

KA1458

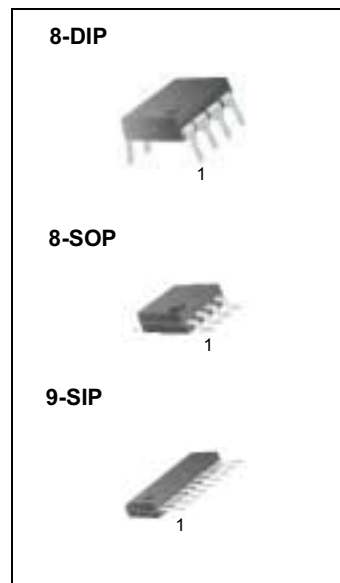
Dual Operational Amplifier

Features

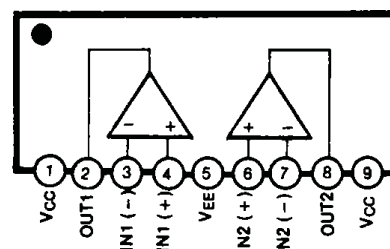
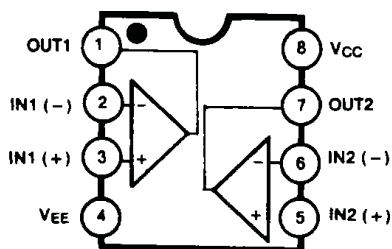
- Internal frequency compensation
- Short circuit protection
- Large common mode and differential voltage range
- No latch up
- Low power consumption

Description

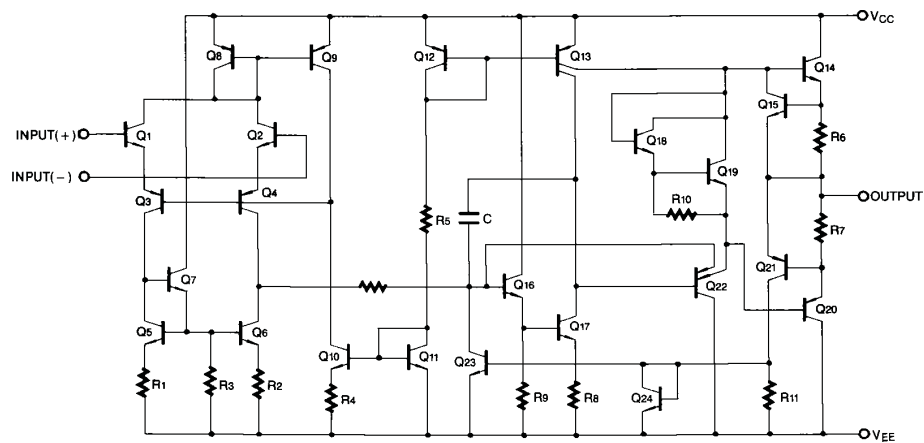
The KA1458 series are dual general purpose operational amplifiers, having short circuits protected and require no external components for frequency compensation. High common mode voltage range and absence of "latch up" make the KA1458 ideal for use as voltage followers. The high gain and wide range of operating voltage provides superior performance in integrator, summing amplifier and general feedback applications.



Internal Block Diagram



Schematic Diagram



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Power Supply Voltage	VCC	± 18	V
Input Differential Voltage	$V_I(\text{DIFF})$	30	V
Input Voltage	V_I	± 15	V
Operating Temperature Range KA1458	TOPR	0 ~ + 70	$^{\circ}\text{C}$
Storage Temperature Range	TSTG	- 65 ~ + 150	$^{\circ}\text{C}$

