

LM301A

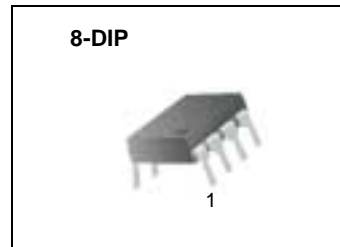
Single Operational Amplifier

Features

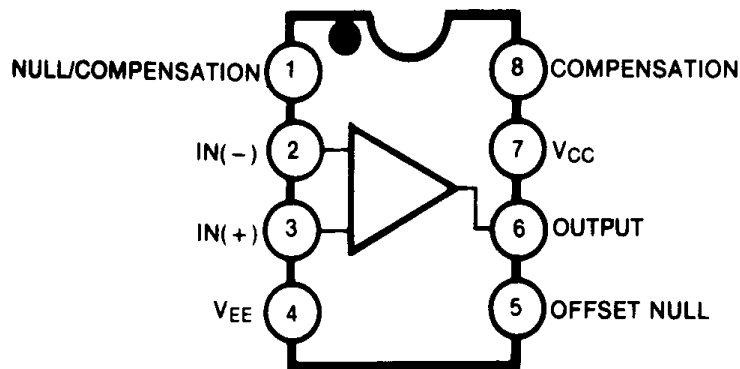
- Short circuit protection and latch free operation
- Slew rate of $10\text{V}/\mu\text{s}$ as a summing amplifier
- Class AB output provides excellent linearity
- Low bias current

Description

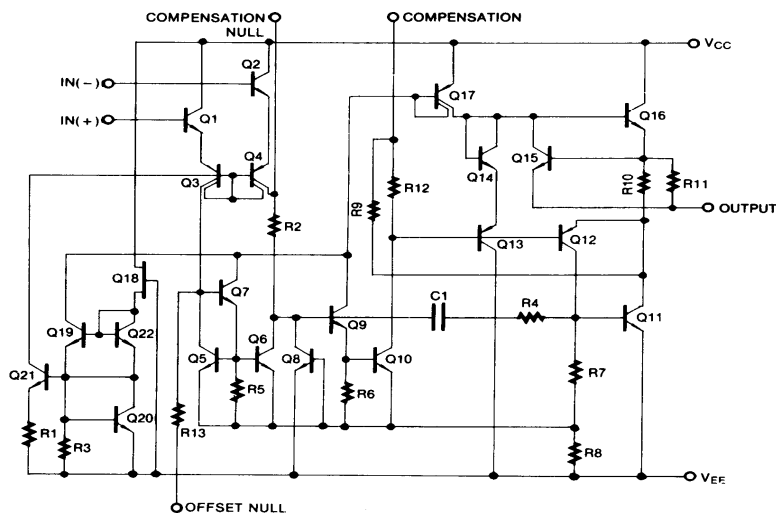
The LM301A is a general purpose operational amplifiers which are externally phase compensated, permit a choice of operation for optimum high frequency performance at a selected gain: unity gain compensation can be obtained with a single capacitor.



Internal Block Diagram



Schematic Diagram



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply Voltage	V _{CC}	±18	V
Differential Input Voltage	V _{I(DIFF)}	30	V
Input Voltage	V _I	±15	V
Output short Circuit Duration	-	Continuous	-
Power Dissipation	P _D	500	mW
Operating Temperature Range	T _{OPR}	0 ~ +70	°C
Storage Temperature Range	T _{STG}	- 65 ~ + 150	°C

Electrical Characteristics

($T_A = +25^\circ\text{C}$, $V_{CC} = +15\text{V}$, $V_{EE} = -15\text{V}$, unless otherwise specified)

