

Dual Operational Amplifier

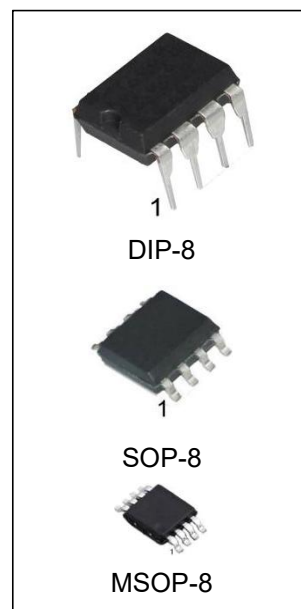
Features

- No Frequency Compensation Required.
- Short-Circuit Protection.
- Wide Common-Mode and Differential Voltage Ranges.
- Low-Power Consumption.
- 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.

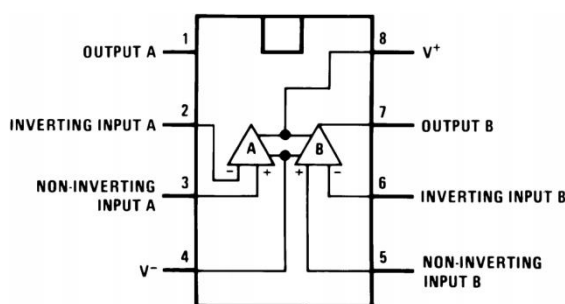
The LM1458 is identical to the LM1558 except that the LM1458 has its specifications guaranteed over the temperature range from 0°C to +70°C instead of -55°C to +125°C.



Ordering Information

DEVICE	Package Type	MARKING	Packing	Packing Qty
LM1458N	DIP-8	LM1458	TUBE	2000pcs/box
LM1458M/TR	SOP-8	LM1458	REEL	2500pcs/reel
LM1458MM/TR	MSOP-8	LM1458	REEL	3000pcs/reel
LM1558N	DIP-8	LM1558	TUBE	2000pcs/box
LM1558M/TR	SOP-8	LM1558	REEL	2500pcs/reel
LM1558MM/TR	MSOP-8	LM1558	REEL	3000pcs/reel

Connection Diagram



Dual-In-Line Package
DIP-8/SOP-8/MSOP-8

Absolute Maximum Ratings

Supply Voltage	
LM1558	±22V
LM1458	±18V
Power Dissipation	
LM1558M/LM1458M	500 mW
LM1558N/LM1458N	400 mW
Differential Input Voltage	±30V
Input Voltage	±15V
Output Short-Circuit Duration	Continuous
Operating Temperature Range	
LM1558	–55°C to +125°C
LM1458	0°C to +70°C
Storage Temperature Range	–65°C to +150°C
Lead Temperature (Soldering, 10 sec.)	260°C
See AN-450 "Surface Mounting Methods and Their Effect on Product Reliability" for other methods of soldering surface mount devices.	
ESD tolerance	300V

