LM301A

Single Operational Amplifier

Features

- Short circuit protection and latch free operation
- Slew rate of 10V/μs 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.

8-DIP

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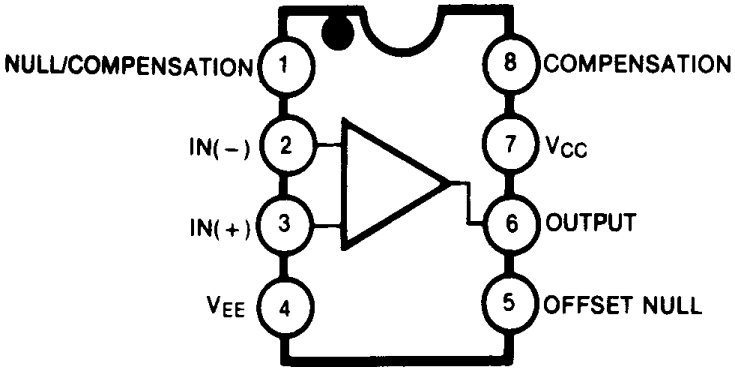
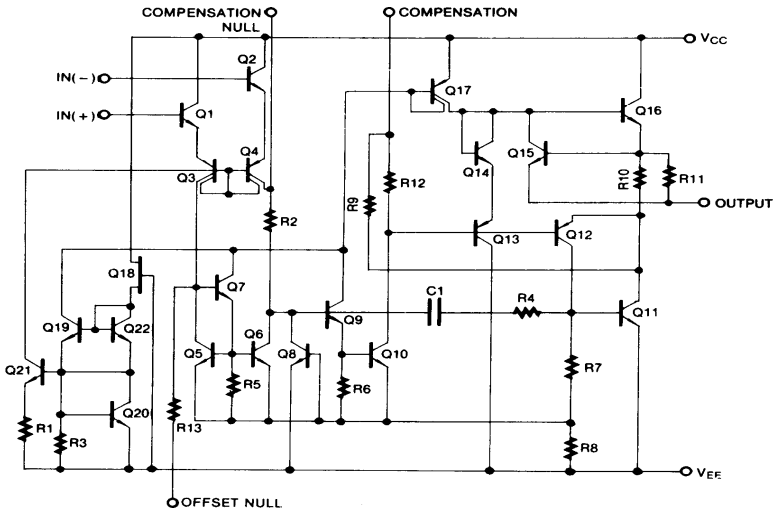
Internal Block Diagram



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°C, V_{CC} = +15V, V_{EE}= -15V, unless otherwise specified)

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

Note:

