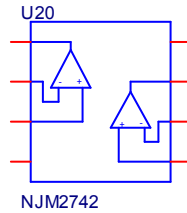# Device Modeling Report

COMPONENTS:MOSFET: OPERATIONAL AMPLIFIER
PART NUMBER:NJM2742
MANUFACTURER: NEW JAPAN RADIO CO.,LTD

Bee Technologies Inc.

# Spice Model

U20
NJM2742

```
*$
* PART NUMBER: NJM2742
* MANUFACTURER: NEW JAPAN RADIO
* All Rights Reserved Copyright (c) Bee Technologies Inc. 2004
.Subckt NJM2742 OUT1 -IN1 +IN1 V- +IN2 -IN2 OUT2 V+
X_U1    +IN1 -IN1 V+ V- OUT1 NJM2742_ME
X_U2    +IN2 -IN2 V+ V- OUT2 NJM2742_ME
.ends  NJM2742
.subckt NJM2742_ME  1 2 3 4 5
 c1   11 12 8.6603E-12
 c2    6  7 30.000E-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 33.553E6 -1E3 1E3 34E6 -34E6
 ga    6  0 11 12 414.69E-6
 gcm   0  6 10 99 73.744E-9
 iee   3 10 dc 300.16E-6
 hlim 90  0 vlim 1K
 q1   11  2 13 qx1
 q2   12  1 14 qx2
 r2    6  9 100.00E3
 rc1   4 11 2.4114E3
 rc2   4 12 2.4114E3
 re1  13 10 2.2378E3
 re2  14 10 2.2378E3
 ree  10 99 666.31E3
 ro1   8  5 50
 ro2   7 99 25
 rp    3  4 1.8330E3
 vb    9  0 dc 0
 vc    3 53 dc 1.7979
 ve   54  4 dc .99791
 vlim  7  8 dc 0
 vlp  91  0 dc 39.500
 vln   0 92 dc 39.500
.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=1.8094E3)
.model qx2 PNP(Is=1.272290E-15 Bf=1.9255E3)
.ends
*$
```
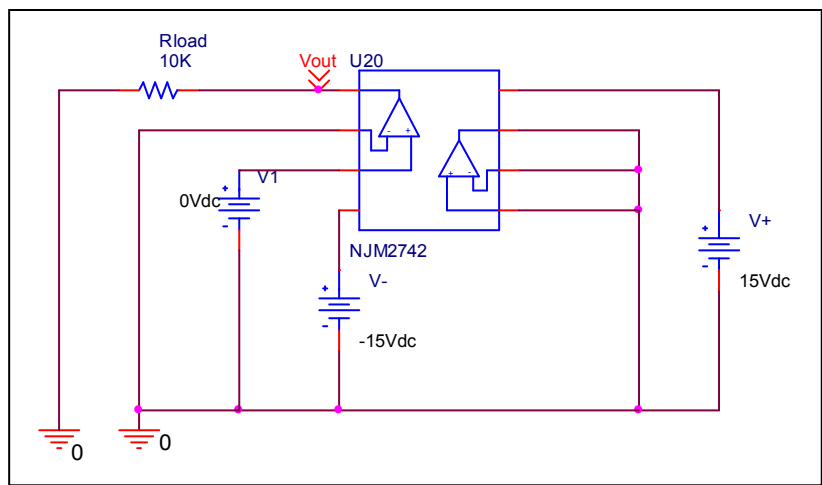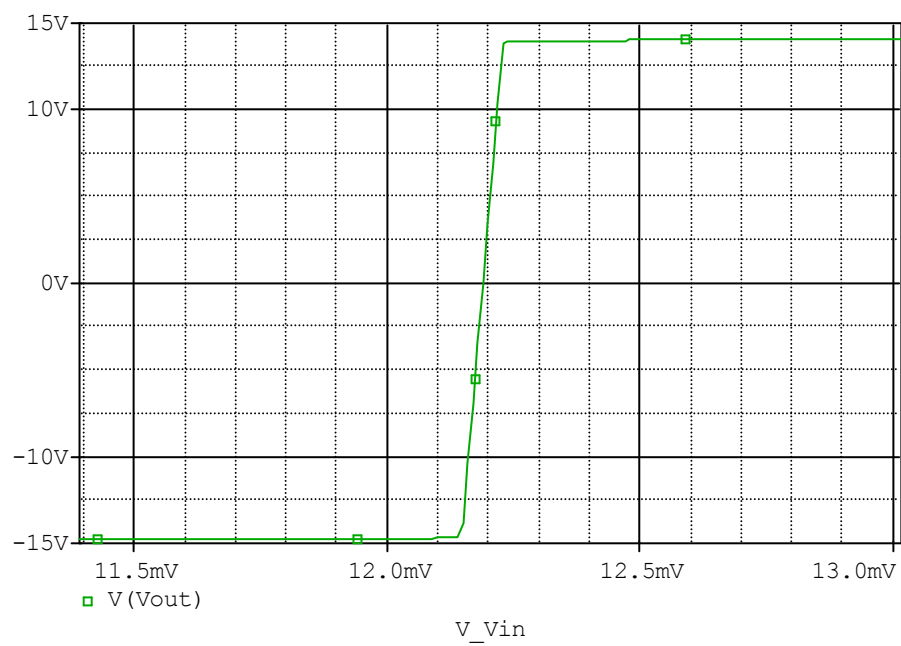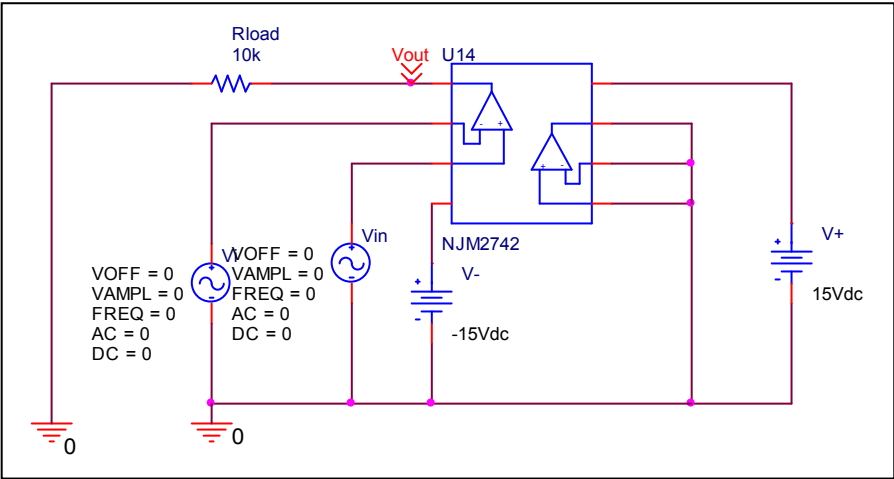
Output Voltage Swing

