LM1458/LM1458C

Dual Operational Amplifier

Features

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

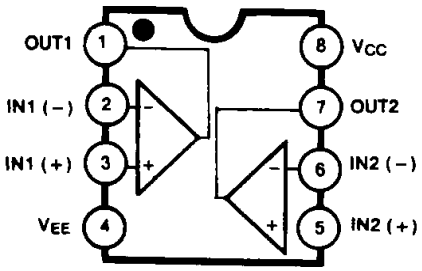
Description

The LM1458/LM1458C 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 LM1458 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.

8-DIP

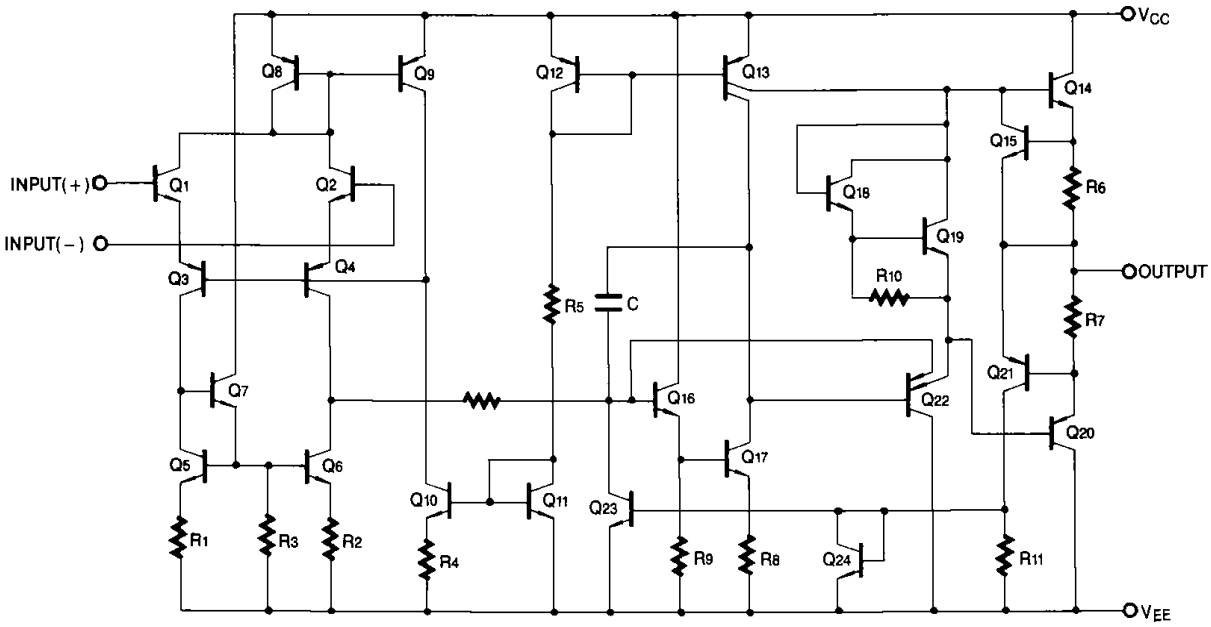
8-SOP

Internal Block Diagram



Rev. 5.0

Schematic Diagram



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Power Supply Voltage	V_{CC}	±18	V
Input Differential Voltage	$V_{I(DIFF)}$	30	V
Input Voltage	V_I	±15	V
Operating Temperature Range LM1458	T_{OPR}	0 ~ + 70	°C
Storage Temperature Range	T_{STG}	- 65 ~ + 150	°C

Electrical Characteristics

(V_{CC} = + 15V, V_{EE} = - 15V, T_A = 25 °C unless otherwise specified)

