

# KA201A/KA301A

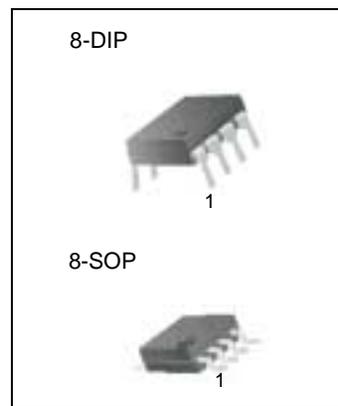
## Single Operational Amplifier

### Features

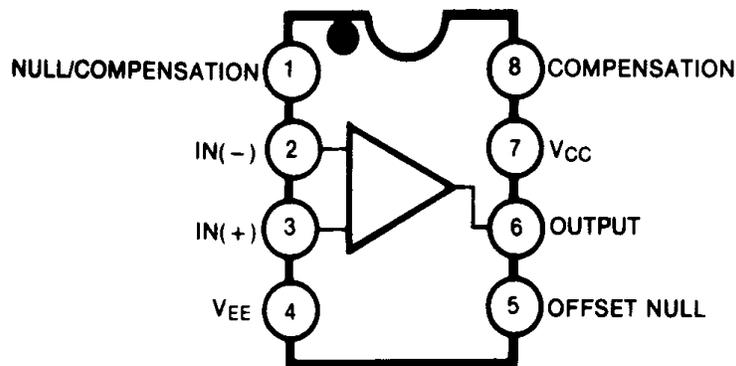
- Short-circuit protection and latch-free operation
- Slew rate of 10V/μs as a summing amplifier
- Class AB output provides excellent linearity
- Low bias current

### Description

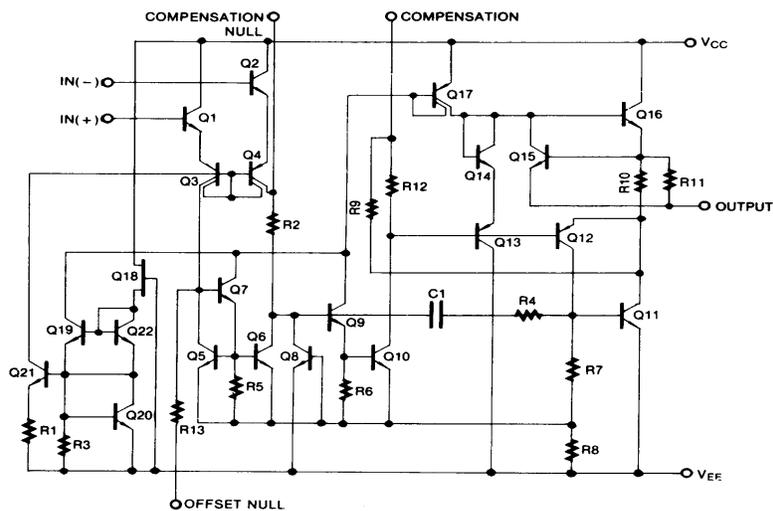
The KA201A and KA301A are general-purpose operational amplifiers which are externally phase compensated, permit a choice of operation for optimum high-frequency performance at a selected gain: unity-gain compensation can be obtained with a single capacitor.