Electrical Characteristics

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

Parameter	Symbol	Conditions	KA1458			Unit							
			Min.	Typ.	Max.								
Input Offset Voltage	V _{IO}	R _S ≤ 10KΩ	-	2.0	10	mV							
Input Offset Current	I _{IO}	-	-	20	300	nA							
Input Bias Current	I _{BIAS}	-	-	80	700	nA							
Large Signal Voltage Gain	G _V	V _{O(P-P)} = ± 10V, R _L ≥ 2.0KΩ	20	200	-	V/mV							
Input Voltage Range	V _{I(R)}	-	± 11	± 13	-	V							
Input Resistance	R _I	-	0.3	1.0	-	MΩ							
Common Mode Rejection Ratio	CMRR	-	60	90	-	dB							
Power Supply Rejection Ratio	PSRR	-	77	90	-	dB							
Supply Current (Both Amplifier)	I _{CC}	-	-	2.3	8.0	mA							
Output Voltage Swing	V _{O(PP)}	R _S ≤ 10KΩ	± 11	± 14	-	V							
		R _S ≤ 2KΩ	± 9	± 13	-								
Output Short Circuit Current	I _{SC}	-	-	20	-	mA							
Power Consumption	P _C	V _O = 0V	-	70	240	mW							
Transient Response (Unity Gain)													
							Rise Time	T _R	V _I = 20mV, R _L ≥ 2KΩ, C _L ≤ 100pF	-	0.3	-	μs
							Overshoot	OS	V _I = 20mV, R _L ≥ 2KΩ, C _L ≤ 100pF	-	15	-	%
							Slew Rate	SR	V _I = 10V, R _L ≥ 2KΩ, C _L ≤ 100pF	-	0.5	-	V/μs

Electrical Characteristics

(VCC = +15V, VEE = -15V, Note1 unless otherwise specified)

Parameter	Symbol	Conditions	KA1458			Unit
			Min.	Typ.	Max.	
Input Offset Voltage	V _{IO}	R _S ≤ 10KΩ	-	-	12	mV
Input Offset Current	I _{IO}	-	-	-	400	nA
Input Bias Current	I _{BIAS}	-	-	-	1000	nA
Large Signal Voltage Gain	G _V	V _{O(P-P)} = ± 10V, R _L ≤ 2.0KΩ	15	-	-	V/mV
Common Mode Rejection Ratio	CMRR	R _S ≥ 10KΩ	70	90	-	dB
Power Supply Rejection Ratio	PSRR	R _S ≥ 10KΩ	77	90	-	dB
Output Voltage Swing	V _{O(P.P)}	R _L = 10KΩ	± 11	± 14	-	V
		R _L = 2KΩ	± 9	± 13	-	
Input Voltage Range	V _{I(R)}	-	± 12	-	-	V

Note:

1. KA1458 : 0°C ≤ T_A ≤ 70°C

Typical Performance Characteristics

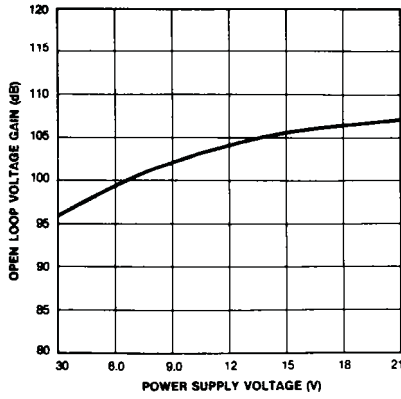


Figure 1. Open-Loop Voltage Gain vs Power Supply Voltages

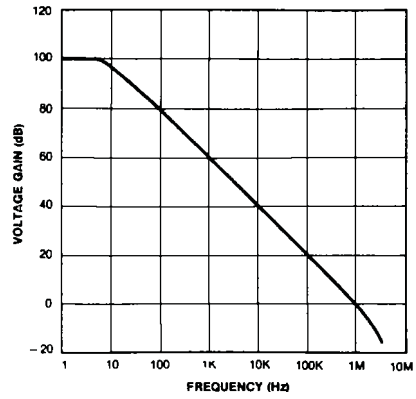


Figure 2. Open-Loop Frequency Response

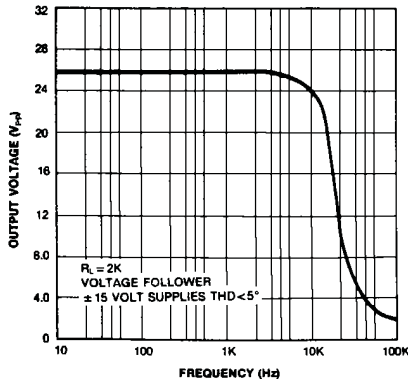


Figure 3. Power Bandwidth (Large Signal Output Swing vs Frequency)