Parameter	Symbol	Conditions	LM1458C			LM1458			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Input Offset Voltage	V_{IO}	$R_S \leq 10K\Omega$	-	2.0	10	-	2.0	6.0	mV
Input Offset Current	I_{IO}	-	-	20	300	-	20	200	nA
Input Bias Current	I_{BIAS}	-	-	80	700	-	80	500	nA
Large Signal Voltage Gain	G_V	$V_{O(P-P)} = \pm 10V$, $R_L \geq 2.0K\Omega$	20	200	-	20	200	-	V/mV
Input Voltage Range	$V_{I(R)}$	-	± 11	± 13	-	± 12	± 13	-	V
Input Resistance	R_I	-	0.3	1.0	-	0.3	1.0	-	MΩ
Common Mode Rejection Ratio	CMRR	-	60	90	-	70	90	-	dB
Power Supply Rejection Ratio	PSRR	-	77	90	-	77	90	-	dB
Supply Current (Both Amplifier)	I_{CC}	-	-	2.3	8.0	-	2.3	-	mA
Output Voltage Swing	$V_{O(PP)}$	$R_S \leq 10K\Omega$	± 11	± 14	-	± 12	± 14	5.6	V
		$R_S \leq 10K\Omega$	± 19	± 13	-	± 10	± 13	-	
Output Short Circuit Current	I_{SC}	-	-	20	-	-	20	-	mA
Power Consumption	P_C	V_O = 0V	-	70	240	-	70	170	mW
Transient Response (Unity Gain)									
Rise Time	T_R	V_I = 20mV, $R_L \geq 2K\Omega$, $C_L \leq 100pF$	-	0.3	-	-	0.3	-	µs
Overshoot	OS	V_I = 20mV, $R_L \geq 2K\Omega$, $C_L \leq 100pF$		15			15		%
Slew Rate	SR	V_I = 10V, $R_L \geq 2K\Omega$, $C_L \leq 100pF$		0.5			0.5		V/µs

Electrical Characteristics

(V_{CC} = + 15V, V_{EE} = - 15V, Note1, unless otherwise specified)

Parameter	Symbol	Conditions	LM1458C			LM1458			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Input Offset Voltage	V_{IO}	$R_S \leq 10K\Omega$	-	-	12	-	-	7.5	mV
Input Offset Current	I_{IO}	-	-	-	400	-	-	300	nA
Input Bias Current	I_{BIAS}	-	-	-	1000	-	-	800	nA
Large Signal Voltage Gain	G_V	$V_{O(P-P)} = \pm 10V$, $R_L \leq 2.0K\Omega$	15	-	-	15	-	-	V/mV
Common Mode Rejection Ratio	CMRR	$R_S \geq 10K\Omega$	70	90	-	70	90	-	dB
Power Supply Rejection Ratio	PSRR	$R_S \geq 10K\Omega$	77	90	-	77	90	-	dB
Output Voltage Swing	$V_{O(P.P)}$	$R_L = 10K\Omega$	± 11	± 14	-	± 12	± 14	-	V
		$R_L = 2K\Omega$	± 9	± 13	-	± 10	± 13	-	
Input Voltage Range	$V_{I(R)}$	-	± 12	-	-	± 12	-	-	V

Note 1
LM1458/LM1458C : $0°C \leq T_A \leq 70°C$

Typical Performance Characteristics

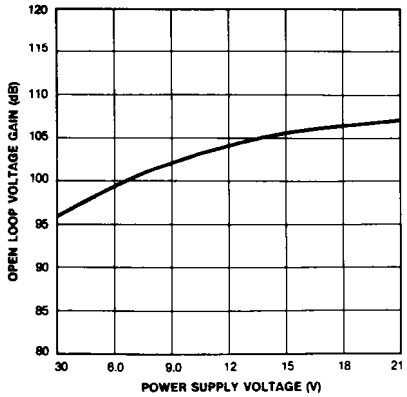


Figure 1. Open-Loop Voltage Gain vs Power Supply Voltages

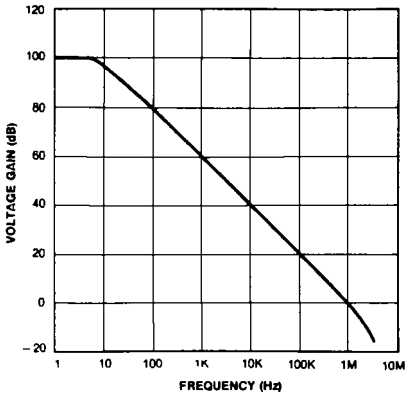


Figure 2. Open-Loop Frequency Response

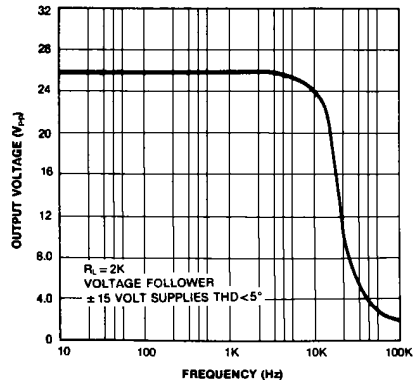


Figure 3. Power Bandwidth (Large Signal Output Swing vs Frequency)