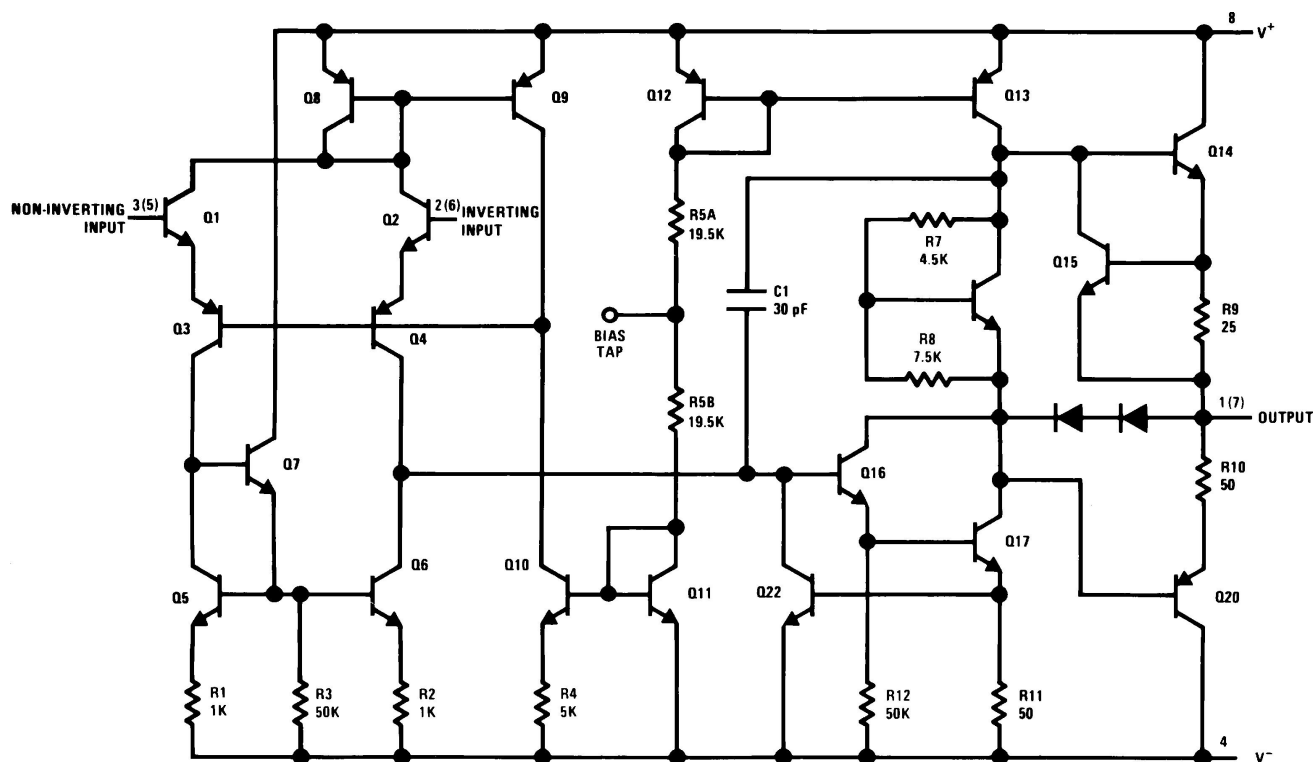
1. "Absolute Maximum Ratings" indicate limits beyond which damage to the device may occur. Operating Ratings indicate conditions for which the device is functional, but do not guarantee specific performance limits.
2. The maximum junction temperature of the LM1558 is 150°C, while that of the LM1458 is 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.
3. For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.
4. 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	$T_A = 25^{\circ}\text{C}$, $R_S \leq 10\text{ k}\Omega$		1.0	5.0		1.0	6.0	mV
Input Offset Current	$T_A = 25^{\circ}\text{C}$		80	200		80	200	nA
Input Bias Current	$T_A = 25^{\circ}\text{C}$		200	500		200	500	nA
Input Resistance	$T_A = 25^{\circ}\text{C}$	0.3	1.0		0.3	1.0		M Ω
Supply Current Both Amplifiers	$T_A = 25^{\circ}\text{C}$, $V_S = \pm 15\text{V}$		3.0	5.0		3.0	5.6	mA
Large Signal Voltage Gain	$T_A = 25^{\circ}\text{C}$, $V_S = \pm 15\text{V}$ $V_{OUT} = \pm 10\text{V}$, $R_L \geq 2\text{ k}\Omega$	50	160		20	160		V/mV
Input Offset Voltage	$R_S \leq 10\text{ k}\Omega$			6.0			7.5	mV
Input Offset Current				500			300	nA
Input Bias Current				1.5			0.8	μA
Large Signal Voltage Gain	$V_S = \pm 15\text{V}$, $V_{OUT} = \pm 10\text{V}$ $R_L \geq \text{k}\Omega$	25			15			V/mV
Output Voltage Swing	$V_S = \pm 15\text{V}$, $R_L = 10\text{ k}\Omega$ $R_L = 2\text{ k}\Omega$	± 12 ± 10	± 14 ± 13		± 12 ± 10	± 14 ± 13		V V
Input Voltage Range	$V_S = \pm 15\text{V}$	± 12			± 12			V
Common Mode Rejection Ratio	$R_S \leq 10\text{ k}\Omega$	70	90		70	90		dB
Supply Voltage Rejection Ratio	$R_S \leq 10\text{ k}\Omega$	77	96		77	96		dB