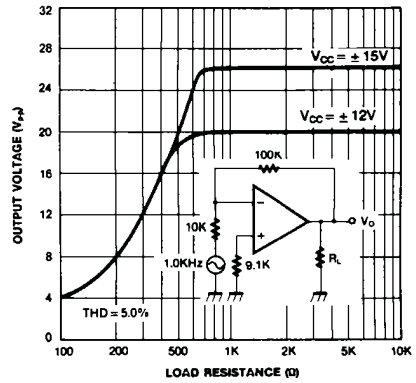
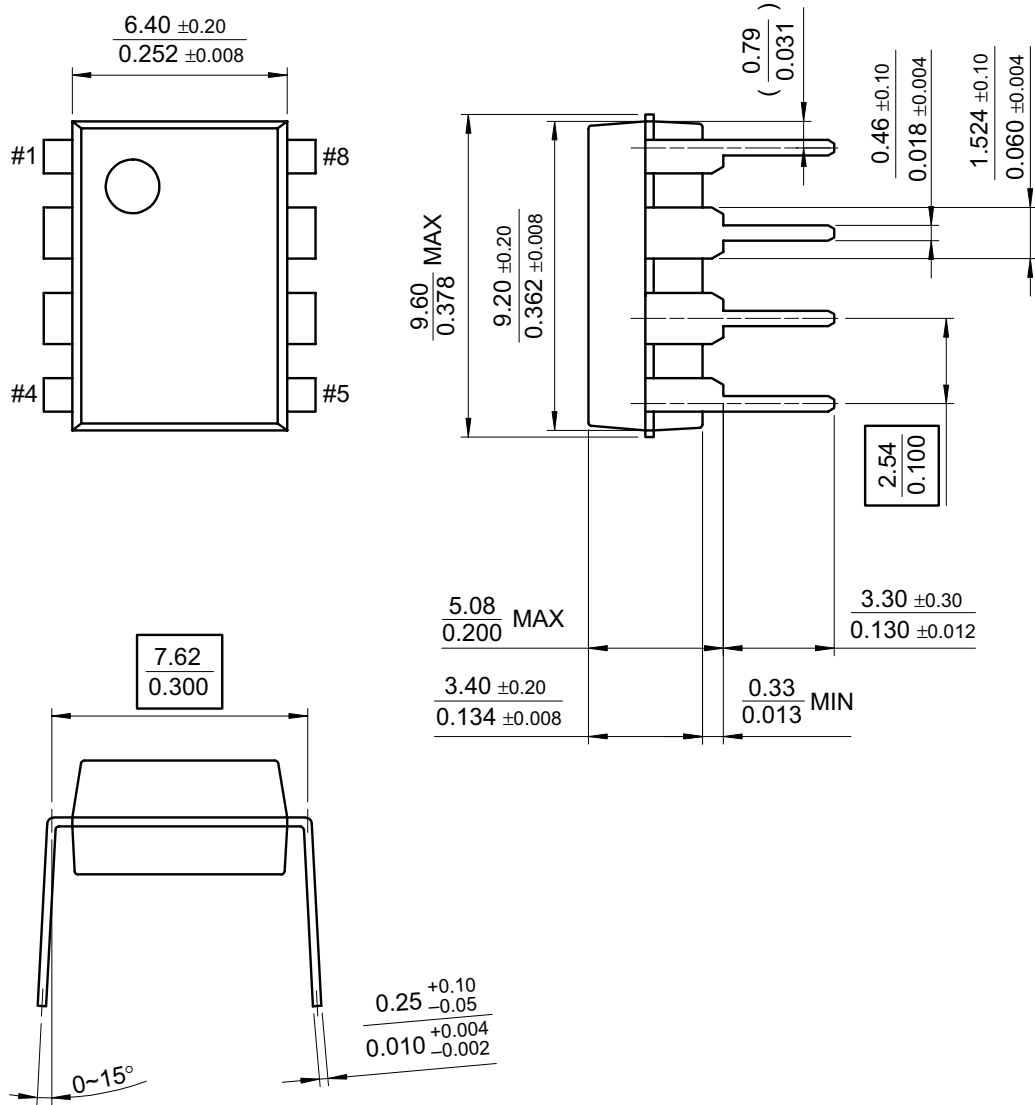


