

LTspice Model

Isolated Amplifier

TEXAS INSTRUMENTS

AMC1301

Model Information

Model A macro model
Call Name MDC_AMC1301_LT
Pin Assign 1:VDD1 2:VINP 3:VINN 4:GND1 5:GND2 6:VOUTN 7:VOUTP 8:VDD2
File List Model Library MDC_AMC1301_LT.lib
 Model Report MDC_AMC1301_LT.pdf(this file)
Verified Simulator Version LTspice XVII

Note

References

The information which was used for modeling is as follow:

[Data Sheet]

- Date/Version JAJSC88F –APRIL 2016–REVISED APRIL 2020
- Product name AMC1301
- Company name TEXAS INSTRUMENTS

[Characteristics listed]

- Characteristics
 - Input Offset Voltage vs Supply Voltage
 - Input Bias Current vs Common-Mode Input Voltage
 - Output Voltage vs Input Voltage
 - Pulse Response
 - Normalized Gain vs Input Frequency

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

Model Functions Table

Functions	Implemented
± 250 -mV input voltage range	<input type="radio"/>
Low offset error	<input type="radio"/>
Fixed gain: 8.2	<input type="radio"/>
3.3-V operation	<input type="radio"/>
isolated input to output	<input type="radio"/>

Input Offset Voltage vs Supply Voltage Testbench

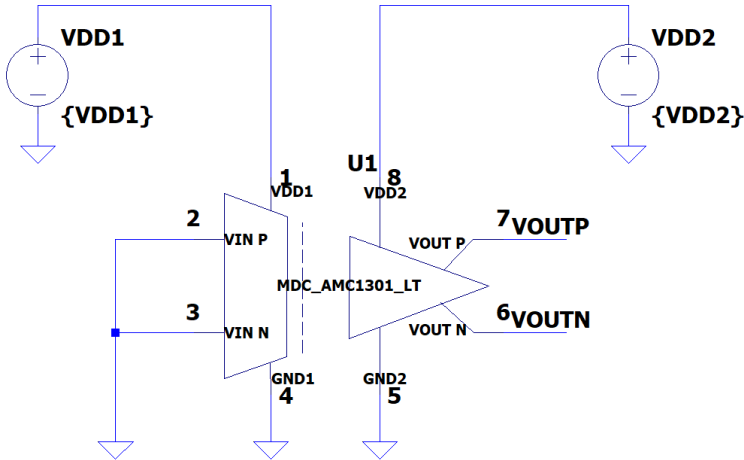
```
.OPTION TNOM=25
.TEMP 25
```

```
.meas VOS1 FIND V(VOUTP,VOUTN)/8.2 AT 40us
```

```
.tran 0 60u 10u
```

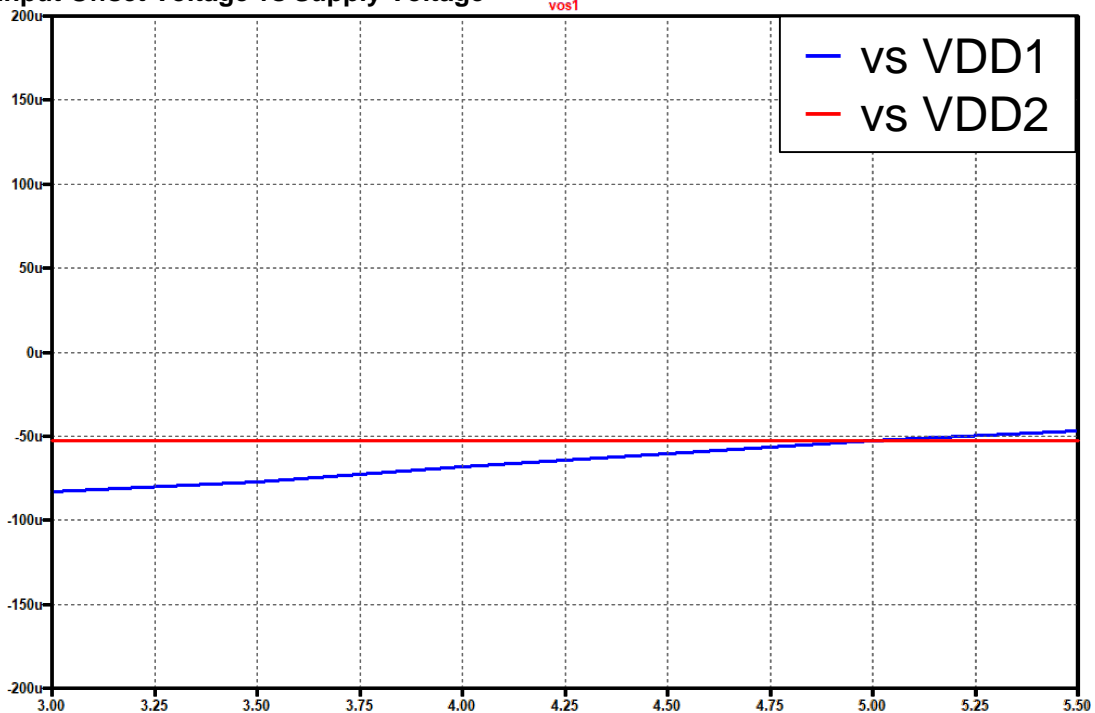
```
.param VDD1=5 VDD2=5
```

```
.step param VDD1 3 5.5 0.5
```



