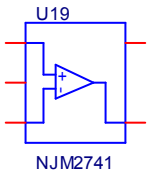
Device Modeling Report

COMPONENTS: OPERATIONAL AMPLIFIER
PART NUMBER:NJM2741
MANUFACTURER: NEW JAPAN RADIO CO.,LTD

Bee Technologies Inc.

Spice Model

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*$
* PART NUMBER:NJM2741
* MANUFACTURER: NEW JAPAN RADIO
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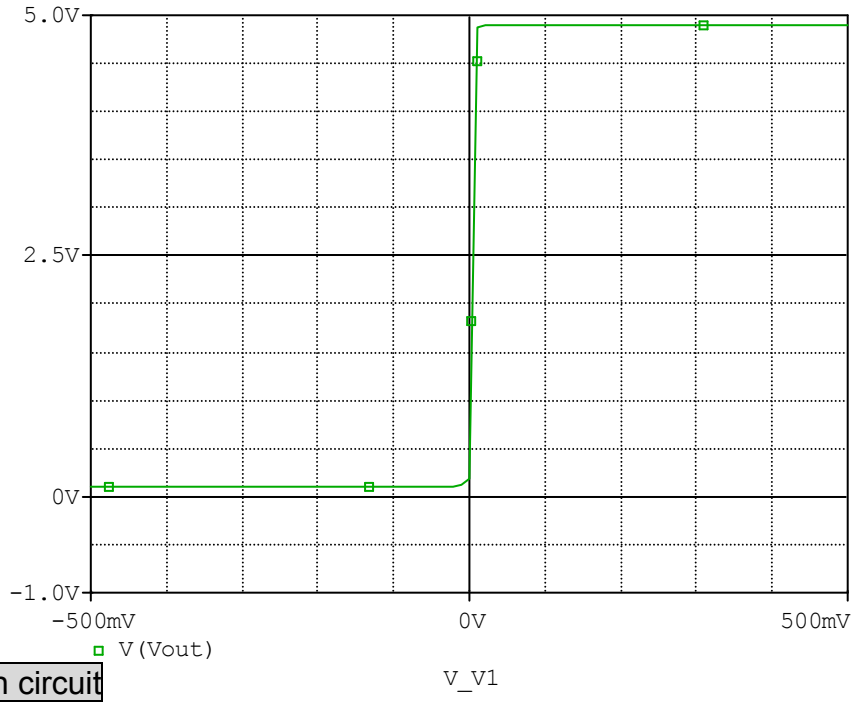
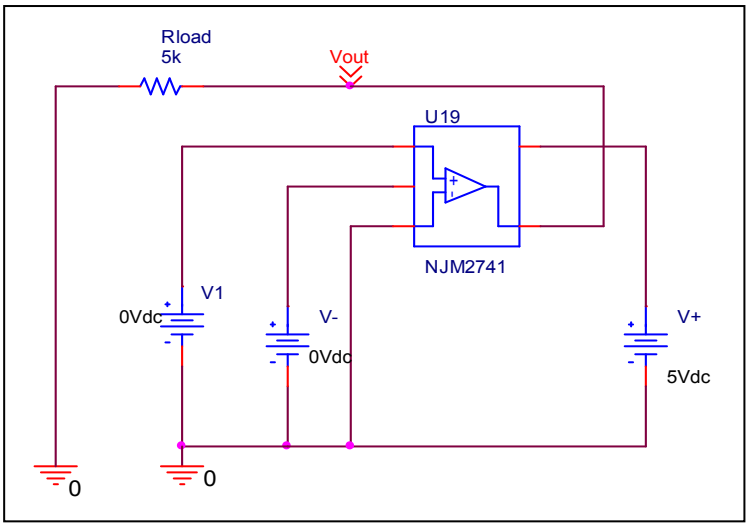