□ V(Vout)

V_V1
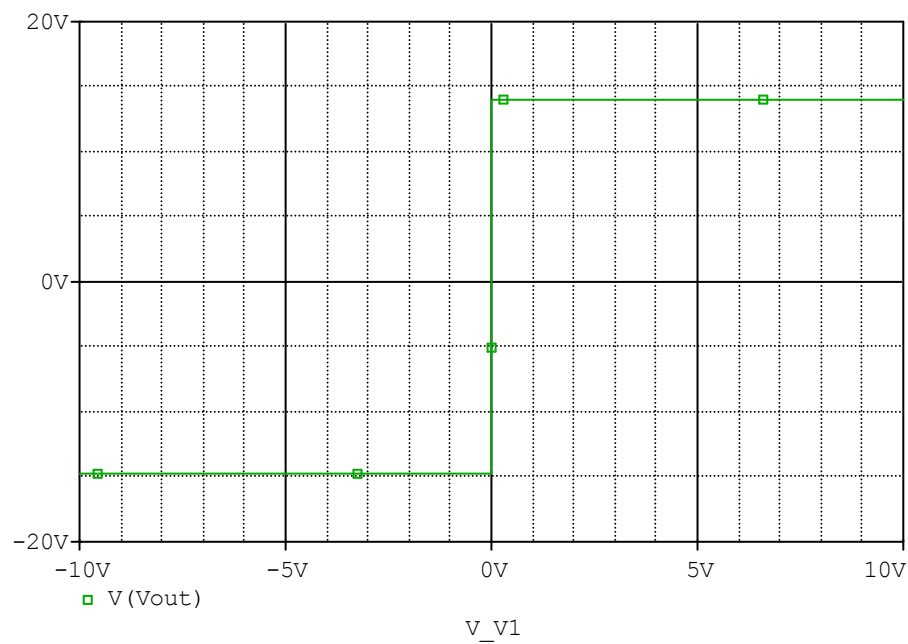
Output Voltage Swing	Data sheet	Simulation	%Error
+Vout(V)	+14	14.01	0.071
-Vout(V)	-14.8	-14.81	0.067

Input Offset Voltage

□ V(Vout)

V_Vin

Vos	Measurement		Simulation		Error	
	12	mV	12.19	mV	1.58	%

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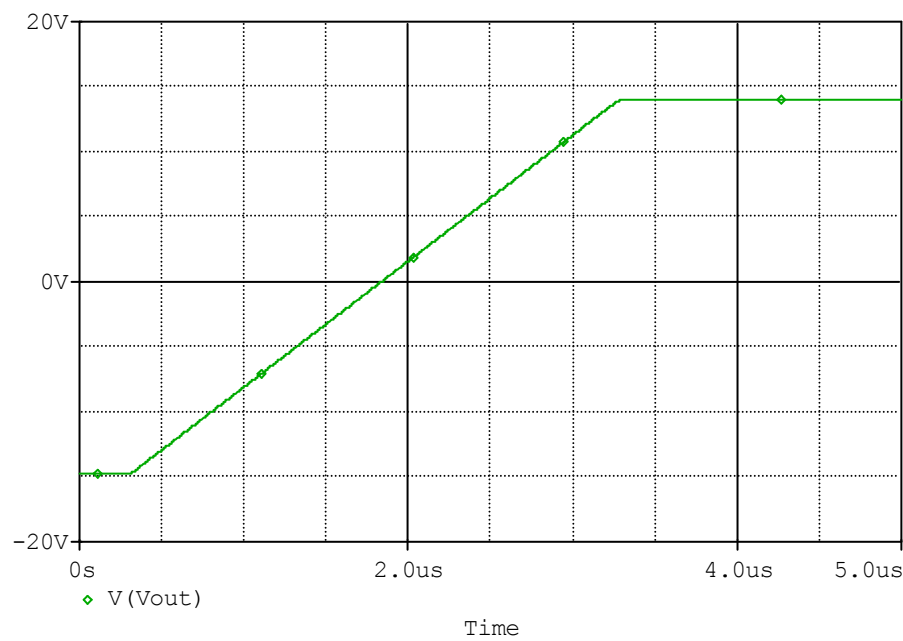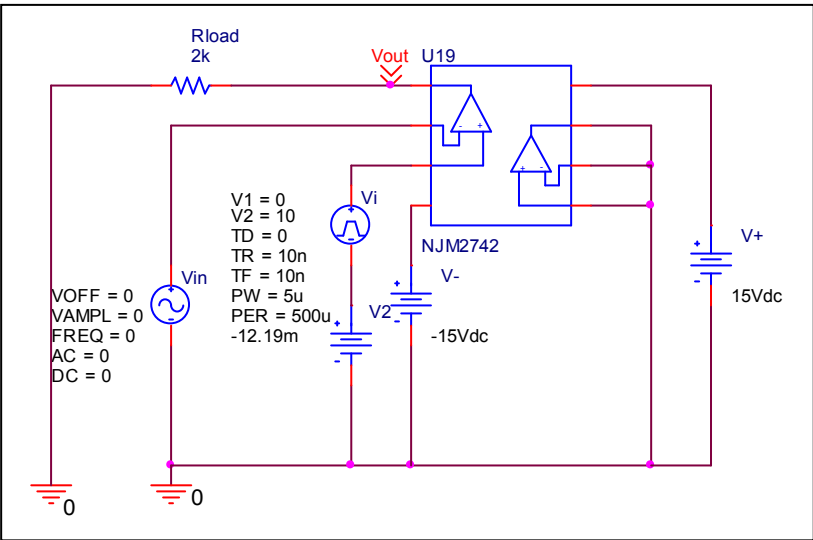
Slew Rate