Figure 4. Output Voltage Swing vs Load Resistance

Mechanical Dimensions

Package

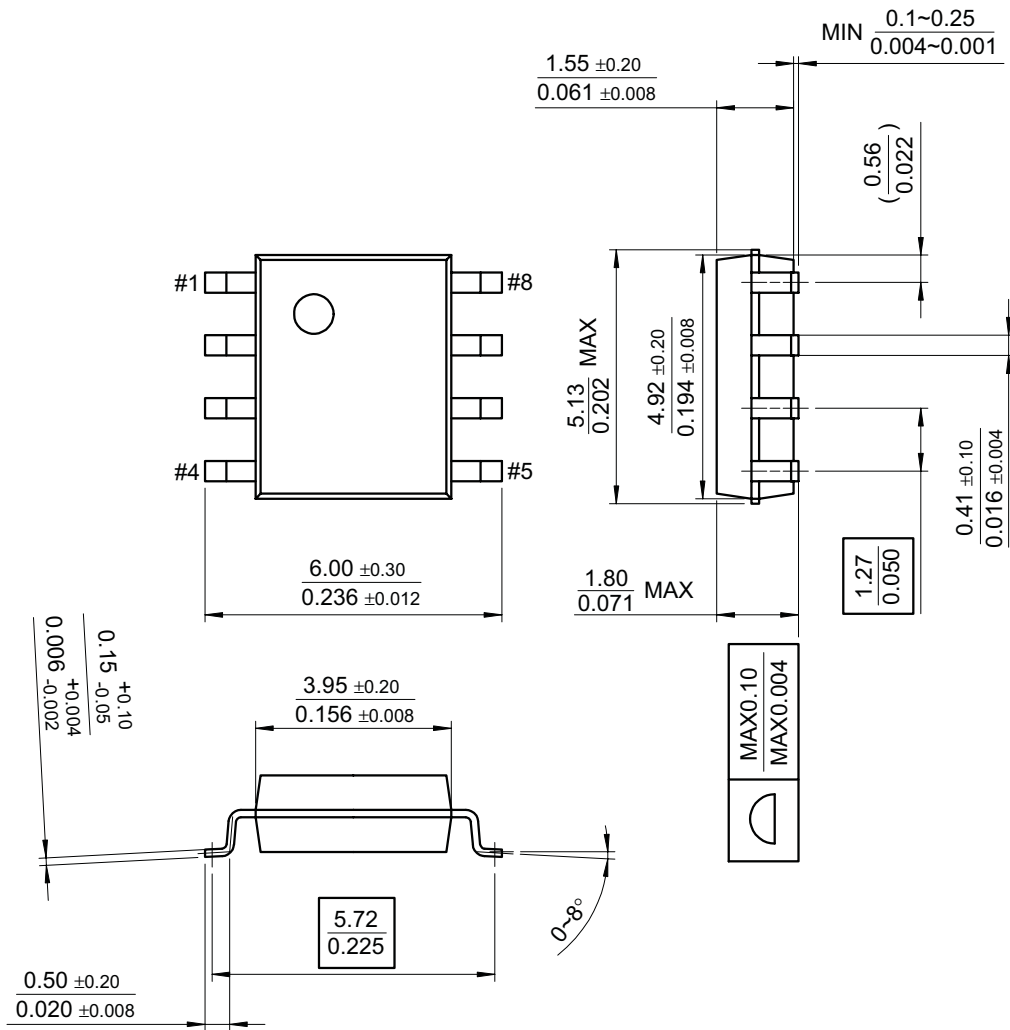
8-DIP



Mechanical Dimensions (Continued)

