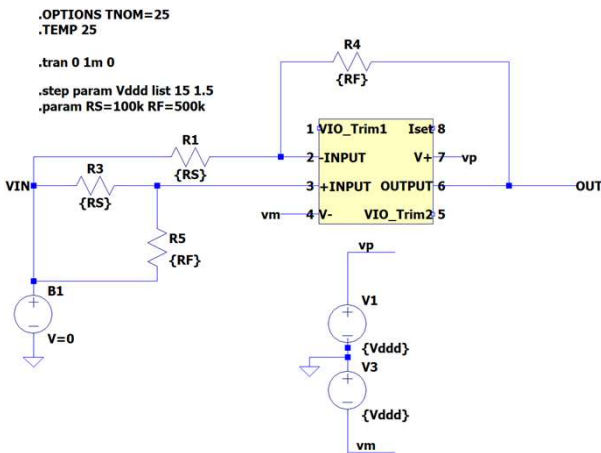
Model Functions Table

RANK=1

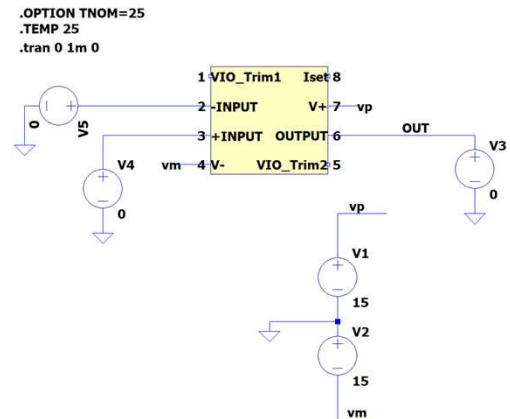
Functions	RANK	Implemented
Input Offset Voltage	1	○
Input Offset Current	1	○
Input Bias Current	1	○
Open-loop Gain	1	○
Maximum Output(VOH, VOL)	1	○

Input Offset Voltage, Input Offset Current Testbench  
 Referred to Data Sheet

Input Offset Voltage



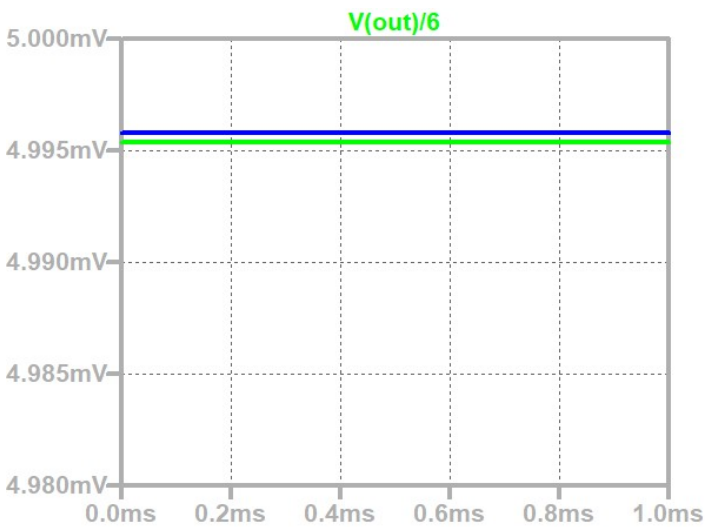
Input Offset Current



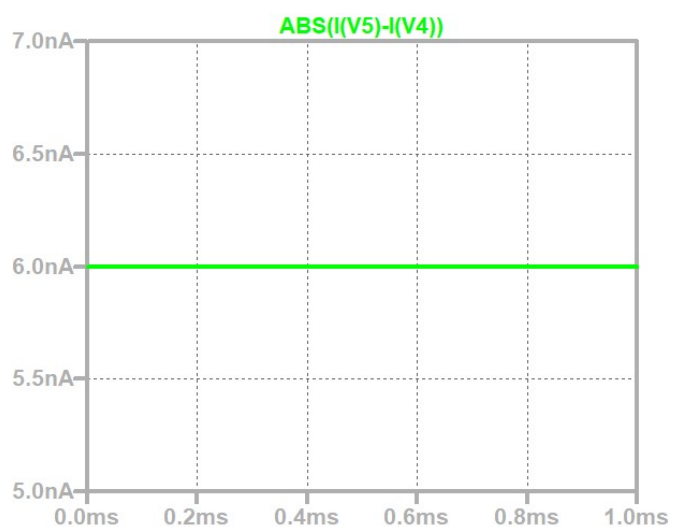
Simulation results are following.  
 Explanatory notes — : simulated