Simulation results are following.
 Explanatory notes — : simulated

Input Offset Voltage vs Supply Voltage

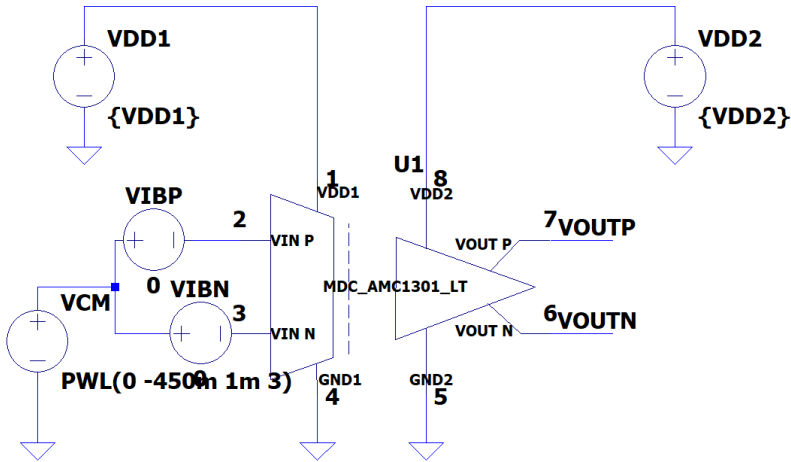


Input Bias Current vs Common-Mode Input Voltage Testbench

```
.OPTION TNOM=25
.TEMP 25

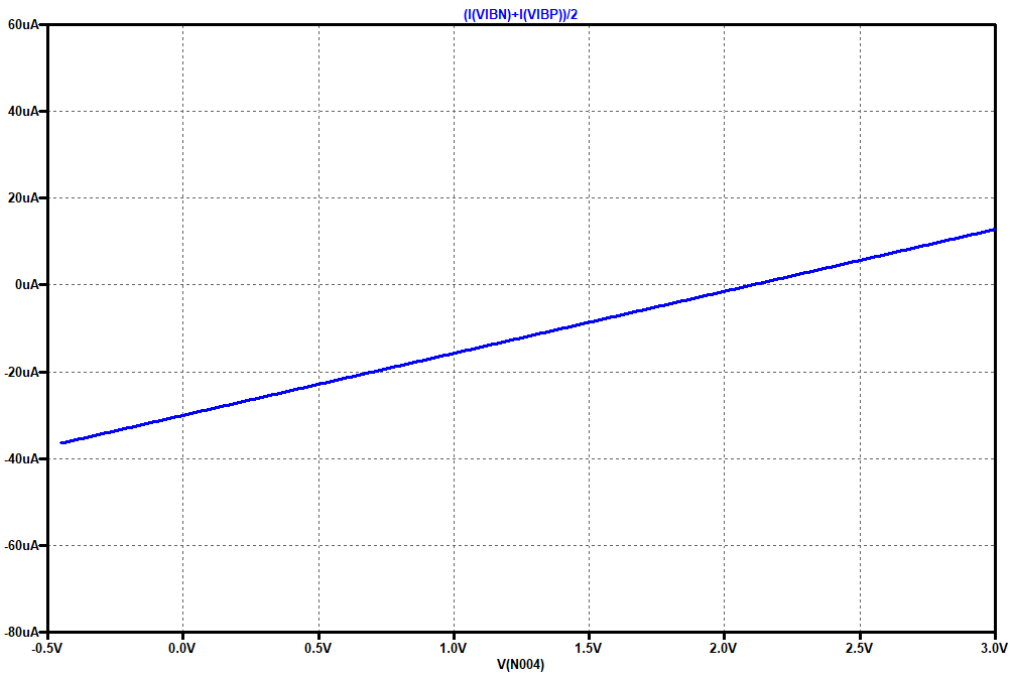
.tran 1m

.param VDD1=5 VDD2=5
```