Package

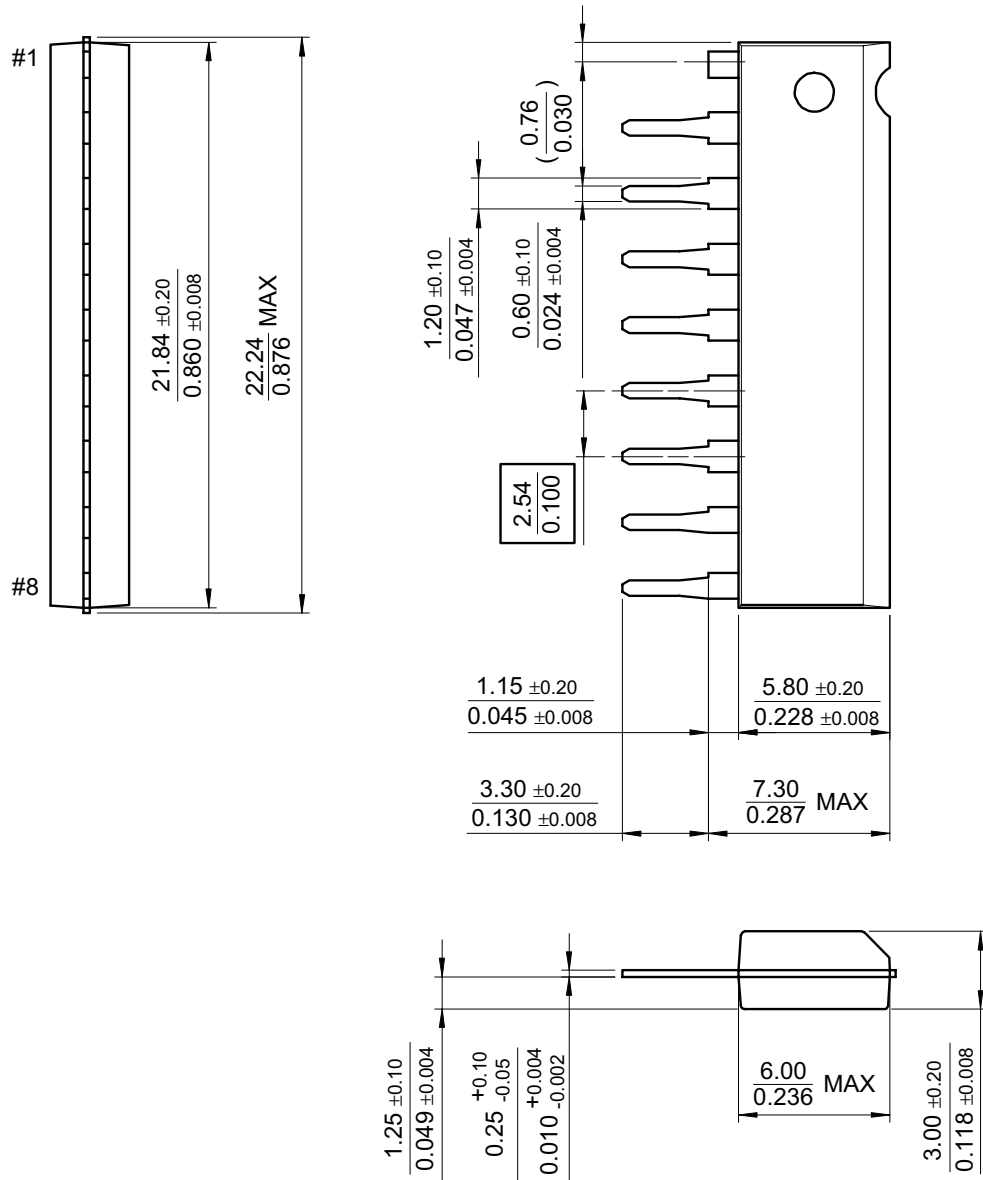
8-SOP



Mechanical Dimensions (Continued)

Package

9-SIP



Ordering Information

Product Number	Package	Operating Temperature
KA1458	8-DIP	0 ~ + 70°C
KA1458D	8-SOP	
KA1458S	9-SIP	

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