.Subckt NJM2741 +IN V- -IN OUT V+
X_U1     +IN -IN V+ V- OUT NJM2741_ME
.ends  NJM2741
.subckt NJM2741_ME  1 2 3 4 5
  c1   11 12 1.0000E-12
  c2    6  7 29.500E-12
  dc    5 53 dy
  de   54  5 dy
  dlp  90 91 dx
  dln  92 90 dx
  dp    4  3 dx
  egnd 99  0 poly(2) (3,0) (4,0) 0 .5 .5
  fb    7 99 poly(5) vb vc ve vlp vln 0 377.37E3 -1E3 1E3 380E3 -380E3
  ga    6  0 11 12 1.8850E-3
  gcm   0  6 10 99 335.20E-9
  iee   3 10 dc 105.20E-6
  hlim 90  0 vlim 1K
  q1   11  2 13 qx1
  q2   12  1 14 qx2
  r2    6  9 100.00E3
  rc1   4 11 530.52
  rc2   4 12 530.52
  re1  13 10 37.793
  re2  14 10 37.793
  ree  10 99 1.9011E6
  ro1   8  5 50
  ro2   7 99 25
  rp    3  4 28.753
  vb    9  0 dc 0
  vc    3 53 dc .89791
  ve   54  4 dc .79791
  vlim  7  8 dc 0
  vlp  91  0 dc 20
  vln   0 92 dc 20
.model dx D(Is=800.00E-18)
.model dy D(Is=800.00E-18 Rs=1m Cjo=10p)
.model qx1 PNP(Is=800.00E-18 Bf=516.22)
.model qx2 PNP(Is=842.2140E-18 Bf=534.08)
