

LM1458/LM1558 Dual Operational Amplifier

General 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.

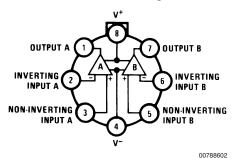
The LM1458 is identical to the LM1558 except that the LM1458 has its specifications guaranteed over the temperature range from 0°C to +70°C instead of -55°C to +125°C.

Features

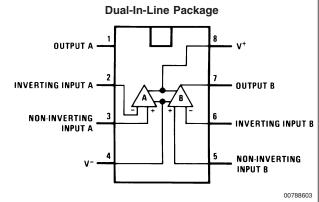
- No frequency compensation required
- Short-circuit protection
- Wide common-mode and differential voltage ranges
- Low-power consumption
- 8-lead can and 8-lead mini DIP
- No latch up when input common mode range is exceeded

Connection Diagrams

Metal Can Package



Top View Order Number LM1558H, LM1558H/883 or LM1458H See NS Package Number H08C



Top View
Order Number LM1558J/883, LM1458M,
LM1458MX or LM1458N
See NS Package Number J08A, M08A or N08E

Absolute Maximum Ratings (Note 1)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/ Distributors for availability and specifications.

(Note 5)

Supply Voltage

LM1558 ±22V LM1458 ±18V

Power Dissipation (Note 2)

LM1558H/LM1458H 500 mW LM1458N 400 mW

Differential Input Voltage ±30V
Input Voltage (Note 3) ±15V

Output Short-Circuit Duration Continuous

Operating Temperature Range

Storage Temperature Range -65°C to +150°C Lead Temperature (Soldering, 10 sec.) 260°C

Soldering Information

Dual-In-Line Package

Soldering (10 seconds) 260°C

Small Outline 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 (Note 6) 300V

Electrical Characteristics (Note 4)

Parameter	Conditions	LM1558			LM1458			Units
		Min	Тур	Max	Min	Тур	Max	
Input Offset Voltage	$T_A = 25^{\circ}C, R_S \le 10 \text{ k}\Omega$		1.0	5.0		1.0	6.0	mV
Input Offset Current	$T_A = 25^{\circ}C$		80	200		80	200	nA
Input Bias Current	$T_A = 25^{\circ}C$		200	500		200	500	nA
Input Resistance	$T_A = 25^{\circ}C$	0.3	1.0		0.3	1.0		MΩ
Supply Current Both	$T_A = 25^{\circ}C, V_S = \pm 15V$		3.0	5.0		3.0	5.6	mA
Amplifiers								
Large Signal Voltage Gain	$T_A = 25^{\circ}C, V_S = \pm 15V$	50	160		20	160		V/mV
	$V_{OUT} = \pm 10V, R_L \ge 2 k\Omega$							
Input Offset Voltage	$R_S \le 10 \text{ k}\Omega$			6.0			7.5	mV
Input Offset Current				500			300	nA
Input Bias Current				1.5			0.8	μA
Large Signal Voltage Gain	$V_{S} = \pm 15V, V_{OUT} = \pm 10V$	25			15			V/mV
	$R_L \ge k\Omega$							
Output Voltage Swing	$V_S = \pm 15V$, $R_L = 10 \text{ k}\Omega$	±12	±14		±12	±14		V
	$R_L = 2 k\Omega$	±10	±13		±10	±13		V
Input Voltage Range	V _S = ±15V	±12			±12			V
Common Mode	$R_S \le 10 \text{ k}\Omega$	70	90		70	90		dB
Rejection Ratio								
Supply Voltage	$R_S \le 10 \text{ k}\Omega$	77	96		77	96		dB
Rejection Ratio								

Note 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.

Note 2: 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 H08 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 DIP the device must be derated based on a thermal resistance of 187°C/W, junction to ambient.

Note 3: For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.

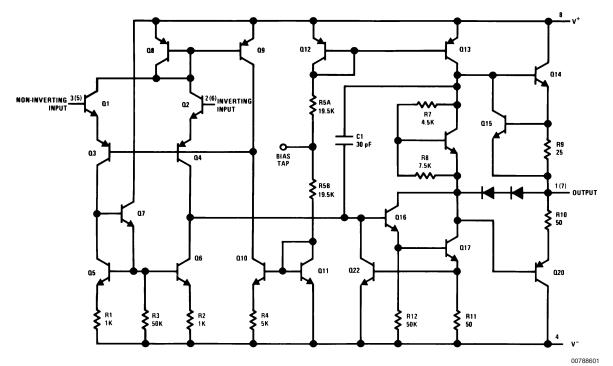
Note 4: These specifications apply for $V_S = \pm 15V$ and $-55^{\circ}C \le T_A \le 125^{\circ}C$, unless otherwise specified. With the LM1458, however, all specifications are limited to $0^{\circ}C \le T_A \le 70^{\circ}C$ and $V_S = \pm 15V$.

Note 5: Refer to RETS 1558V for LM1558J and LM1558H military specifications.

Note 6: Human body model, 1.5 k $\!\Omega$ in series with 100 pF.

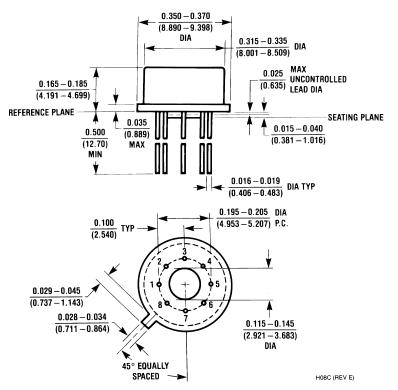
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Schematic Diagram

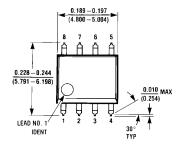


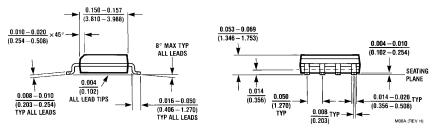
Numbers in parentheses are pin numbers for amplifier B.

Physical Dimensions inches (millimeters) unless otherwise noted



Metal Can Package (H) Order Number LM1558H, LM1558H/883 or LM1458H NS Package Number H08C

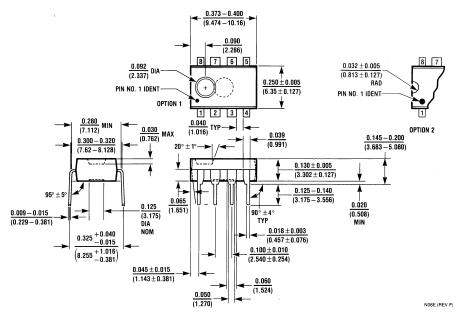




Small Outline Package (M) Order Number LM1458M or LM1458MX **NS Package Number M08A**

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Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



Molded Dual-In-Line Package (N) Order Number LM1458N NS Package Number N08E

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