Input Offset Voltage

$V+/V- = \pm 15V$   
 $V+/V- = \pm 1.5V$

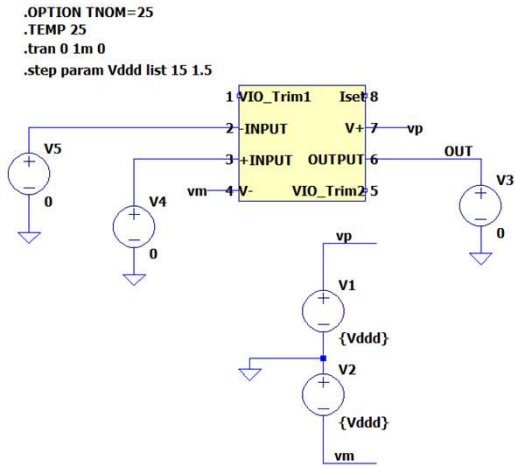


Input Offset Current



Input Bias Current, Open-loop Gain Testbench  
Referred to Data Sheet

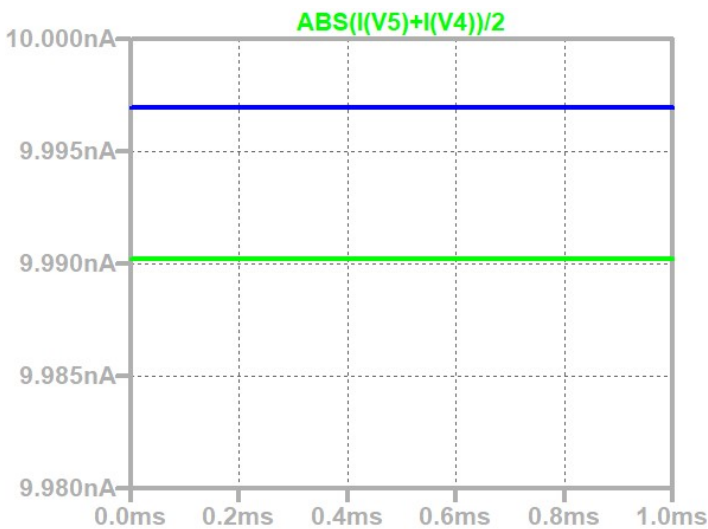
Input Bias Current



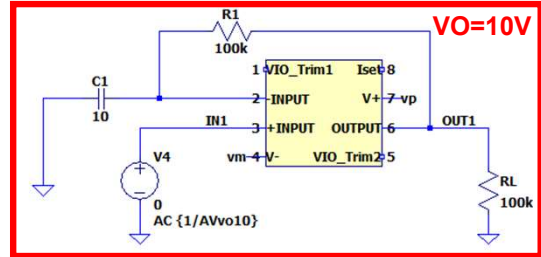
Simulation results are following.  
Explanatory notes — : simulated

