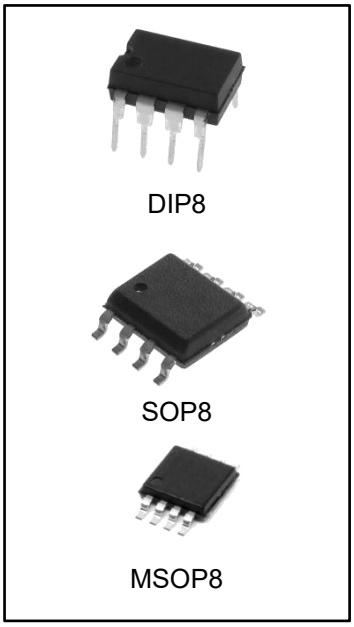
Dual Operational Amplifier

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

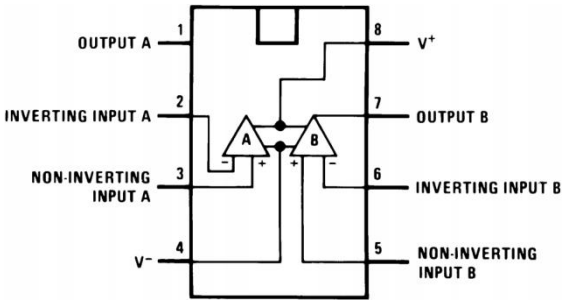
The LM1458 and the LM1558 are general purpose dual operational amplifiers. The two amplifiers share a common bias network and power supply leads. Otherwise, their operation is completely independent.

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	DIP8	LM1458	TUBE	2000pcs/box
LM1458M/TR	SOP8	LM1458	REEL	2500pcs/reel
LM1458MM/TR	MSOP8	LM1458	REEL	3000pcs/reel
LM1558N	DIP8	LM1558	TUBE	2000pcs/box
LM1558M/TR	SOP8	LM1558	REEL	2500pcs/reel
LM1558MM/TR	MSOP8	LM1558	REEL	3000pcs/reel

Connection Diagram



Dual-In-Line Package

DIP8/SOP8/MSOP8

Absolute Maximum Ratings

Supply Voltage	
LM1558	±22V
LM1458	±18V
Power Dissipation	
LM1558H/LM1458H	500 mW
LM1458N	400 mW
Differential Input Voltage	±30V
Input Voltage	±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:	
DIP Package:Soldering (10 seconds)	260°C
SOP Package:Vapor Phase (60 seconds)	215°C
SOP Package: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	300V