### Internal Block Diagram



## Schematic Diagram



## Absolute Maximum Ratings

Parameter	Symbol	KA201A	KA301A	Unit
Supply Voltage	V <sub>CC</sub>	±22	±18	V
Differential Input Voltage	V <sub>I(OFF)</sub>	30	30	V
Input Voltage	V <sub>I</sub>	±15	±15	V
Output short Circuit Duration	-	Continuous	Continuous	-
Power Dissipation	P <sub>D</sub>	500	500	mW
Operating Temperature Range	T <sub>OPR</sub>	-25 ~ +85	0 ~ +70	°C
Storage Temperature Range	T <sub>STG</sub>	-65 ~ +150	- 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	KA201A			KA301A			Unit	
			Min.	Typ.	Max.	Min.	Typ.	Max.		
Input Offset Voltage	$V_{IO}$	$R_S \leq 50\text{K}\Omega$		-	0.5	2.0	-	2.0	7.5	MV
			NOTE 1	-	-	3	-	-	10	mV
Input Offset Current	$I_{IO}$			-	1.5	10	-	4.5	50	nA
			NOTE 1	-	-	20	-	-	70	nA
Input Bias Current	$I_{BIAS}$			-	40	75	-	60	250	nA
			NOTE 1	-	-	100	-	-	300	nA
Supply Current	$I_{CC}$	$V_{CC} = \pm 20\text{V}$		-	2.0	3.0	-	-	-	mA
		$V_{CC} = \pm 15\text{V}$		-	-	-	-	2.0	3.0	mA
		$V_{CC} = \pm 20\text{V}$ , $T_A = T_{A(\text{MAX})}$		-	1.7	2.5	-	-	-	mA
Large Signal Voltage Gain	$G_V$	$V_{CC} = \pm 15\text{V}$ , $R_L \geq 2\text{K}\Omega$ , $V_{O(\text{P.P})} = \pm 10\text{V}$		50	160	-	25	160	-	V/mV
			NOTE 1	25	-	-	15	-	-	V/mV
Average Temperature Coefficient of Input Offset Voltage	$\Delta V_{IO}/\Delta T$	NOTE 1		-	3.0	15	-	6.0	30	$\mu\text{V}/^\circ\text{C}$
Average Temperature Coefficient of Input Offset Current	$\Delta I_{IO}/\Delta T$	$25^\circ\text{C} \leq T_A \leq T_{A(\text{MAX})}$		-	0.01	0.1	-	0.01	0.3	nA/ $^\circ\text{C}$
		$T_{A(\text{MIN})} \leq T_A \leq 25^\circ\text{C}$		-	0.02	0.2	-	0.02	0.6	nA/ $^\circ\text{C}$
Input Voltage Range	$V_{I(\text{R})}$	$V_{CC} = \pm 20\text{V}$	NOTE 1	$\pm 15$	-	-	-	-	-	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	80	100	-	70	95	-	dB
Power Supply Rejection Ratio	PSRR	$R_S \leq 50\text{K}\Omega$	NOTE 1	80	100	-	70	100	-	dB
Output Voltage Swing	$V_{O(\text{P.P})}$	$V_{CC} = \pm 15\text{V}$	$R_L = 10\text{K}\Omega$	$\pm 12$	$\pm 14$	-	$\pm 12$	$\pm 14$	-	V
			$R_L = 2.0\text{K}\Omega$	$\pm 10$	$\pm 13$	-	$\pm 10$	$\pm 13$	-	V
Input Resistance	$R_I$	-		1.5	4.0	-	0.5	2.0	-	M $\Omega$