Slew Rate(v/us)	Data sheet	Simulation	%Error
	10V/us	9.68V/us	3.2

Input current Ib, Ibos
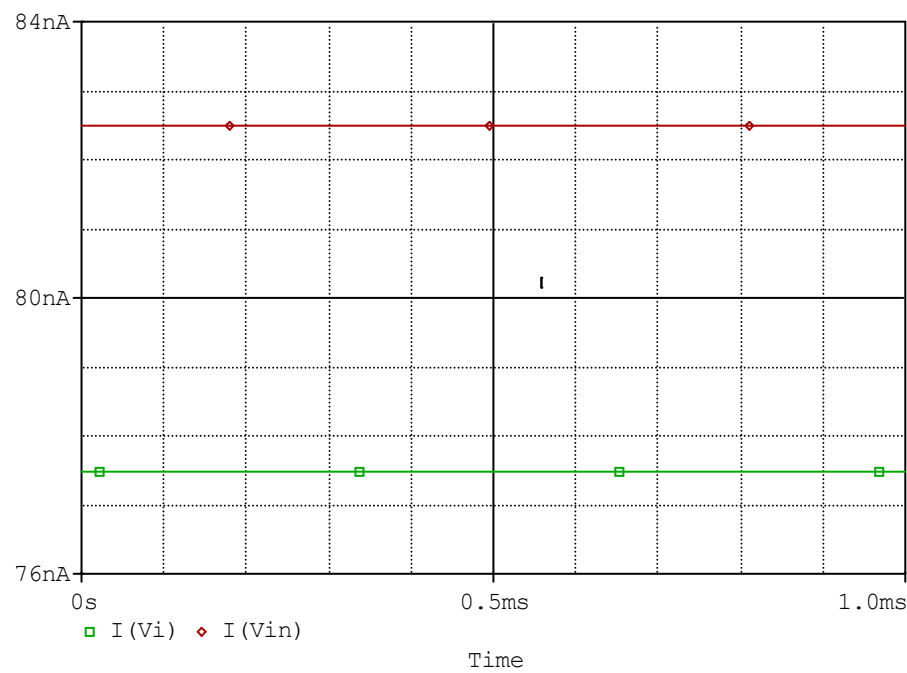
Evaluation circuit
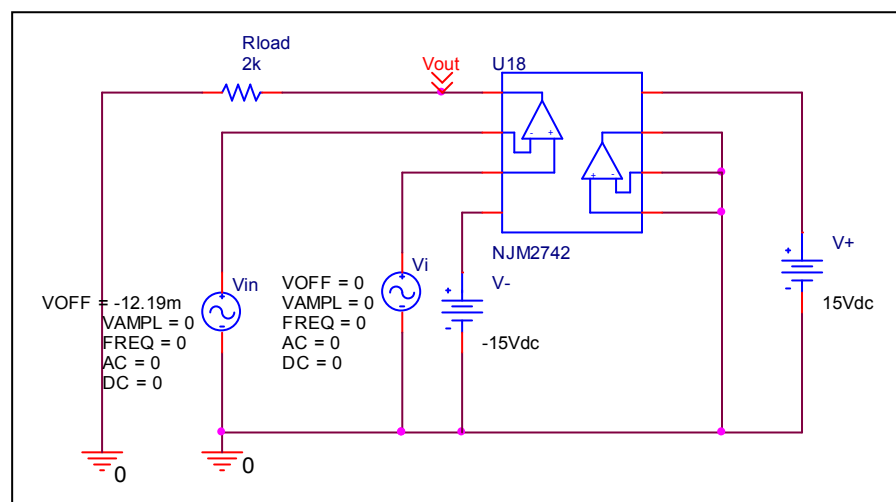
	Data sheet	Simulation	%Error
Ib(nA)	80	79.9	0.125
Ibos(nA)	5	5.01	0.2