Parameter	Symbol	Conditions	LM301A			Unit	
			Min.	Typ.	Max.		
Input Offset Voltage	V_{IO}	$R_S \leq 50\text{K}\Omega$	-	2.0	7.5	mV	
		Note 1	-	-	10	mV	
Input Offset Current	I_{IO}		-	4.5	50	nA	
		Note 1	-	-	70	nA	
Input Bias Current	I_{BIAS}		-	60	250	nA	
		Note 1	-	-	300	nA	
Supply Current	I_{CC}	$V_{CC} = \pm 20\text{V}$	-	-	-	mA	
		$V_{CC} = \pm 15\text{V}$	-	2.0	3.0	mA	
		$V_{CC} = \pm 20\text{V}$, $T_A = T_{A(\text{MAX})}$	-	-	-	mA	
Large Signal Voltage Gain	G_V	$V_{CC} = \pm 15\text{V}$, $R_L \geq 2\text{K}\Omega$, $V_{O(\text{P-P})} = \pm 10\text{V}$	25	160	-	V/mV	
		Note 1	15	-	-	V/mV	
Average Temperature Coefficient of Input Offset Voltage (NOTE2)	$\Delta V_{IO}/\Delta T$	Note 1	-	6.0	30	$\mu\text{V}/^\circ\text{C}$	
Average Temperature Coefficient of Input Offset Current (NOTE2)	$\Delta I_{IO}/\Delta T$	$25^\circ\text{C} \leq T_A \leq T_{A(\text{MAX})}$	-	0.01	0.3	$\text{nA}/^\circ\text{C}$	
		$T_{A(\text{MIN})} \leq T_A \leq 25^\circ\text{C}$	-	0.02	0.6	$\text{nA}/^\circ\text{C}$	
Input Voltage Range	$V_{I(\text{R})}$	$V_{CC} = \pm 20\text{V}$	Note 1	-	-	V	
		$V_{CC} = \pm 15\text{V}$	Note 1	± 12	-	V	
Common-Mode Rejection Ratio	CMRR	$R_S \leq 50\text{K}\Omega$	Note 1	70	95	-	dB
Power Supply Rejection Ratio	PSRR	$R_S \leq 50\text{K}\Omega$	Note 1	70	100	-	dB
Output Voltage Swing	$V_{O(\text{P-P})}$	$V_{CC} = \pm 15\text{V}$	$R_L = 10\text{K}\Omega$	± 12	± 14	-	V
			$R_L = 2.0\text{K}\Omega$	± 10	± 13	-	V
Input Resistance (NOTE2)	R_I	-	0.5	2.0	-	$\text{M}\Omega$	

Note:

- LM301A: $0 \leq T_A \leq +70^\circ\text{C}$
- Guaranteed by design.