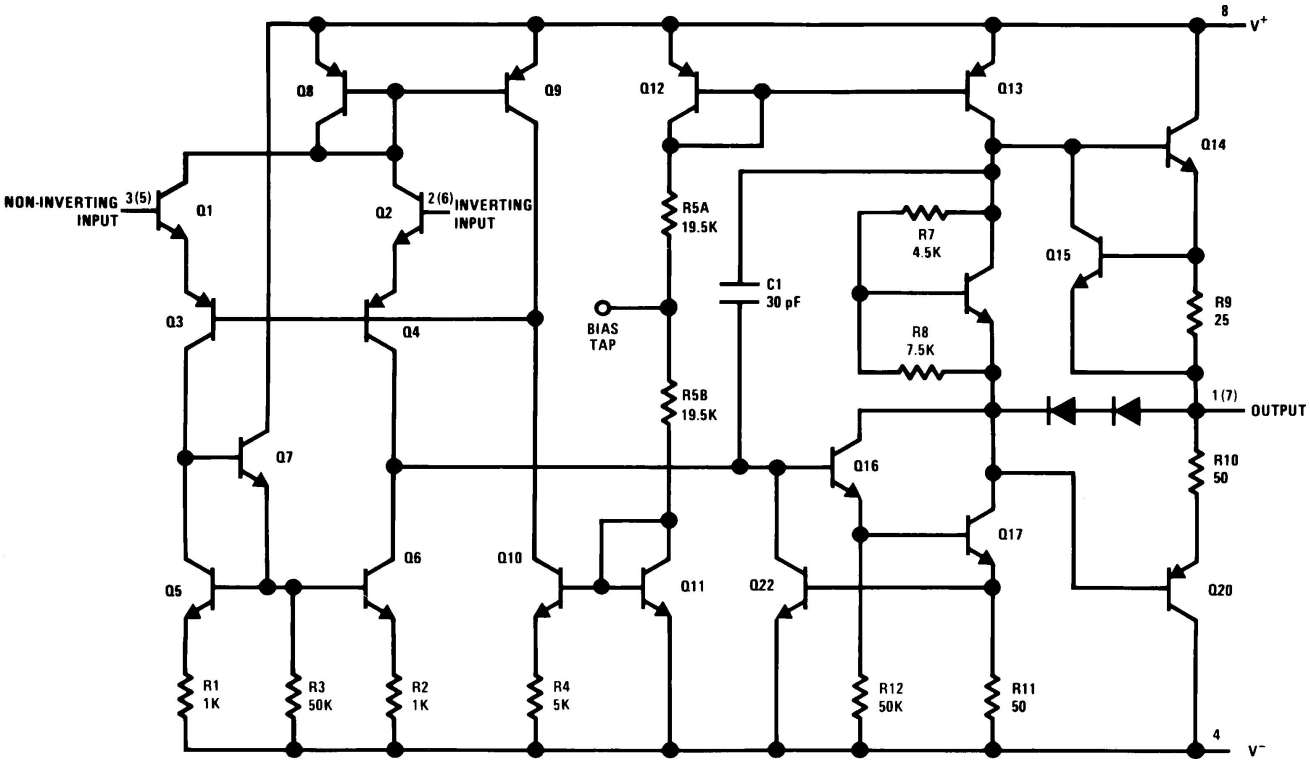
1. “Absolute Maximum Ratings” indicate limits beyond which damage to the device may occur. Operating Ratings indicate conditions for which the device is functional, but do not guarantee specific performance limits.
2. The maximum junction temperature of the LM1558 is 150°C, while that of the LM1458 is 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°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 BothAmplifiers	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
Input Voltage Range	V_S = ±15V	±12			±12			V
Common ModeRejection Ratio	R_S ≤ 10 kΩ	70	90		70	90		dB
Supply VoltageRejection Ratio	R_S ≤ 10 kΩ	77	96		77	96		dB

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

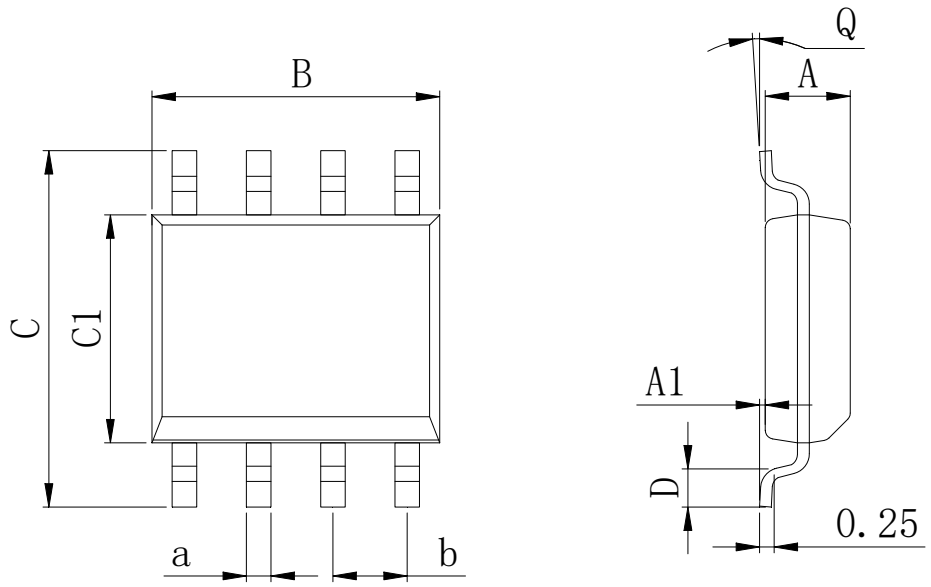
SCHEMATIC DIAGRAM



Numbers in parentheses are pin numbers for amplifier B.

