LM1458/LM1558 Dual Operational Amplifier

Check for Samples: LM1458, LM1558

FEATURES

- **No Frequency Compensation Required**
- **Short-Circuit Protection**
- **Wide Common-Mode and Differential Voltage Ranges**
- **Low-Power Consumption**
- **8-Lead TO-99 and 8-Lead PDIP**
- **No Latch Up When Input Common Mode Range is Exceeded**

DESCRIPTION

The LM1458 and the LM1558 are general purpose dual operational amplifiers. The two amplifiers share a common bias network and power supply leads. Otherwise, their operation is completely independent.

The LM1458 is identical to the LM1558 except that the LM1458 has its specifications guaranteed over the temperature range from 0°C to +70°C instead of −55°C to +125°C.

Connection Diagram

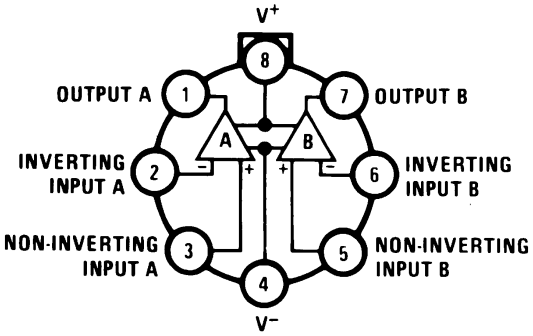

Figure 1. TO-99 Package (Top View) See Package Number LMC (O-MBCY-W8)

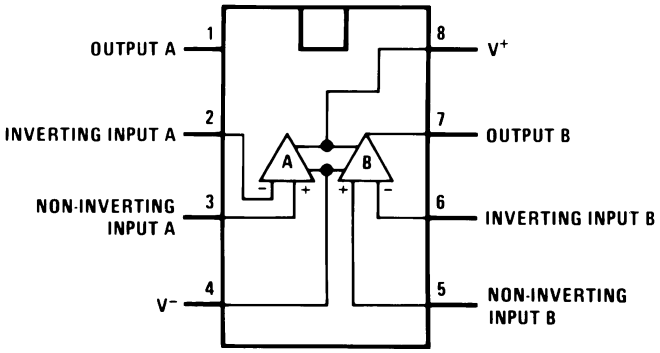

Figure 2. Dual-In-Line Package (Top View) See Package Number D (R-PDSO-G8) or P (R-PDIP-T8)

These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

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Absolute Maximum Ratings (1)(2)(3)

Supply Voltage	
LM1558	±22V
LM1458	±18V
Power Dissipation (4)	
LM1558H/LM1458H	500 mW
LM1458N	400 mW
Differential Input Voltage	±30V
Input Voltage (5)	±15V
Output Short-Circuit Duration	Continuous
Operating Temperature Range LM1558 LM1458	 −55°C to +125°C 0°C to +70°C
Storage Temperature Range	−65°C to +150°C
Lead Temperature (Soldering, 10 sec.)	260°C
Soldering Information	
PDIP Package	
Soldering (10 seconds)	260°C
SOIC Package	
Vapor Phase (60 seconds)	215°C
Infrared (15 seconds)	220°C
See AN-450 “Surface Mounting Methods and Their Effect on Product Reliability” for other methods of soldering surface mount devices.	
ESD tolerance (6)	300V

(1) “Absolute Maximum Ratings” indicate limits beyond which damage to the device may occur. Operating Ratings indicate conditions for which the device is functional, but do not guarantee specific performance limits.
(2) Refer to RETS 1558V for LM1558J and LM1558H military specifications.
(3) If Military/Aerospace specified devices are required, please contact the TI Sales Office/Distributors for availability and specifications.
(4) The maximum junction temperature of the LM1558 is 150°C, while that of the LM1458 is 100°C. For operating at elevated temperatures, devices in the LMC package must be derated based on a thermal resistance of 150°C/W, junction to ambient or 20°C/W, junction to case. For the PDIP the device must be derated based on a thermal resistance of 187°C/W, junction to ambient.
(5) For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.
(6) Human body model, 1.5 kΩ in series with 100 pF.

Electrical Characteristics (1)

Parameter	Conditions	LM1558			LM1458			Units
		Min	Typ	Max	Min	Typ	Max	
Input Offset Voltage	T_A = 25°C, R_S ≤ 10 kΩ		1.0	5.0		1.0	6.0	mV
Input Offset Current	T_A = 25°C		80	200		80	200	nA
Input Bias Current	T_A = 25°C		200	500		200	500	nA
Input Resistance	T_A = 25°C	0.3	1.0		0.3	1.0		MΩ
Supply Current Both Amplifiers	T_A = 25°C, V_S = ±15V		3.0	5.0		3.0	5.6	mA
Large Signal Voltage Gain	T_A = 25°C, V_S = ±15V V_{OUT} = ±10V, R_L ≥ 2 kΩ	50	160		20	160		V/mV
Input Offset Voltage	R_S ≤ 10 kΩ			6.0			7.5	mV
Input Offset Current				500			300	nA
Input Bias Current				1.5			0.8	µA
Large Signal Voltage Gain	V_S = ±15V, V_{OUT} = ±10V R_L ≥ kΩ	25			15			V/mV
Output Voltage Swing	V_S = ±15V, R_L = 10 kΩ R_L = 2 kΩ	±12 ±10	±14 ±13		±12 ±10	±14 ±13		V V