Simulation results are following.
 Explanatory notes — : simulated

Input Bias Current vs Common-Mode Input Voltage

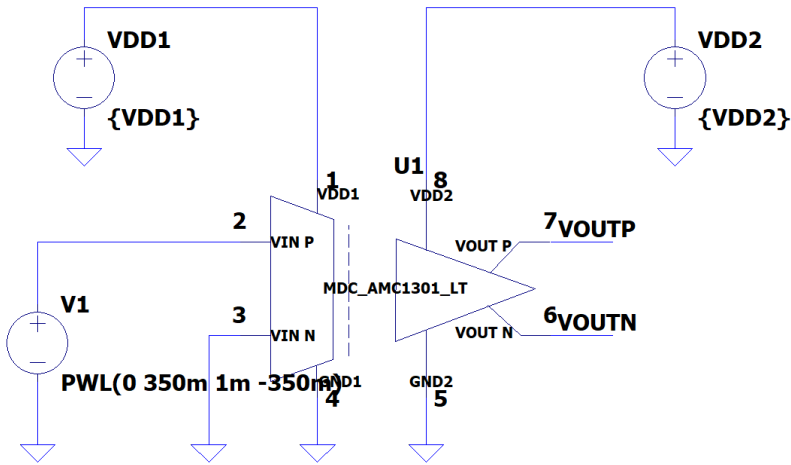


Output Voltage vs Input Voltage Testbench
Referred to Data Sheet

```
.OPTION TNOM=25
.TEMP 25
```

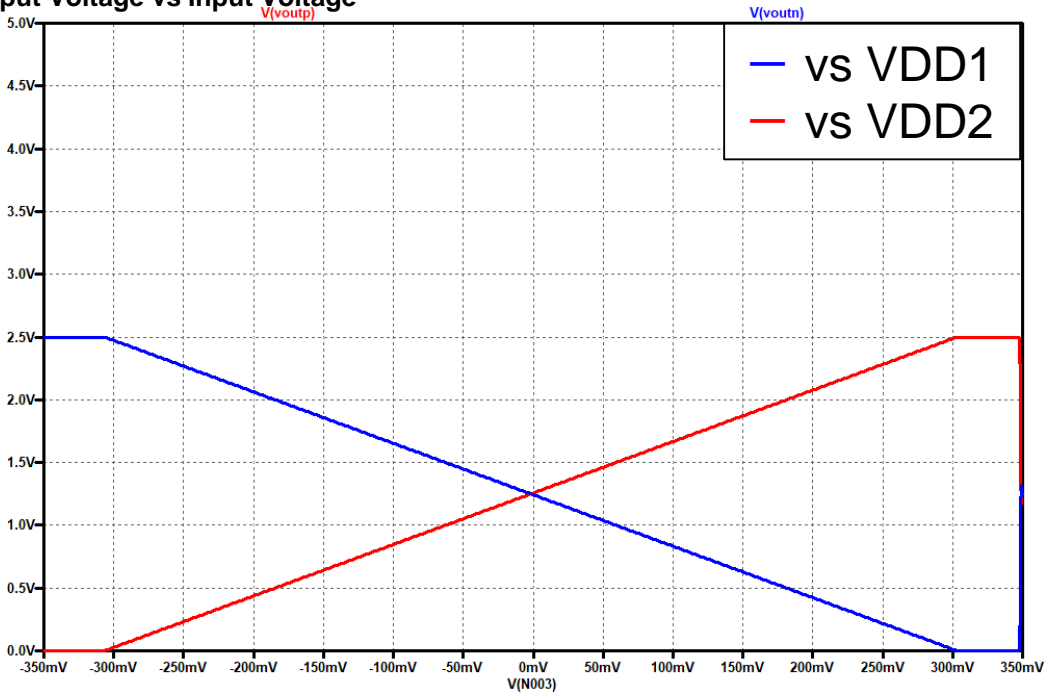
```
.tran 1m
```

```
.param VDD1=5 VDD2=5
```



