

# LM301A

## Single Operational Amplifier

### Features

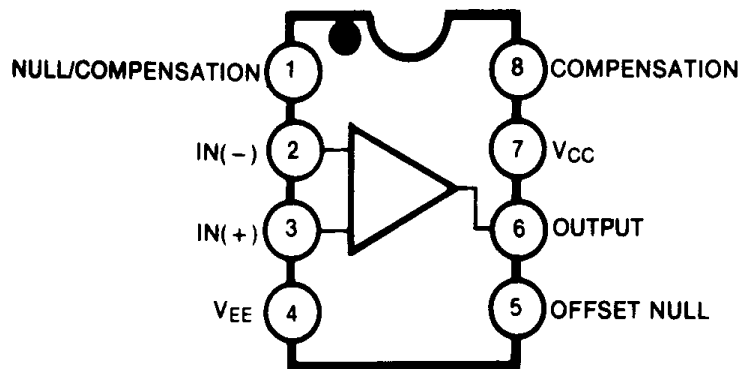
- Short circuit protection and latch free operation
- Slew rate of 10V/ $\mu$ s as a summing amplifier
- Class AB output provides excellent linearity
- Low bias current

### Description

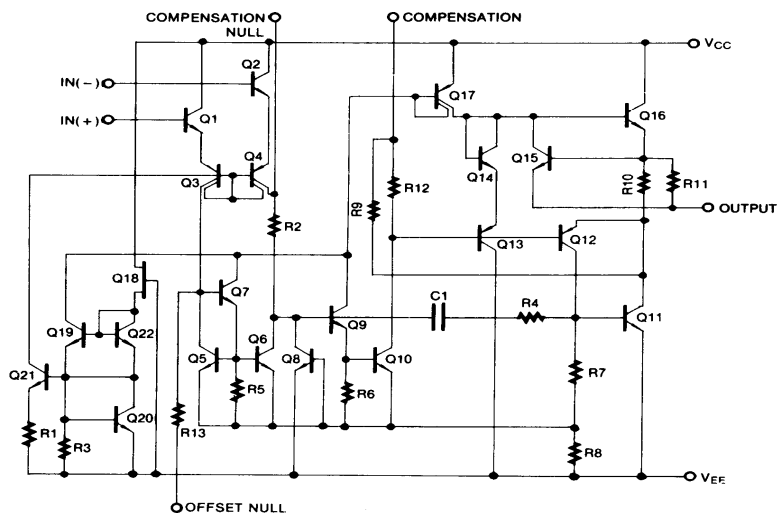
The LM301A is a general purpose operational amplifiers which are externally phase compensated, permit a choice of operation for optimum high frequency performance at a selected gain: unity gain compensation can be obtained with a single capacitor.



### Internal Block Diagram



## Schematic Diagram



## Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply Voltage	V <sub>CC</sub>	±18	V
Differential Input Voltage	V <sub>I(DIFF)</sub>	30	V
Input Voltage	V <sub>I</sub>	±15	V
Output short Circuit Duration	-	Continuous	-
Power Dissipation	P <sub>D</sub>	500	mW
Operating Temperature Range	T <sub>OPR</sub>	0 ~ +70	°C
Storage Temperature Range	T <sub>STG</sub>	- 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	$\pm 12$	-	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	$V_{O(\text{P-P})}$	$V_{CC} = \pm 15\text{V}$	$R_L = 10\text{K}\Omega$	$\pm 12$	$\pm 14$	-	V
			$R_L = 2.0\text{K}\Omega$	$\pm 10$	$\pm 13$	-	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