1. LM301A: 0 ≤ $T_A \leq$ +70 °C
2. Guaranteed by design.

Typical Performance Characteristics

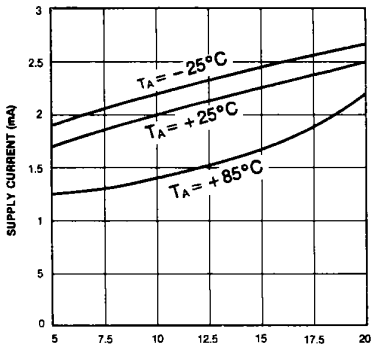


Figure 1. Supply Current

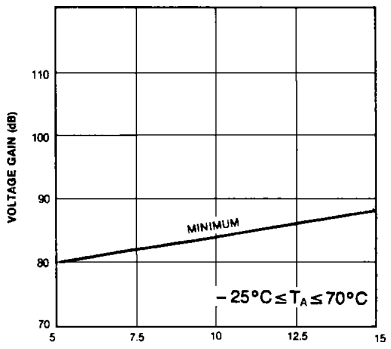


Figure 2. Voltage Gain

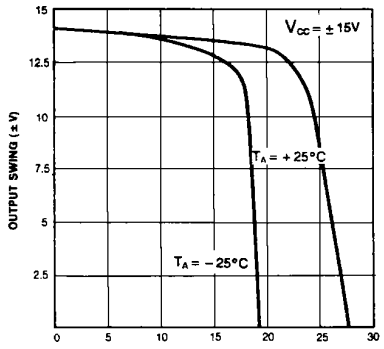


Figure 3. Current Limiting

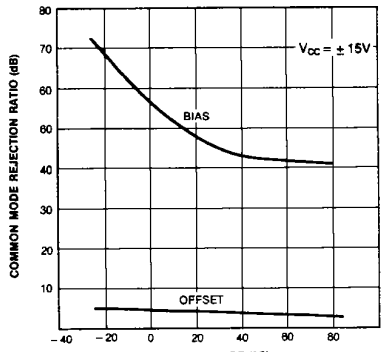


Figure 4. Input Current

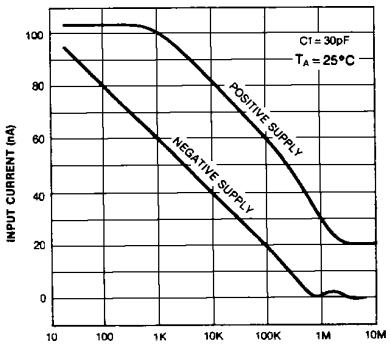


Figure 5. Power Supply Rejection

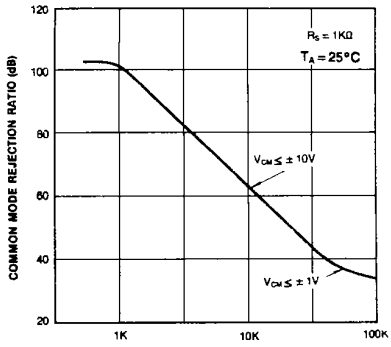


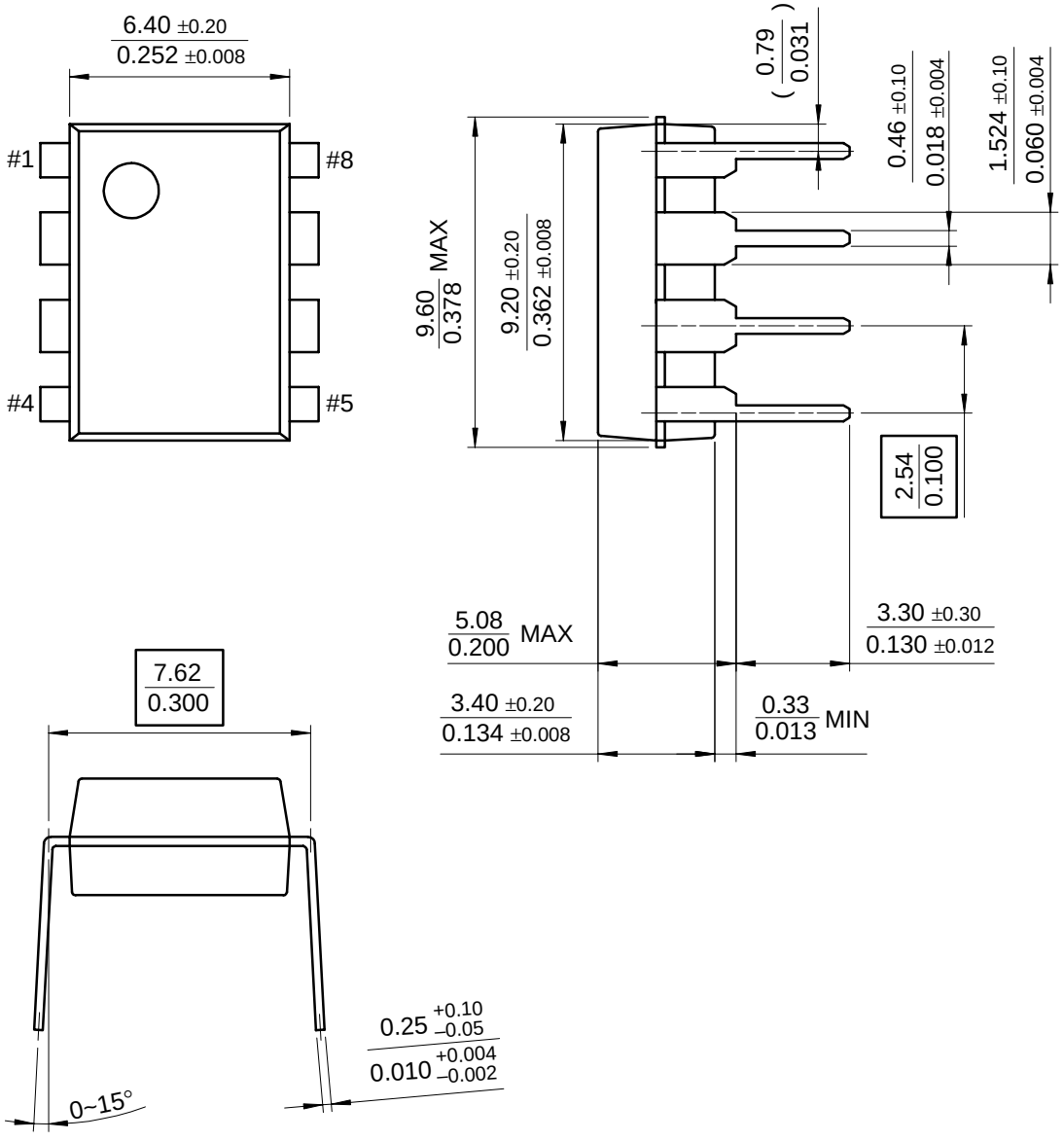
Figure 6. Common Mode Rejection

Mechanical Dimensions

Package

Dimensions in millimeters

8-DIP



Ordering Information

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