Input Bias Current

$V+/V- = \pm 15V$   
 $V+/V- = \pm 1.5V$

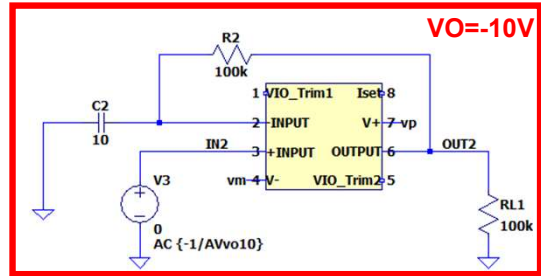


Open-loop Gain



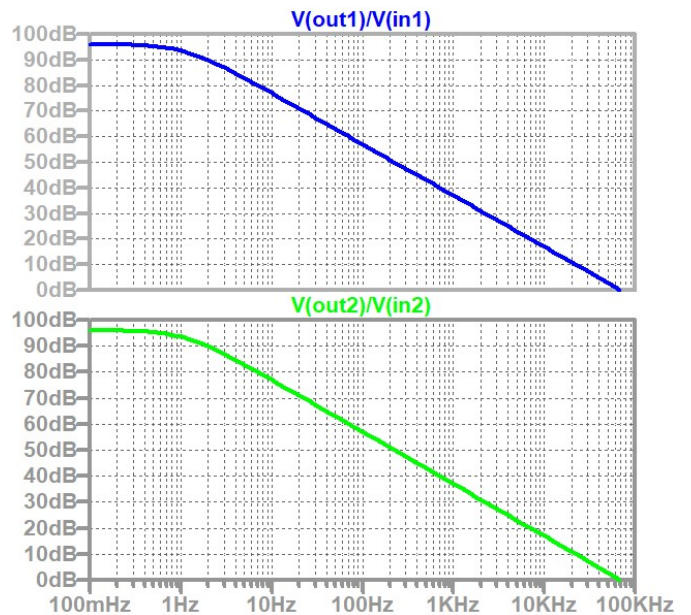
```

.OPTION TNOM=25
.TEMP 25
.ac oct 20 0.1 100000
.param AVvo10=6320
    
```



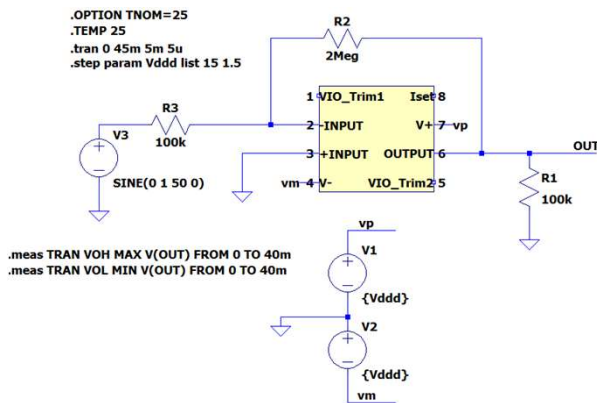
Open-loop Gain

When  $V_{out} = 10V$ , Gain=96 dB  
When  $V_{out} = -10V$ , Gain=96 dB



**Maximum Output(VOH, VOL) Testbench  
Referred to Data Sheet**

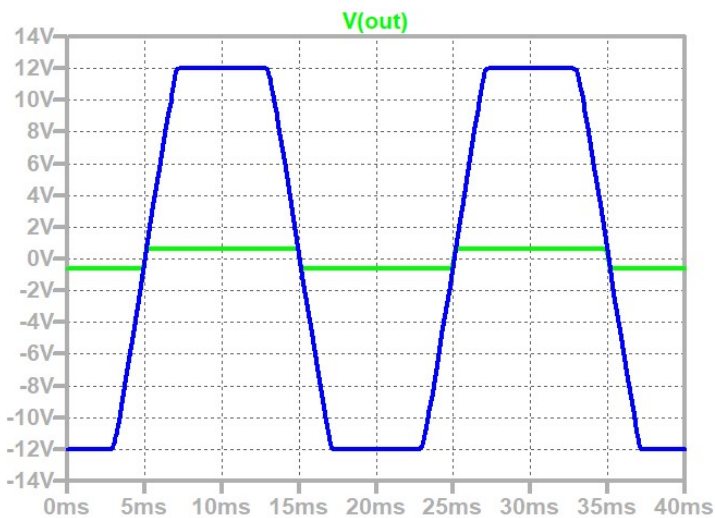
**Maximum Output(VOH, VOL)**



Simulation results are following.  
Explanatory notes — : simulated

**Maximum Output(VOH, VOL)**

When  $V+/V- = \pm 15V$ ,  $VOH=12V$  &  $VOL=-12V$   
When  $V+/V- = \pm 1.5V$ ,  $VOH=0.6V$  &  $VOL=-0.6V$



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