Explanatory notes — : simulated

Output Voltage vs Input Voltage

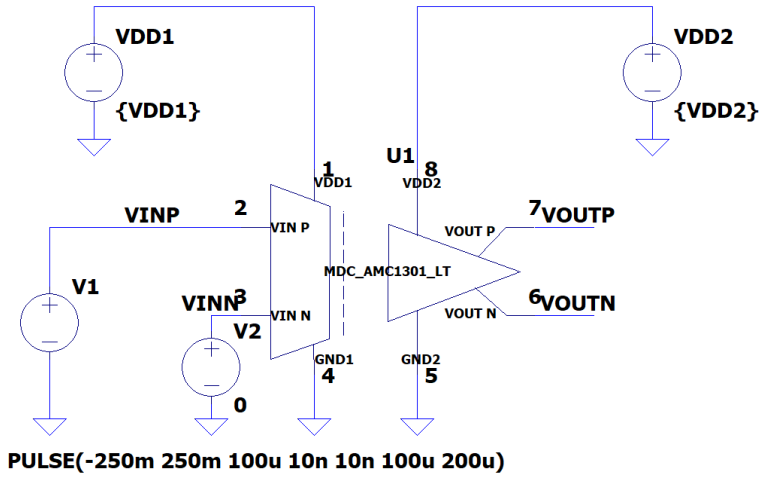


Pulse Response Testbench

```
.OPTION TNOM=25