Open Loop Voltage Gain vs. Frequency , Av-dc, f-0dB

Simulation result
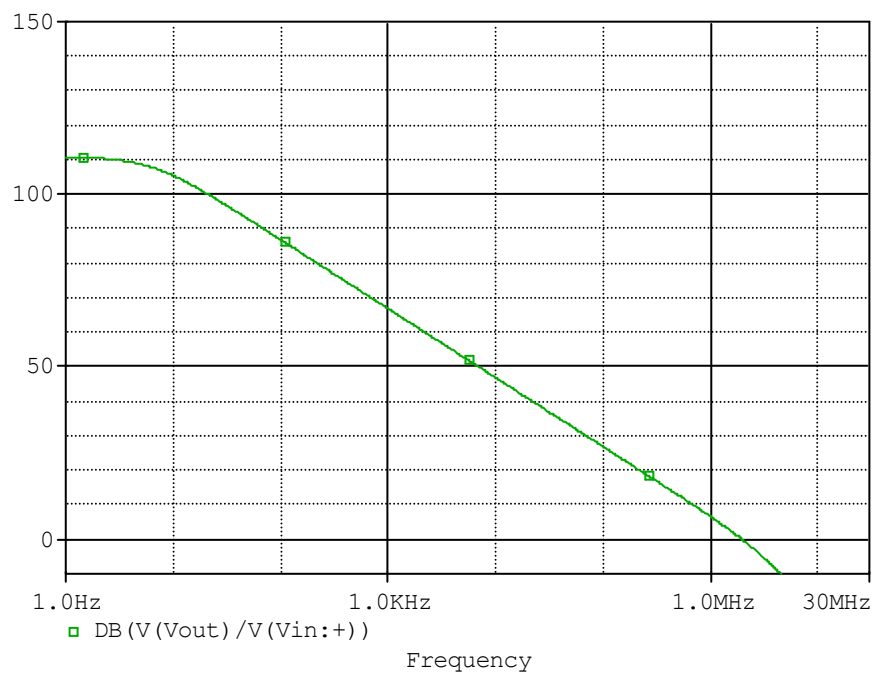
Evaluation circuit
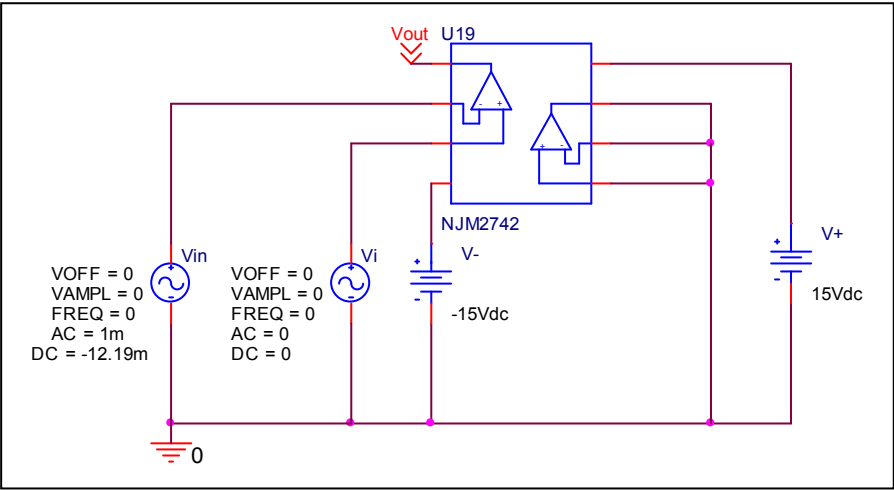
	Data sheet	Simulation	%Error
f-0dB(MHz)	2	1.95	2.5
Av-dc(dB)	110	110.71	0.645