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

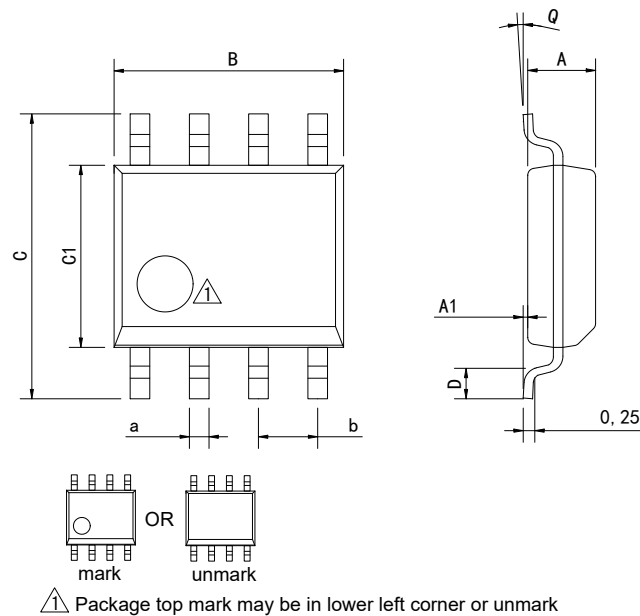
Schematic Diagram



Numbers in parentheses are pin numbers for amplifier B.

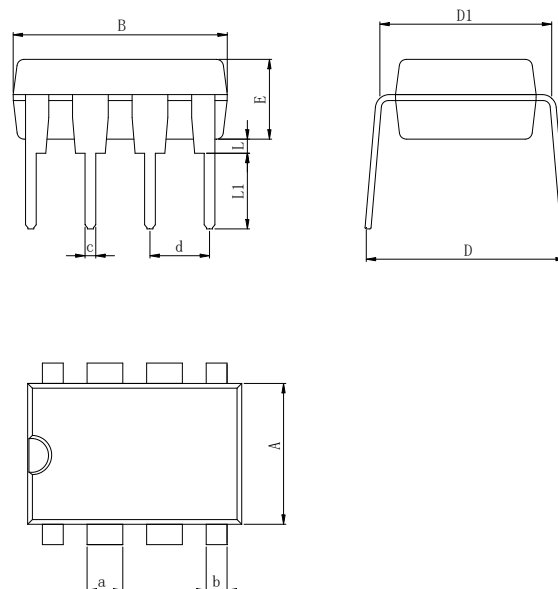
Physical Dimensions

SOP-8



Dimensions In Millimeters(SOP-8)									
Symbol:	A	A1	B	C	C1	D	Q	a	b
Min:	1.35	0.05	4.90	5.80	3.80	0.40	0°	0.35	1.27 BSC
Max:	1.55	0.20	5.10	6.20	4.00	0.80	8°	0.45	