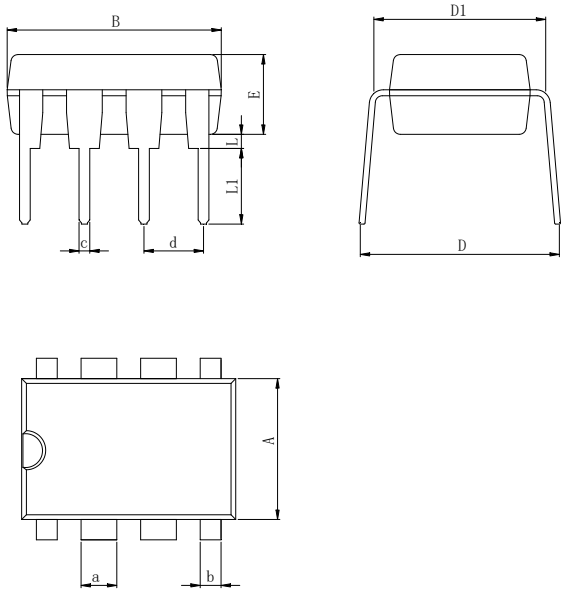
Physical Dimensions

SOP8



Dimensions In Millimeters(SOP8)									
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	

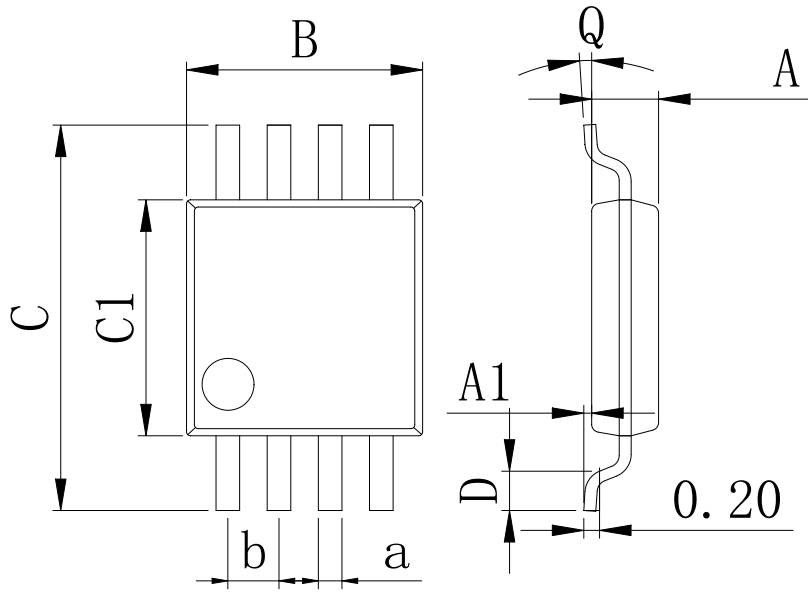
DIP8



Dimensions In Millimeters(DIP8)											
Symbol:	A	B	D	D1	E	L	L1	a	b	c	d
Min:	6.10	9.00	8.40	7.42	3.10	0.50	3.00	1.50	0.85	0.40	2.54 BSC
Max:	6.68	9.50	9.00	7.82	3.55	0.70	3.60	1.55	0.90	0.50	

Physical Dimensions

MSOP8



Dimensions In Millimeters(MSOP8)									
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	

IMPORTANT STATEMENT:

Huaguan Semiconductor reserves the right to change its products and services without notice. Before ordering, the customer shall obtain the latest relevant information and verify whether the information is up to date and complete. Huaguan Semiconductor does not assume any responsibility or obligation for the altered documents.

Customers are responsible for complying with safety standards and taking safety measures when using Huaguan Semiconductor products for system design and machine manufacturing. You will bear all the following responsibilities: select the appropriate Huaguan Semiconductor products for your application; Design, validate and test your application; Ensure that your application meets the appropriate standards and any other safety, security or other requirements. To avoid the occurrence of potential risks that may lead to personal injury or property loss.

Huaguan Semiconductor products have not been approved for applications in life support, military, aerospace and other fields, and Huaguan Semiconductor will not bear the consequences caused by the application of products in these fields.

The technical and reliability data (including data sheets), design resources (including reference designs), application or other design suggestions, network tools, safety information and other resources provided for the performance of semiconductor products produced by Huaguan Semiconductor are not guaranteed to be free from defects and no warranty, express or implied, is made. The use of testing and other quality control technologies is limited to the quality assurance scope of Huaguan Semiconductor. Not all parameters of each device need to be tested.

The documentation of Huaguan Semiconductor authorizes you to use these resources only for developing the application of the product described in this document. You have no right to use any other Huaguan Semiconductor intellectual property rights or any third party intellectual property rights. It is strictly forbidden to make other copies or displays of these resources. You should fully compensate Huaguan Semiconductor and its agents for any claims, damages, costs, losses and debts caused by the use of these resources. Huaguan Semiconductor accepts no liability for any loss or damage caused by infringement.