.ends
*$
```

Output Voltage Swing

Simulation result



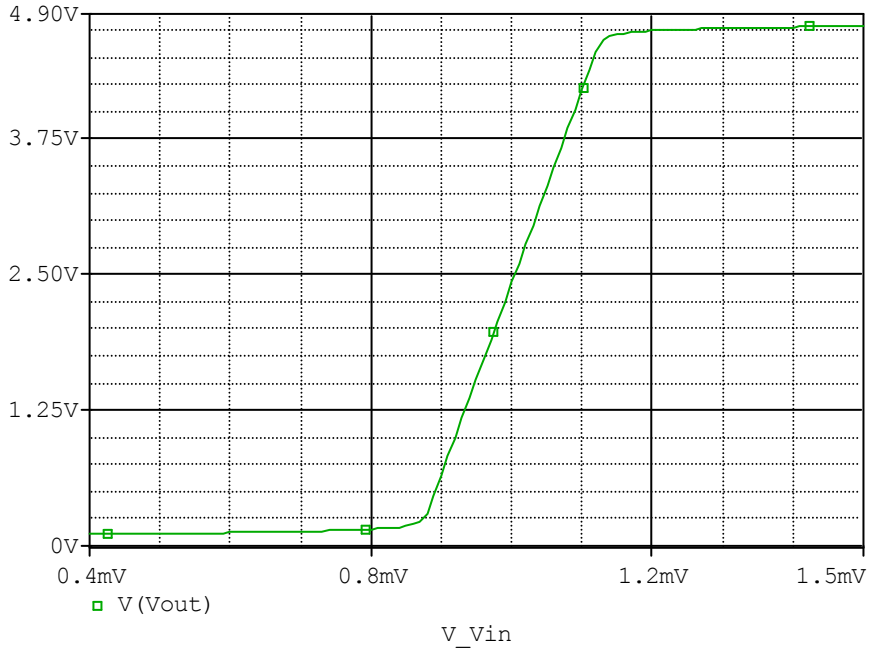
Evaluation circuit



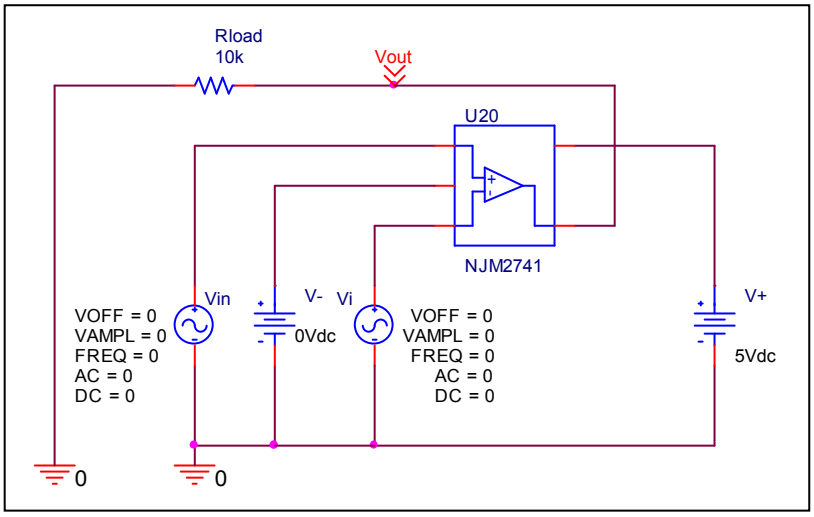
Output Voltage Swing	Data sheet	Simulation	%Error
V_{OH}(V)	4.900	4.900	0.000
V_{OL}(V)	0.100	0.100	0.000

Input Offset Voltage

Simulation result



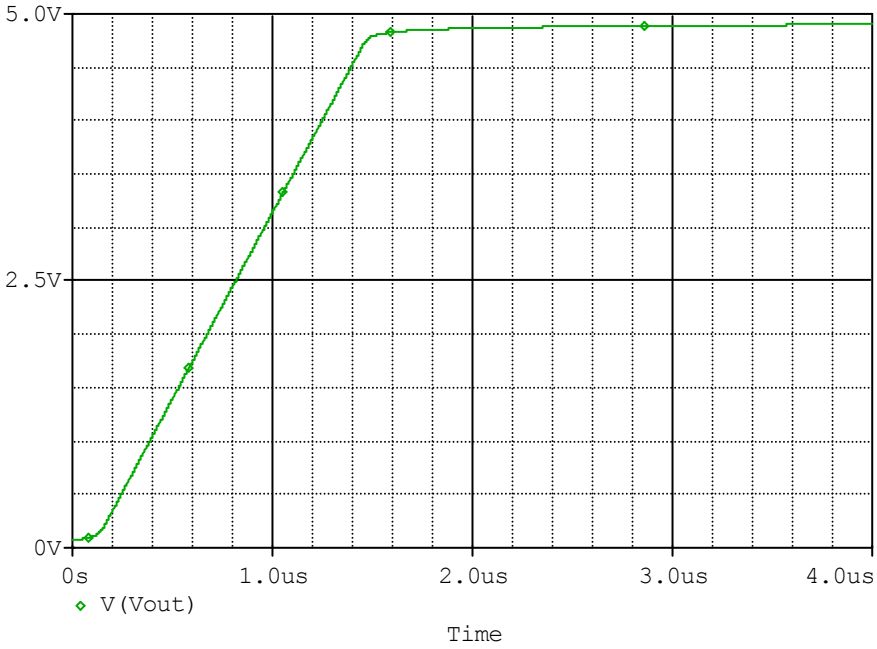
Evaluation circuit



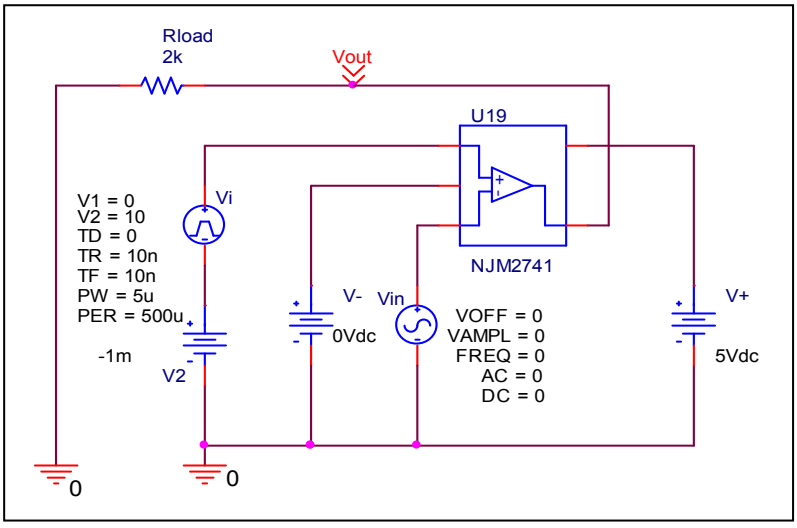
Vos	Measurement		Simulation		Error	