### Note:

1. KA201A:  $-25 \leq T_A \leq +85^\circ\text{C}$ , KA301A:  $0 \leq T_A \leq +70^\circ\text{C}$

# Typical Performance Characteristics

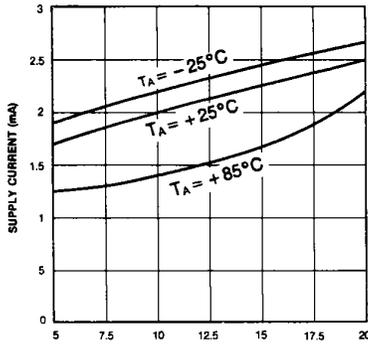


Figure 1. Supply Current

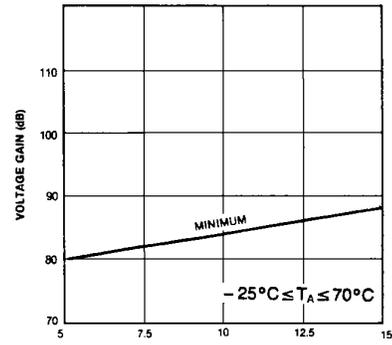


Figure 2. Voltage Gain

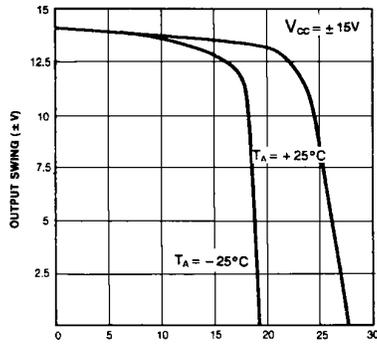


Figure 3. Current Limiting

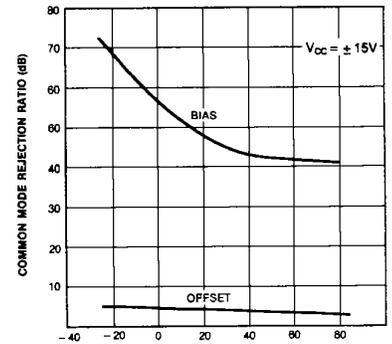


Figure 4. Input Current

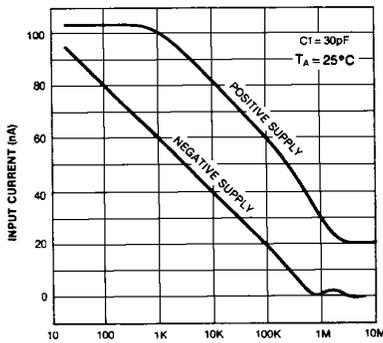


Figure 5. Power Supply Rejection

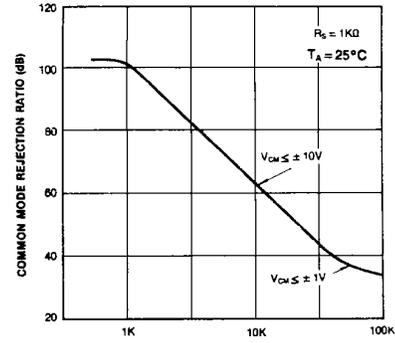