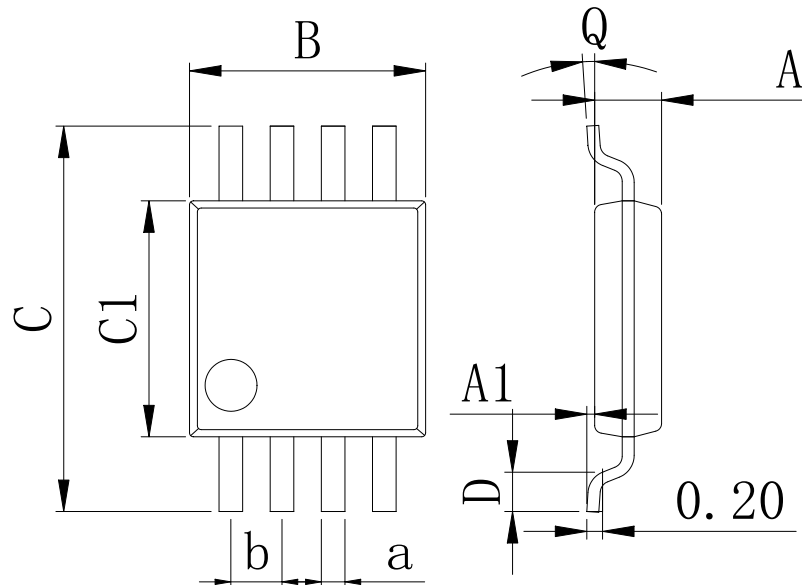
DIP-8



Dimensions In Millimeters(DIP-8)											
Symbol:	A	B	D	D1	E	L	L1	a	b	c	d
Min:	6.10	9.00	8.10	7.42	3.10	0.50	3.00	1.50	0.85	0.40	2.54 BSC
Max:	6.68	9.50	10.9	7.82	3.55	0.70	3.60	1.55	0.90	0.50	

Physical Dimensions

MSOP-8



Dimensions In Millimeters(MSOP-8)									
Symbol:	A	A1	B	C	C1	D	Q	a	b
Min:	0.80	0.05	2.90	4.75	2.90	0.35	0°	0.25	0.65 BSC
Max:	0.90	0.20	3.10	5.05	3.10	0.75	8°	0.35	

Revision History

REVISION NUMBER	DATE	REVISION	PAGE
V1.0	2015-10	New	1-8
V1.1	2019-8	Update encapsulation type、Updated DIP-8 dimension	1、 2、 5
V1.2	2024-11	Update Lead Temperature	2
V1.3	2025-12	Update important statements、 Update SOP-8 Dimension drawing	5、 8

IMPORTANT STATEMENT:

Huaguan Semiconductor reserves the right to change products and services offered without prior notice. Customers should obtain the latest relevant information before placing orders and verify that such information is current and complete. Huaguan Semiconductor assumes no responsibility or liability for altered documents.

Customers are responsible for complying with safety standards and implementing safety measures when using Huaguan Semiconductor products in system design and end-product manufacturing. You assume full responsibility for: selecting the appropriate Huaguan Semiconductor products for your application; designing, validating, and testing your application; and ensuring that your application complies with applicable standards and all other safety, security, or other requirements. This is to prevent potential risks that may lead to personal injury or property damage.

Huaguan Semiconductor products are not approved for use in life support, military, aerospace, or other high-risk applications. Huaguan products are neither intended nor warranted for use in such systems or equipment. Any failure or malfunction may lead to personal injury or severe property damage. Such applications are deemed "Unsafe Use." Unsafe Use includes, but is not limited to: surgical and medical equipment, nuclear energy control equipment, aircraft or spacecraft instruments, control or operation of vehicle power, braking, or safety systems, traffic signal instruments, all types of safety devices, and any other applications intended to support or sustain life. Huaguan Semiconductor shall not be liable for consequences resulting from Unsafe Use in these fields. Users must independently evaluate and assume all risks. Any issues, liabilities, or losses arising from the use of products beyond their approved applications shall be solely borne by the user. Users may not claim any compensation from Huaguan Semiconductor based on these terms. If any third party claims against Huaguan Semiconductor due to such Unsafe Use, the user shall compensate Huaguan Semiconductor for all resulting damages and liabilities.

Huaguan Semiconductor provides technical and reliability data (including datasheets), design resources (including reference designs), application or other design advice, web tools, safety information, and other resources for its semiconductor products. However, no guarantee is made that these resources are free from defects, and no express or implied warranties are provided. The use of testing and other quality control techniques is limited to Huaguan Semiconductor's quality assurance scope. Not all parameters of each device are tested.

Huaguan Semiconductor's documentation authorizes you to use these resources only for developing applications related to the products described herein. You are not granted rights to any other intellectual property of Huaguan Semiconductor or any third party. Any other reproduction or display of these resources is strictly prohibited. You shall fully indemnify Huaguan Semiconductor and its agents against any claims, damages, costs, losses, and liabilities arising from your use of these resources. Huaguan Semiconductor shall not be held responsible.