(1) These specifications apply for V_S = ±15V and −55°C ≤ T_A ≤ 125°C, unless otherwise specified. With the LM1458, however, all specifications are limited to 0°C ≤ T_A ≤ 70°C and V_S = ±15V.

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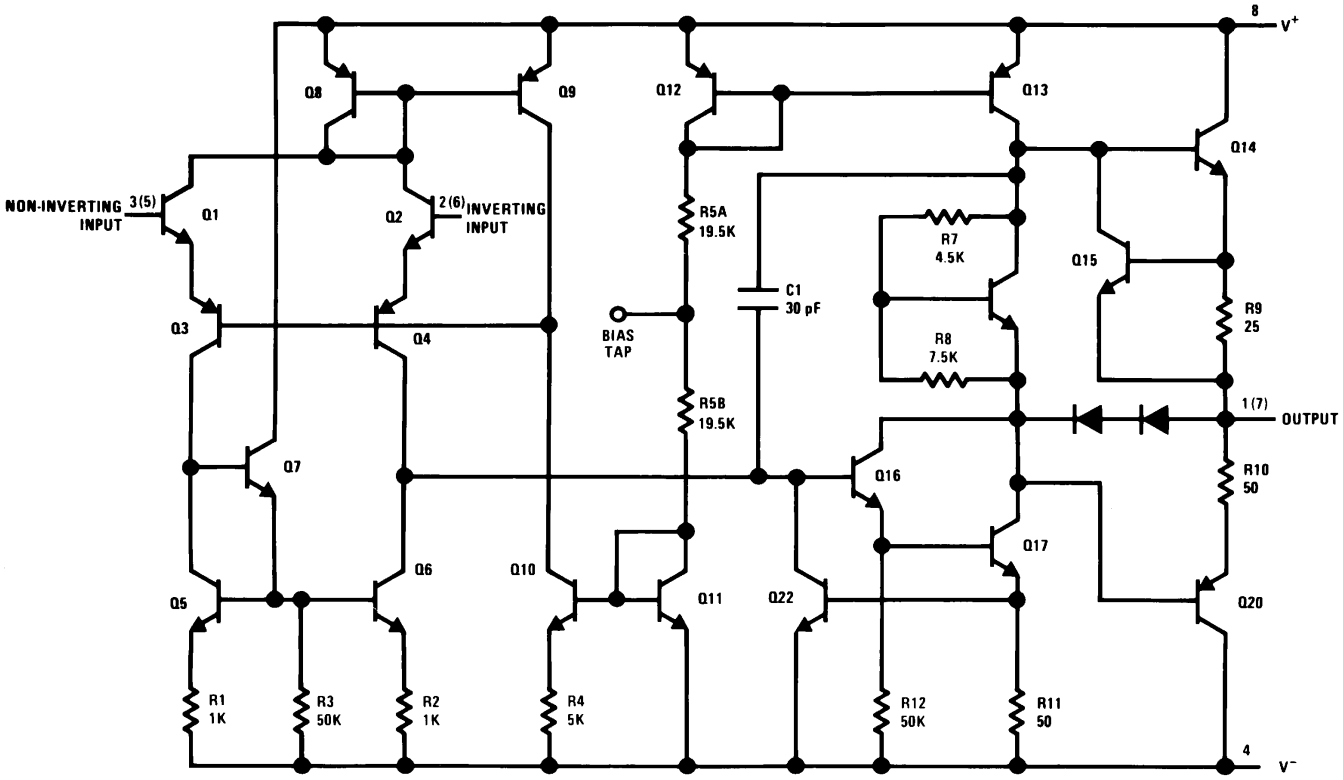
Electrical Characteristics [1] (continued)

Parameter	Conditions	LM1558			LM1458			Units
		Min	Typ	Max	Min	Typ	Max	
Input Voltage Range	V_S = ±15V	±12			±12			V
Common Mode Rejection Ratio	R_S ≤ 10 kΩ	70	90		70	90		dB
Supply Voltage Rejection Ratio	R_S ≤ 10 kΩ	77	96		77	96		dB

SCHEMATIC DIAGRAM



Numbers in parentheses are pin numbers for amplifier B.

REVISION HISTORY

Changes from Revision C (March 2013) to Revision D	Page
• Changed layout of National Data Sheet to TI format	3

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