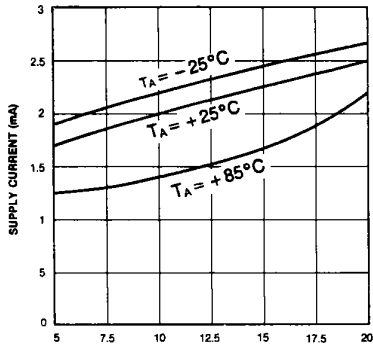


Figure 1. Supply Current

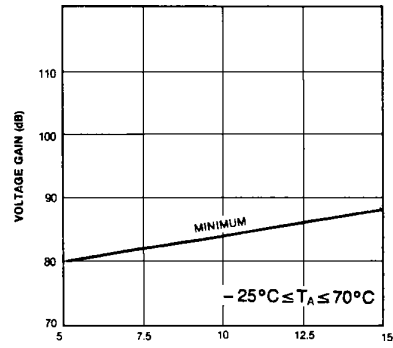


Figure 2. Voltage Gain

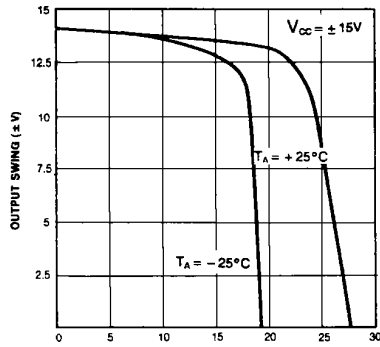


Figure 3. Current Limiting

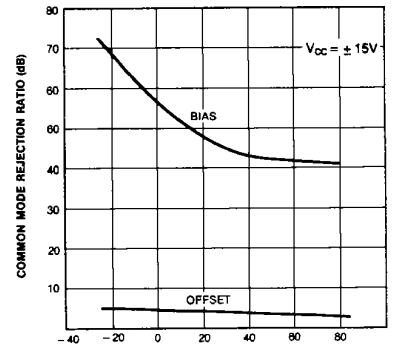


Figure 4. Input Current

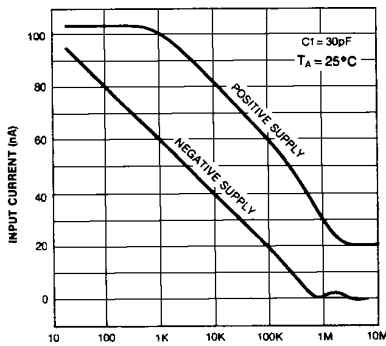


Figure 5. Power Supply Rejection

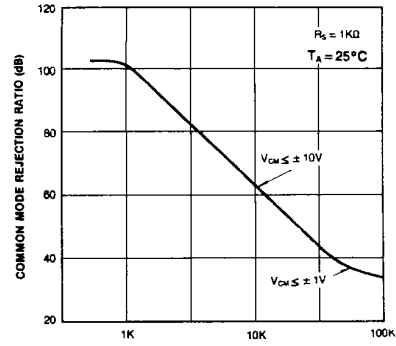


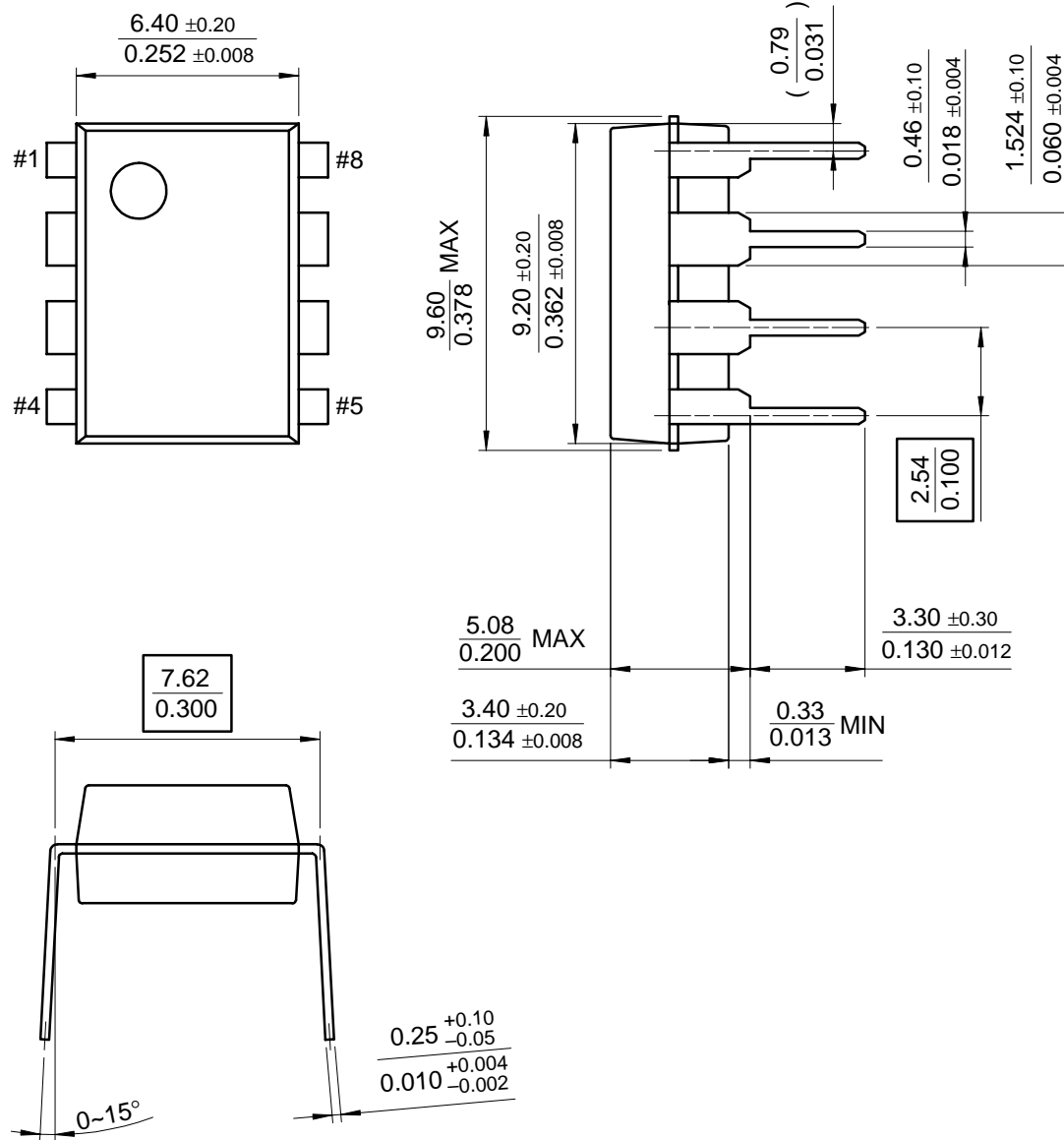
Figure 6. Common Mode Rejection

# 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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