.TEMP 25
```

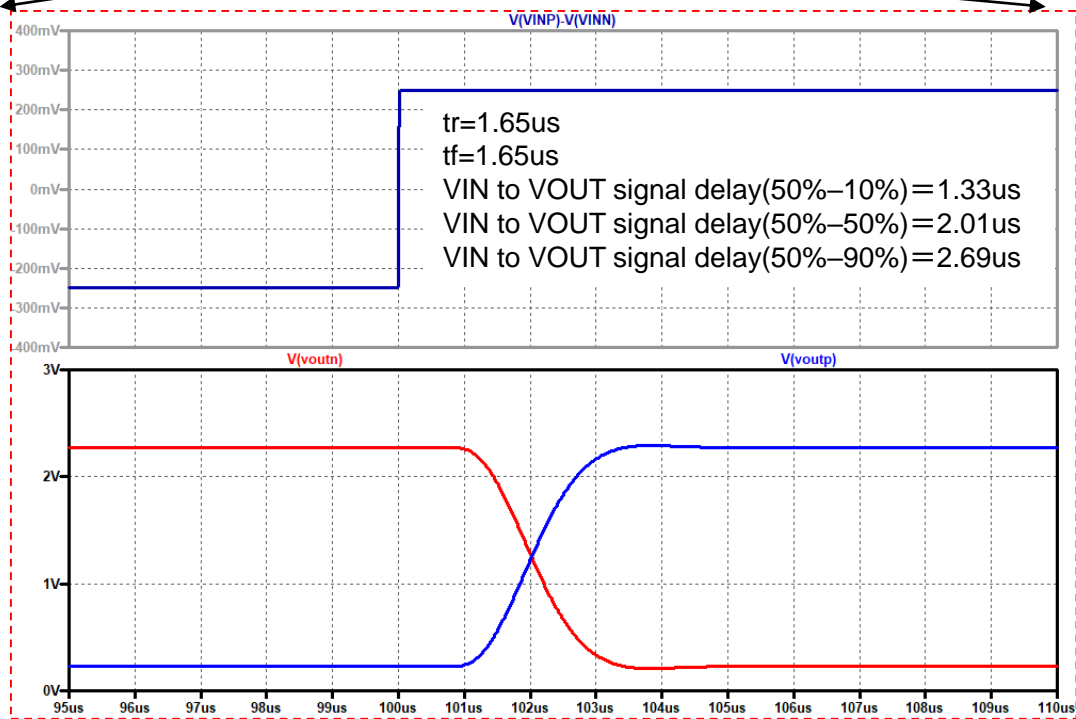
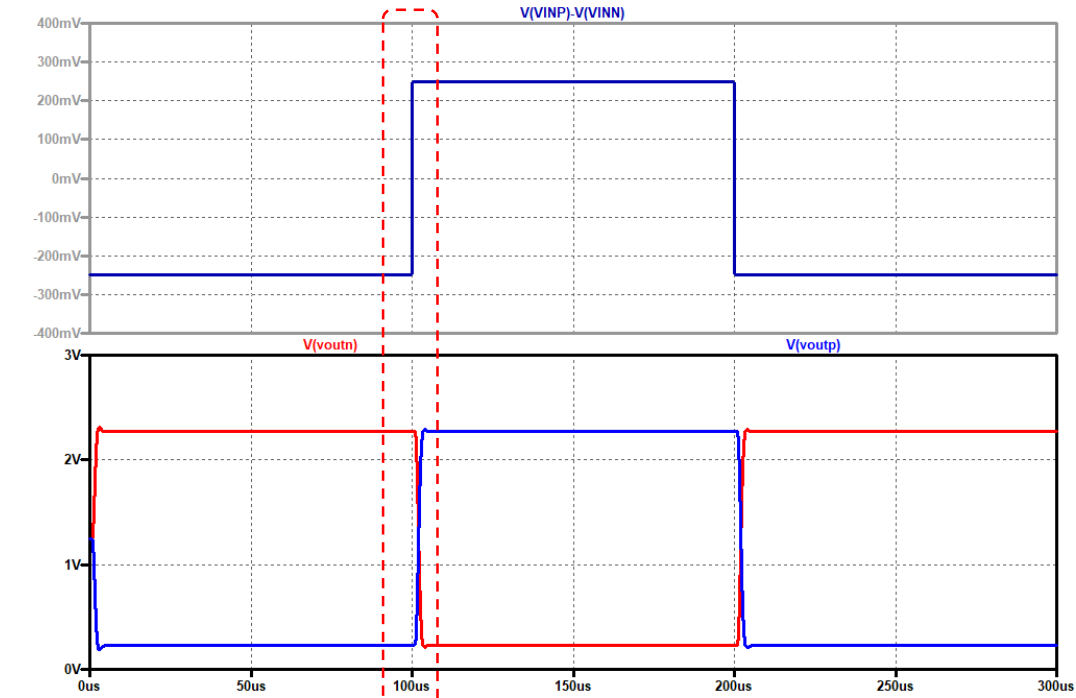
```
.tran 300u
```

```
.param VDD1=5 VDD2=5
```