	1.000	mV	1.000	mV	0.000	%

Slew Rate

Simulation result



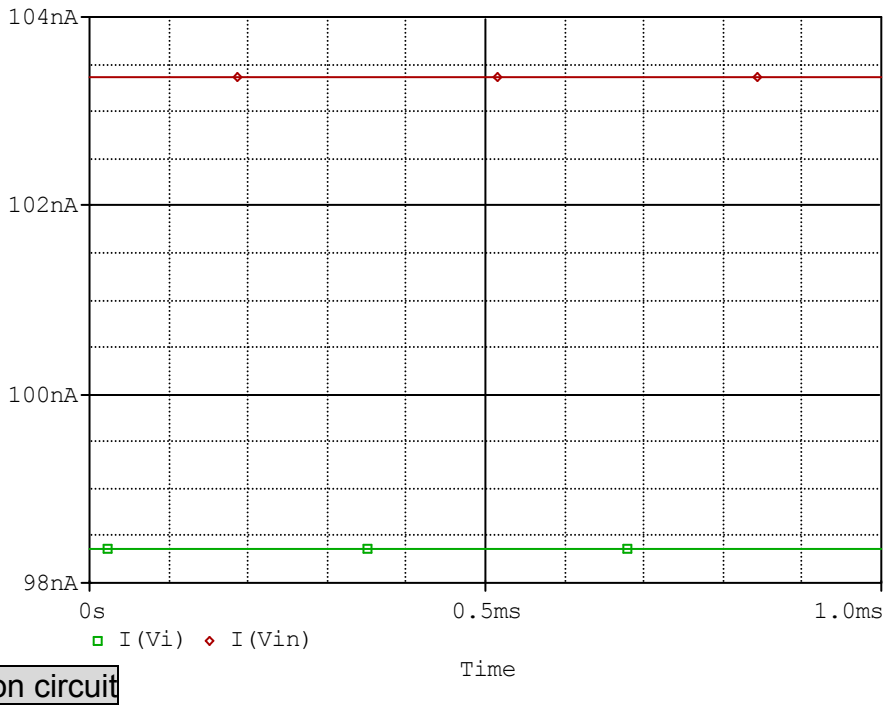
Evaluation circuit



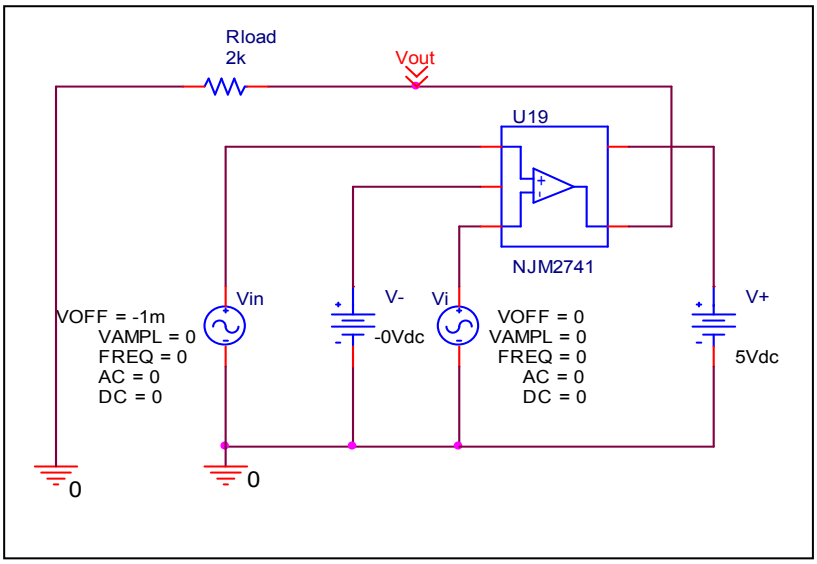
Slew Rate(v/us)	Data sheet	Simulation	%Error
	3.500	3.487	-0.371

Input current

Simulation result



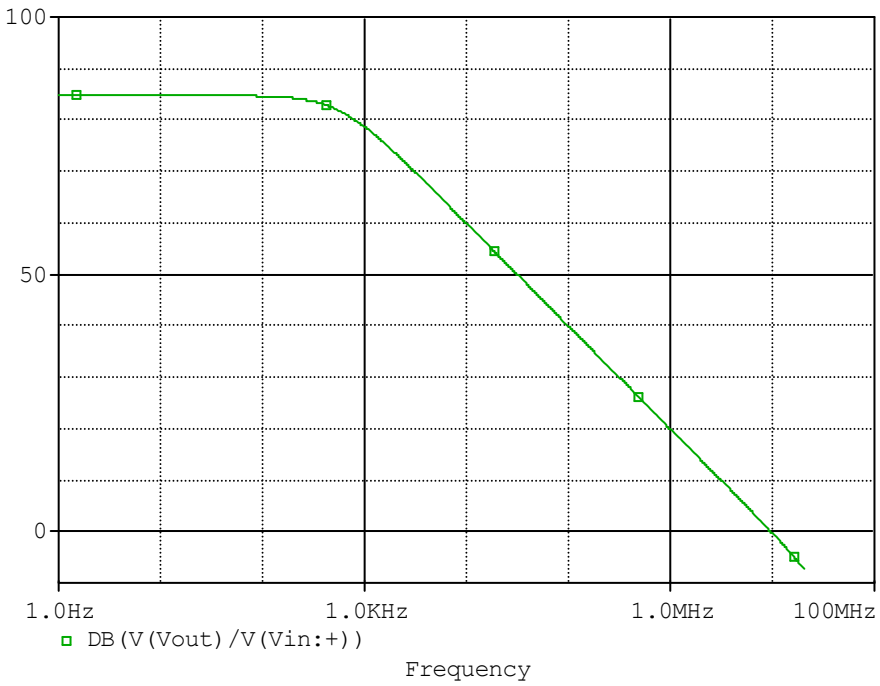
Evaluation circuit



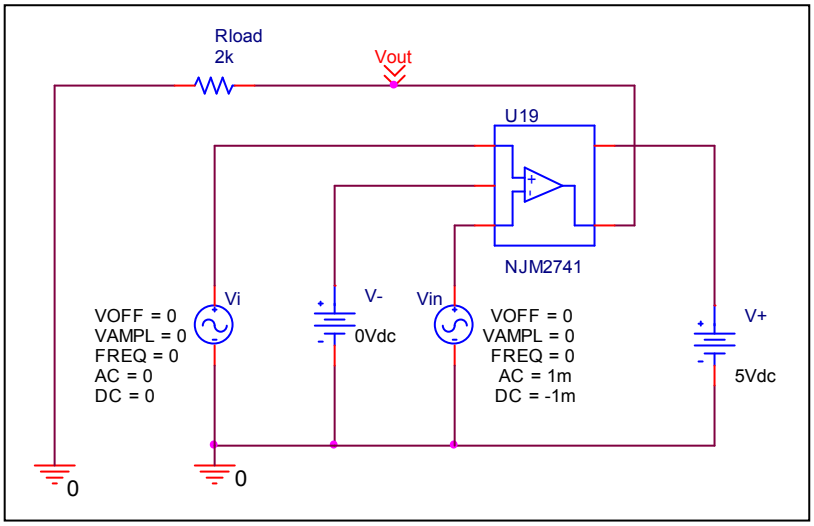
	Data sheet	Simulation	%Error
Ib(nA)	100.000	100.856	0.856