Common-Mode Rejection Voltage gain

Simulation result
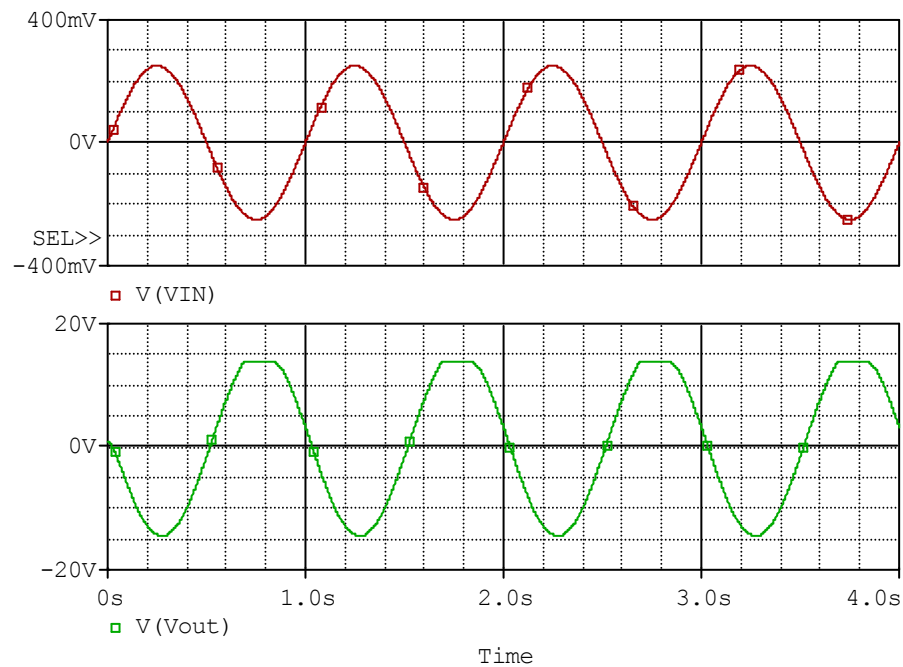
Evaluation circuit
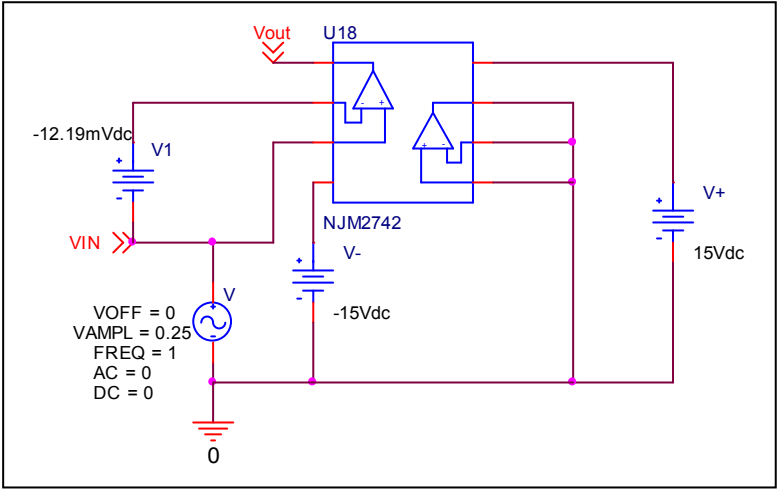
Common mode gain=28.338/0.5
Common Mode Reject Ratio=343162/56.676=6054.802

	Data sheet	Simulation	%Error
CMRR	75	75.641	0.854