

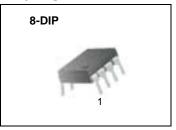
# LM301A Single Operational Amplifier

## Features

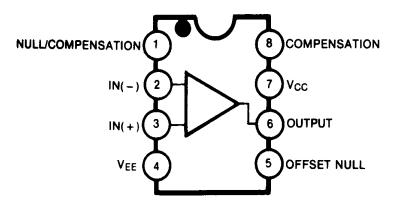
- Short circuit protection and latch free operation
- Slew rate of  $10V/\mu s$  as a summing amplifier
- Class AB output provides excellent linearity
- Low bias current

### Description

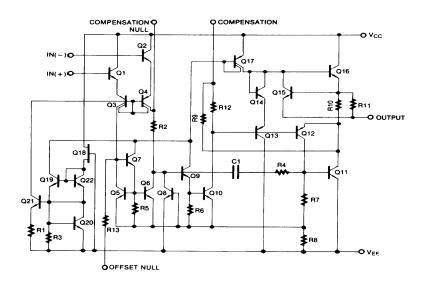
The LM301A is a general purpose operational amplifiers which are externally phase compensated, permit a choice of operation for optimum high frequency performance at a selected gain: unity gain compensation can be obtained with a single capacitor.



#### Internal Block Diagram



# Schematic Diagram



# **Absolute Maximum Ratings**

Parameter	Symbol	Value	Unit	
Supply Voltage	Vcc	±18	V	
Differential Input Voltage	VI(DIFF)	30	V	
Input Voltage	VI	±15	V	
Output short Circuit Duration	-	Continuous	-	
Power Dissipation	PD	500	mW	
Operating Temperature Range	TOPR	0 ~ +70	°C	
Storage Temperature Range	TSTG	- 65 ~ + 150	°C	

## **Electrical Characteristics**

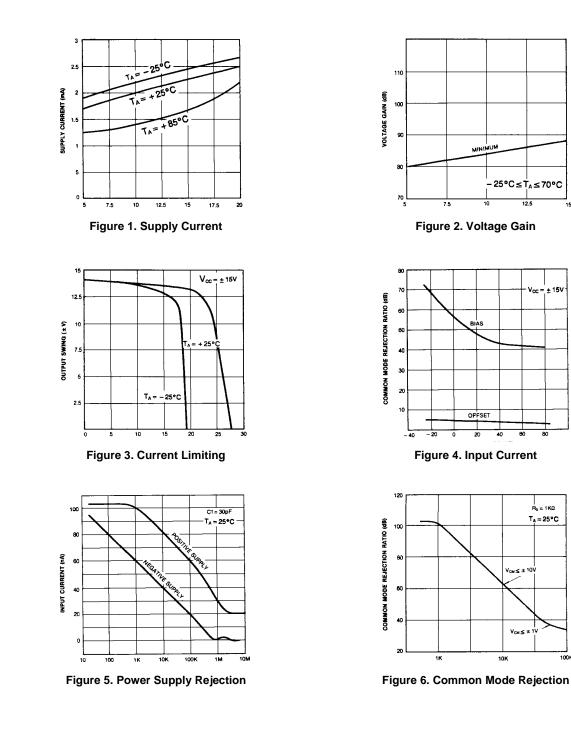
(TA =+25°C, VCC = +15V, VEE= -15V, unless otherwise specified)

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Parameter	Symbol	Condi	Conditions		Тур.	Max.	Unit
	N/La	Rs <u>&lt;</u> 50KΩ		-	2.0	7.5	mV
Input Offset Voltage	Vio		Note 1	-	-	10	mV
Input Offset Current	lio			-	4.5	50	nA
			Note 1	-	-	70	nA
Input Bias Current	IBIAS			-	60	250	nA
			Note 1	-	-	300	nA
Supply Current	ICC	$V_{CC} = \pm 20V$		-	-	-	mA
		VCC = ± 15V		-	2.0	3.0	mA
		$V_{CC} = \pm 20V, T_A = T_A(MAX)$		-	-	-	mA
Large Signal Voltage Gain	Gv	VCC= ± 15V, RI VO(P-P)= ± 10V		25	160	-	V/mV
			Note 1	15	-	-	V/mV
Average Temperature Coefficient of Input Offset Voltage (NOTE2)	Δνιο/Δτ	Note 1		-	6.0	30	μV/°C
Average Temperature Coefficient		$25 \text{ °C} \leq T_A \leq T_A(MAX)$		-	0.01	0.3	nA/°C
of Input Offset Current (NOTE2) ΔIIO/2		$T_A(MIN) \le T_A \le 25 \ ^\circ C$		-	0.02	0.6	nA/°C
Input Voltage Range	VI(R)	$VCC = \pm 20V$	Note 1	-	-	-	V
		$V_{CC} = \pm 15V$	Note 1	± 12	-	-	V
Common-Mode Rejection Ratio	CMRR	$R_S \le 50 K \Omega$	Note 1	70	95	-	dB
Power Supply Rejection Ratio	PSRR	$R_{\text{S}} \leq 50 K \Omega$	Note 1	70	100	-	dB
Output Voltage Swing	VO(P-P)	$V_{CC} = \pm 15V$	RL = 10KΩ	± 12	±14	-	V
		$v_{\rm UU} = \pm 13$	RL = 2.0KΩ	± 10	± 13	-	V
Input Resistance (NOTE2)	Rı	-		0.5	2.0	-	MΩ

#### Note:

1. LM301A:  $0 \le T_A \le +70 \ ^{\circ}C$ 

2. Guaranteed by design.



15

15V

80

100K

## **Typical Performance Characteristics**

**Dimensions in millimeters** 

#### **Mechanical Dimensions**

#### Package

# $6.40 \pm 0.20$ 0.79 $0.252 \pm 0.008$ **1.524** ±0.10 $0.060 \pm 0.004$ 0.46 ±0.10 0.018 ±0.004 #1 #8 $\begin{array}{c} 9.20 \pm \! 0.20 \\ \hline 0.362 \pm \! 0.008 \end{array}$ 9.60 0.378 MAX #5 #4 2.54 0.100 3.30 ±0.30 5.08 0.200 MAX 0.130 ±0.012 7.62 0.300 3.4<u>0 ±0.20</u> $\frac{0.33}{0.013}\,\text{MIN}$ $\overline{0.134 \pm 0.008}$ 0.25 <sup>+0.10</sup> -0.05 0.010 +0.004 -0.002 <u>0~15°</u>

8-DIP

#### **Ordering Information**

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

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