Typical Performance Characteristics

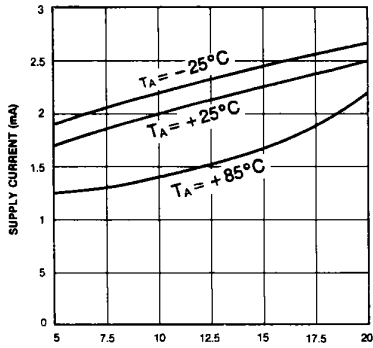


Figure 1. Supply Current

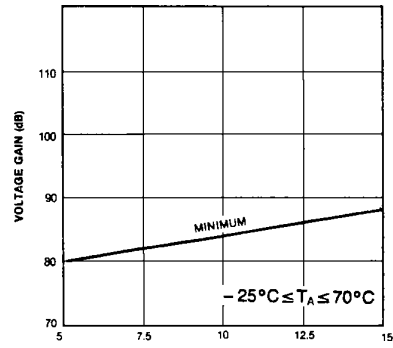


Figure 2. Voltage Gain

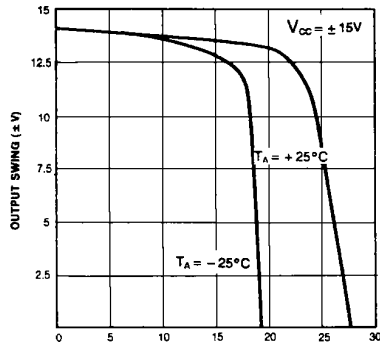


Figure 3. Current Limiting

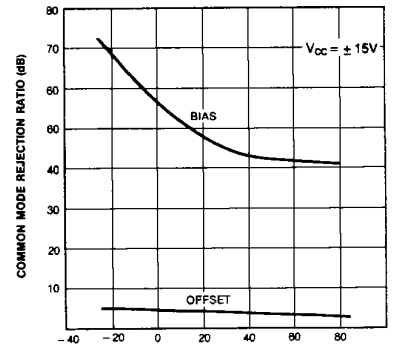


Figure 4. Input Current

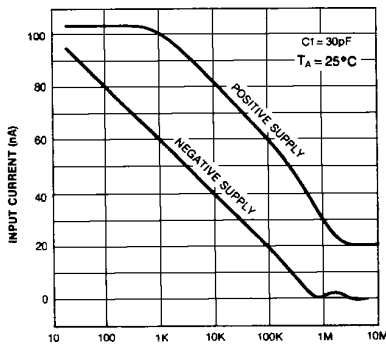


Figure 5. Power Supply Rejection

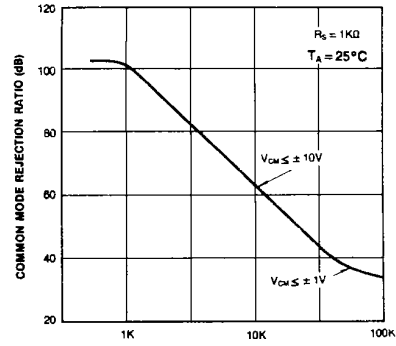


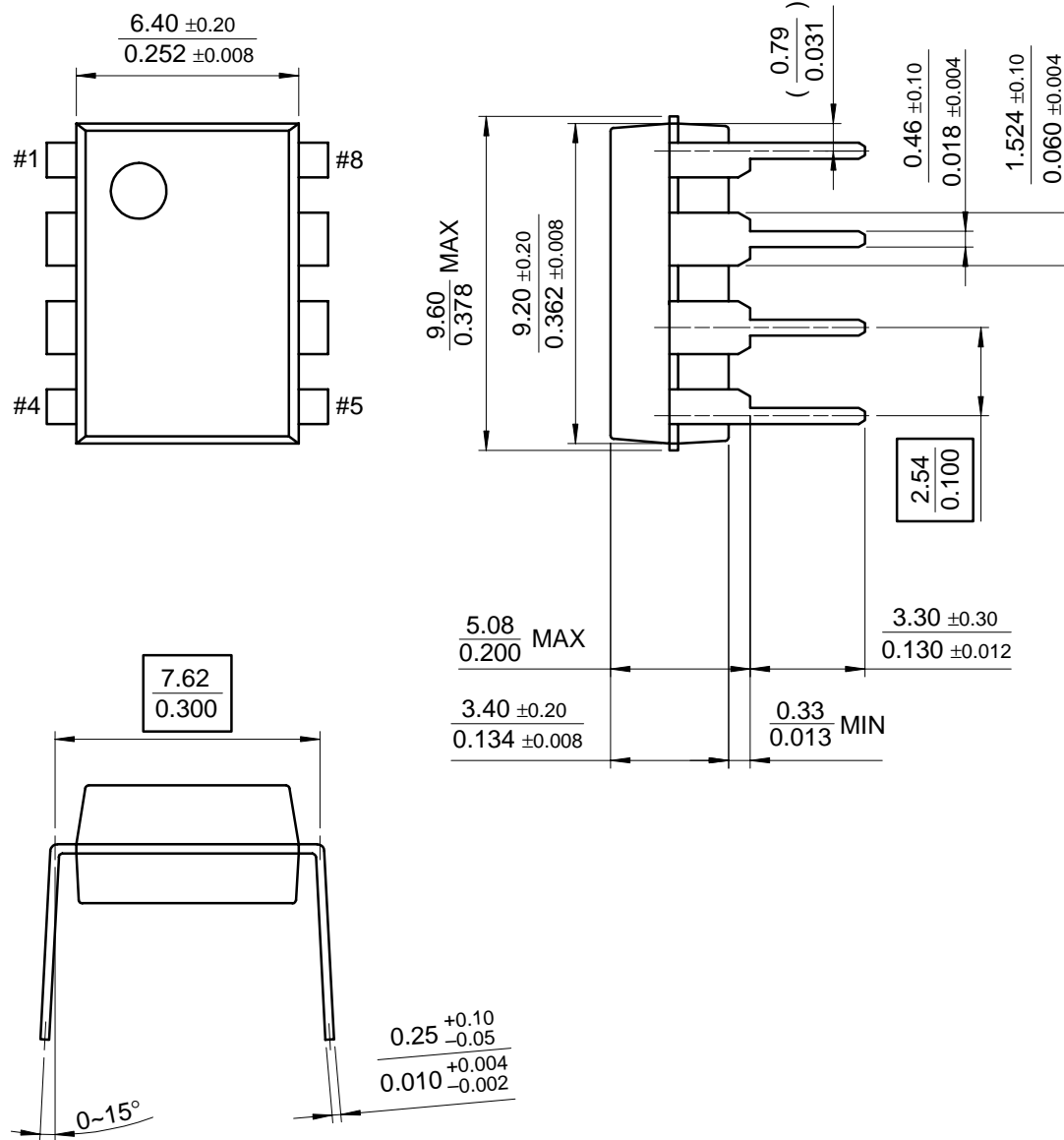
Figure 6. Common Mode Rejection

Mechanical Dimensions

Package

Dimensions in millimeters

8-DIP



Ordering Information

Product Number	Package	Operating Temperature
LM301AN	8-DIP	0 ~ + 70 °C

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