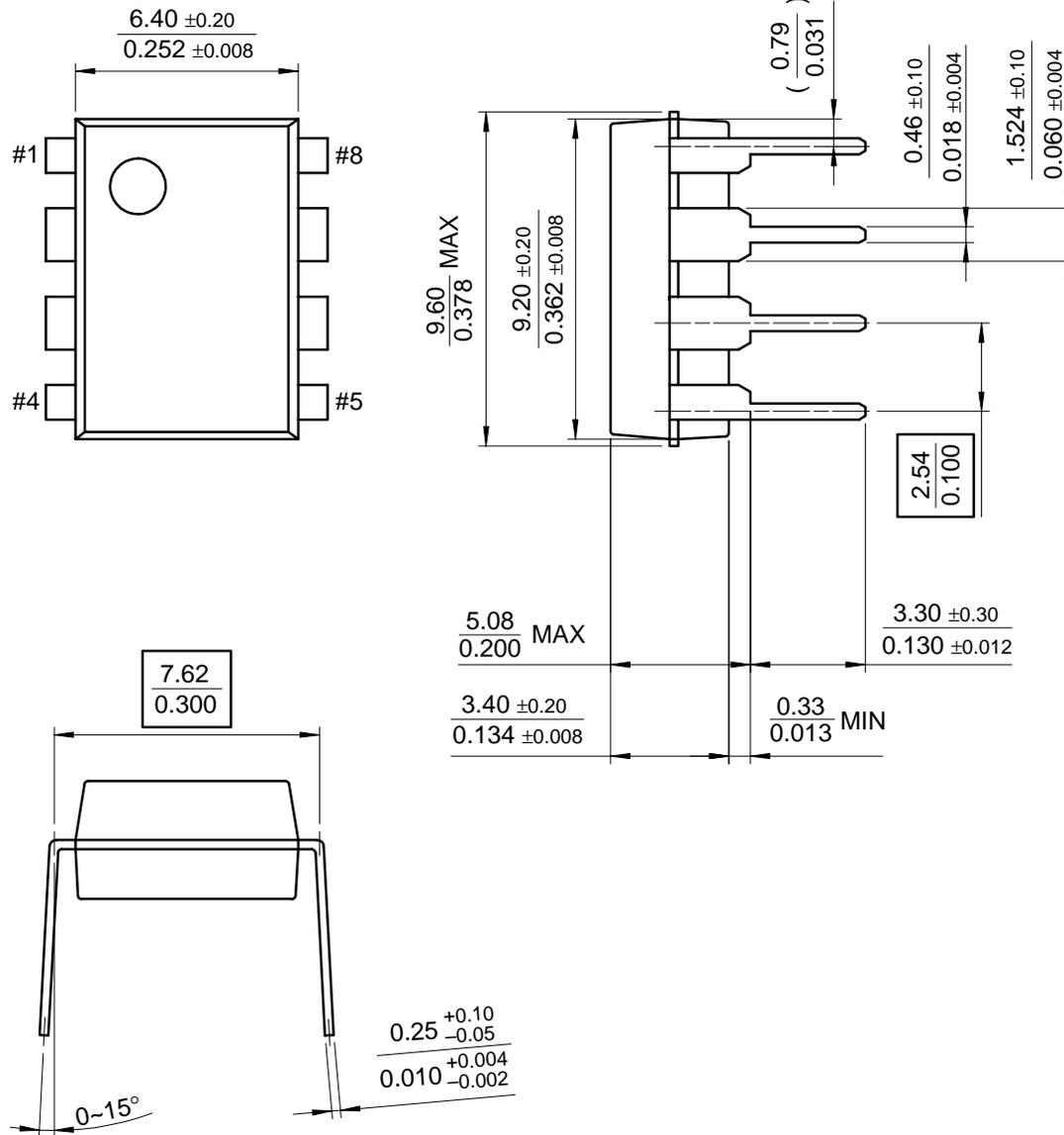
Figure 6. Common Mode Rejection

# Mechanical Dimensions

## Package

Dimensions in millimeters

### 8-DIP

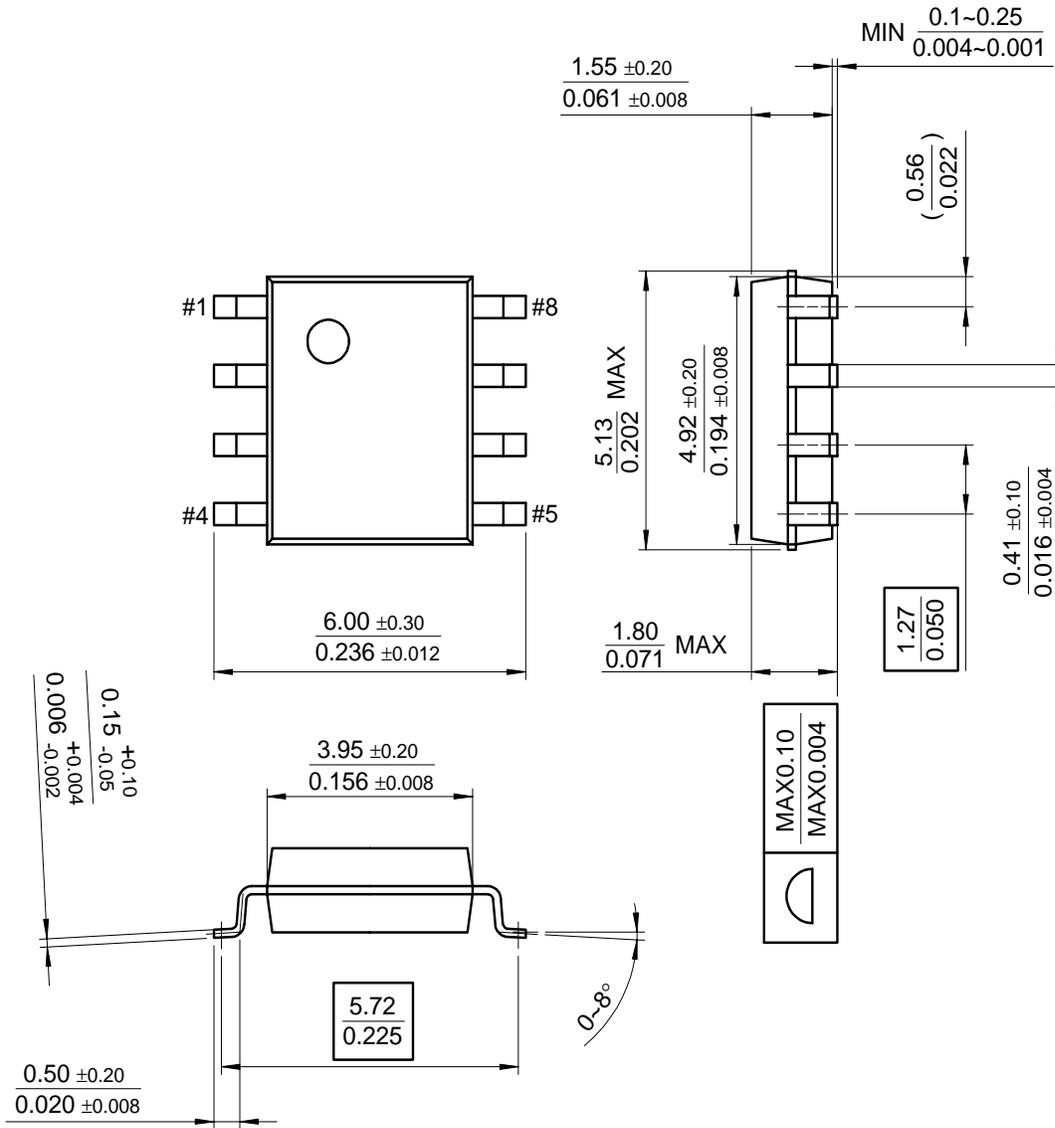


**Mechanical Dimensions** (Continued)

**Package**

Dimensions in millimeters

**8-SOP**



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## Ordering Information

Product Number	Package	Operating Temperature
KA201A	8-DIP	-25 ~ +85 °C
KA201AD	8-SOP	
KA301A	8-DIP	0 ~ + 70 °C

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