Simulation results are following.
 Explanatory notes — : simulated

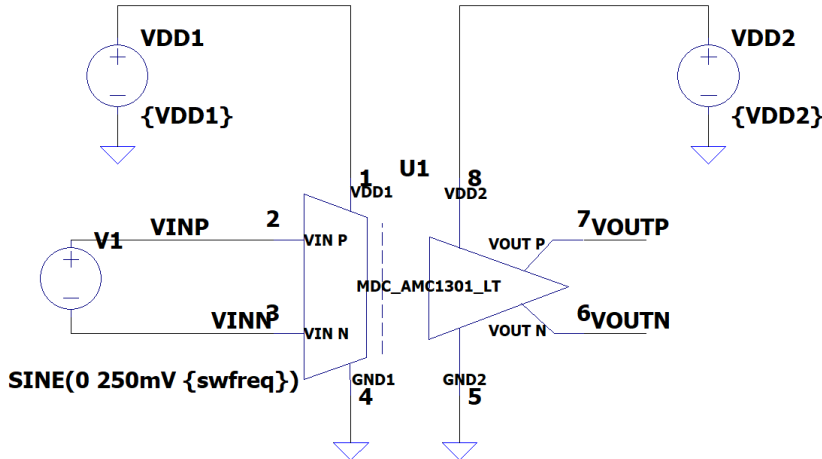
Pulse Response



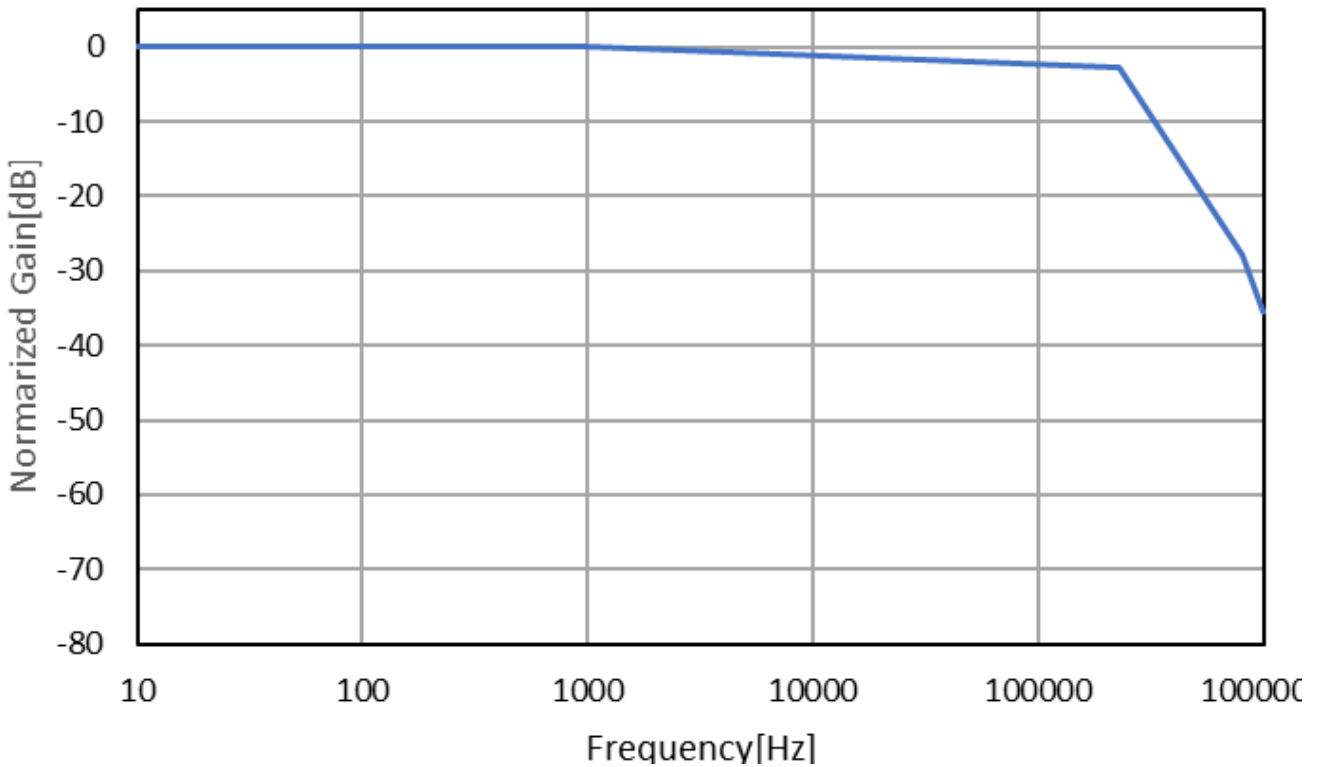
Normalized Gain vs Input Frequency Testbench

```
.OPTION TNOM=25          .meas Gain MAX V(VOUTP,VOUTN) FROM 0 TO 30m
.TEMP 25

.tran 0 30m 0 1m        .param VDD1=5 VDD2=3.3 swfreq=10
.step param swfreq list 10 1k 230k 800k 1Meg
```



Simulation results are following.
 Explanatory notes — : simulated



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