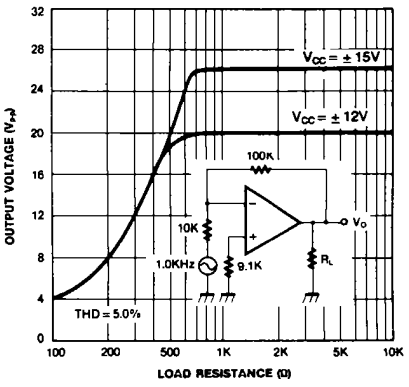
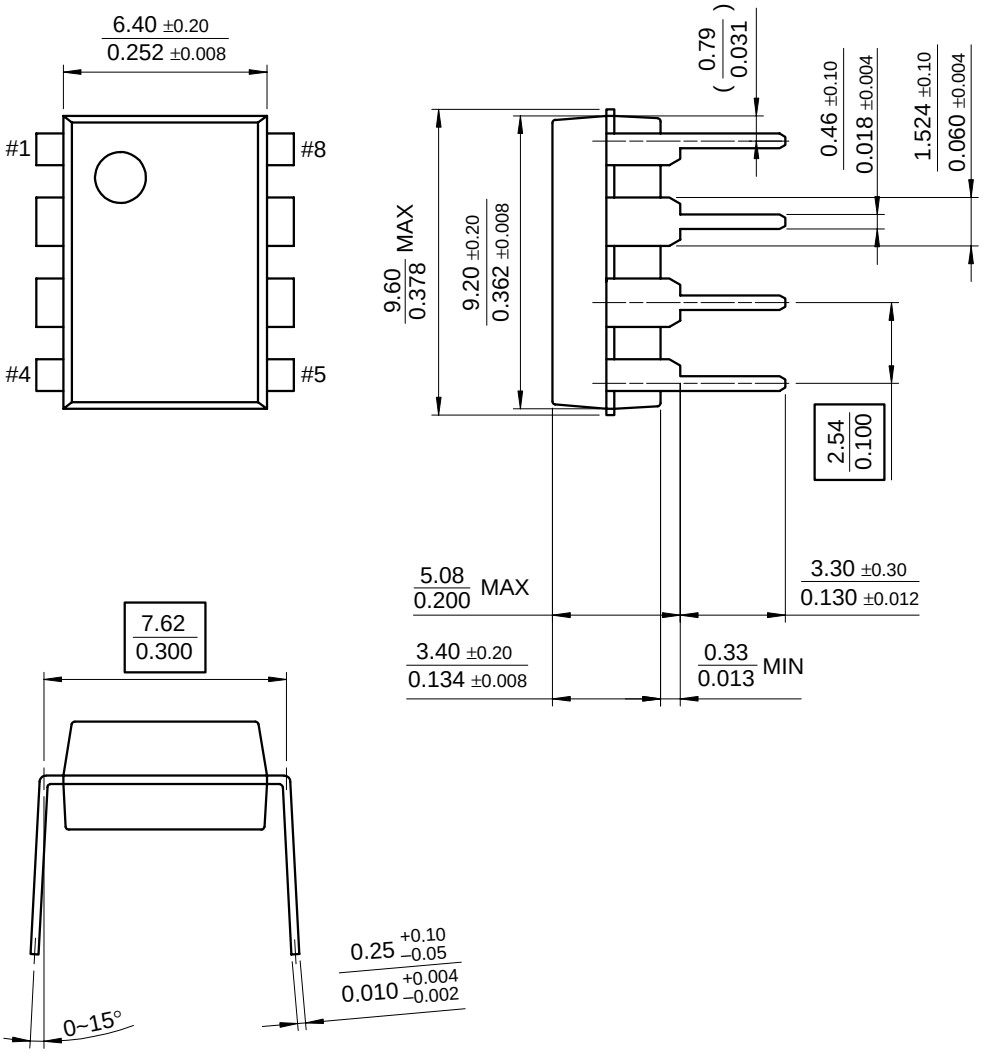