Ibos(nA)	5.000	5.001	0.020

Open Loop Voltage Gain vs. Frequency

Simulation result



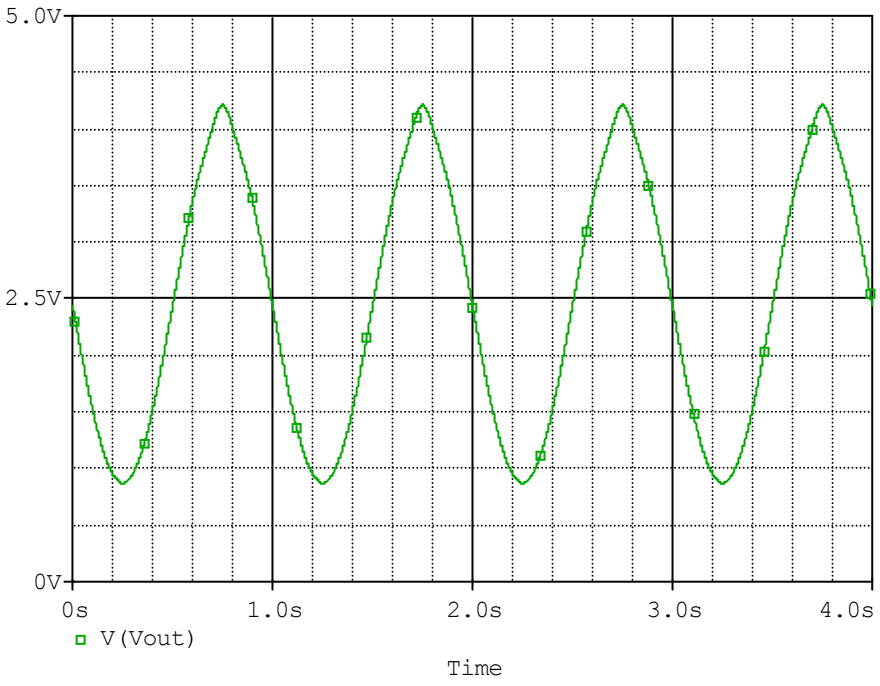
Evaluation circuit



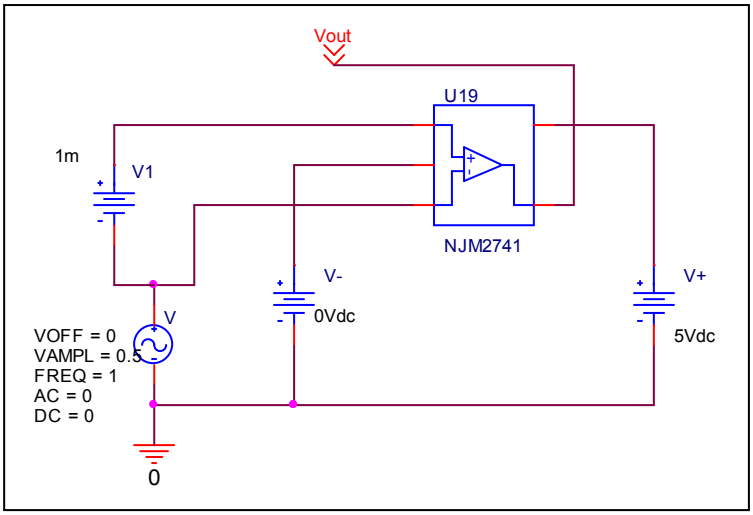
	Data sheet	Simulation	%Error
f-0dB(MHz)	10.000	9.601	-3.990
Av-dc(dB)	85.000	84.748	-0.296

Common-Mode Rejection Voltage gain

Simulation result



Evaluation circuit



Common Mode Reject Ratio=17274.281/3.342=5168.845

CMRR	Data sheet	Simulation	%Error
	75.000	74.267	-0.977