Figure 4. Output Voltage Swing vs Load Resistance

Mechanical Dimensions

Package

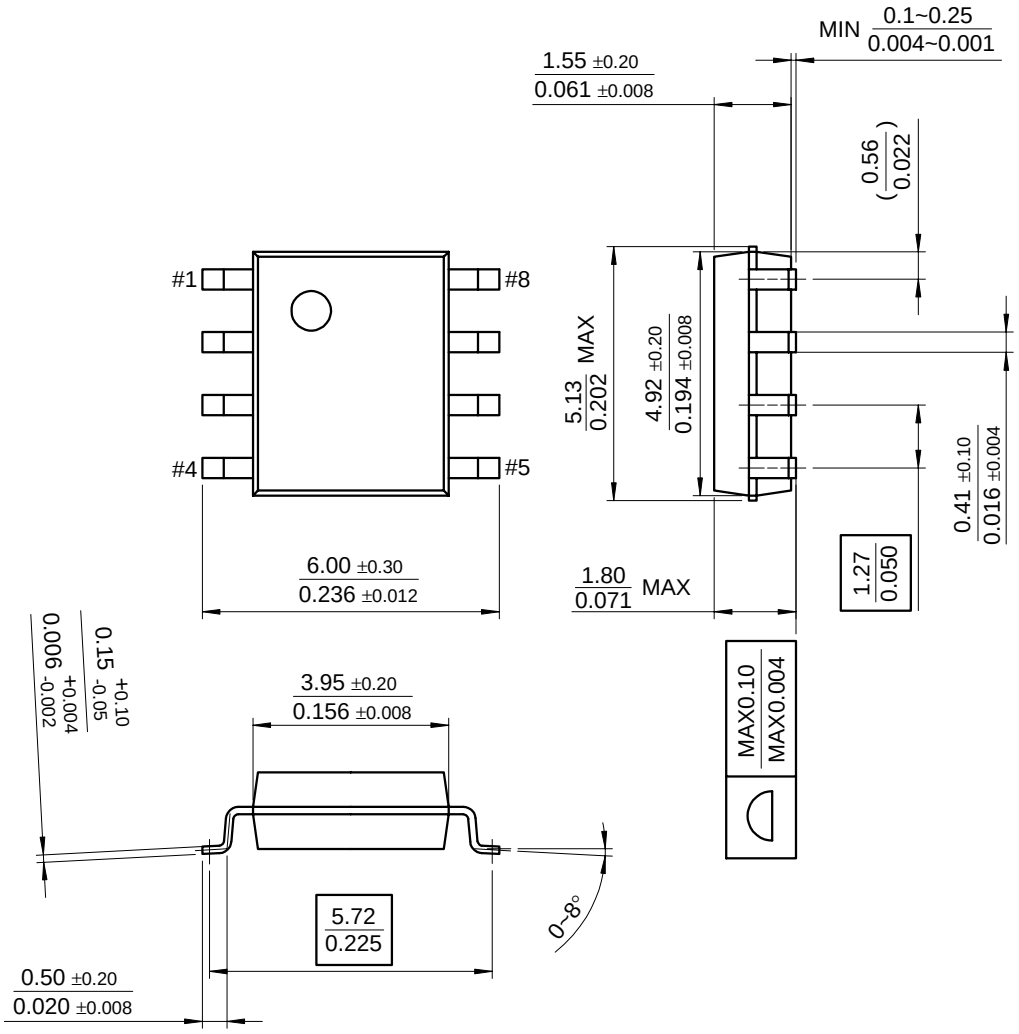
8-DIP



Mechanical Dimensions (Continued)

Package

8-SOP



Ordering Information

Product Number	Package	Operating Temperature
LM1458CN	8-DIP	0 ~ + 70°C
LM1458N		
LM1458CM	8-SOP	
LM1458M		

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