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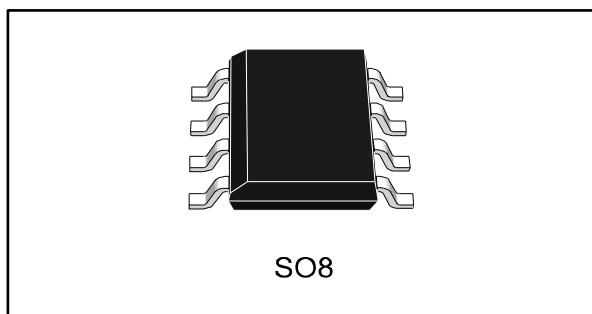


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## High-performance, dual operational amplifier

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Datasheet - production data



### Features

- Low power consumption
- Large input voltage range
- No latch-up
- High gain
- Short-circuit protection
- No frequency compensation required

### Applications

- Summing amplifier
- Voltage follower
- Integrator
- Active filtering
- Function generator

### Description

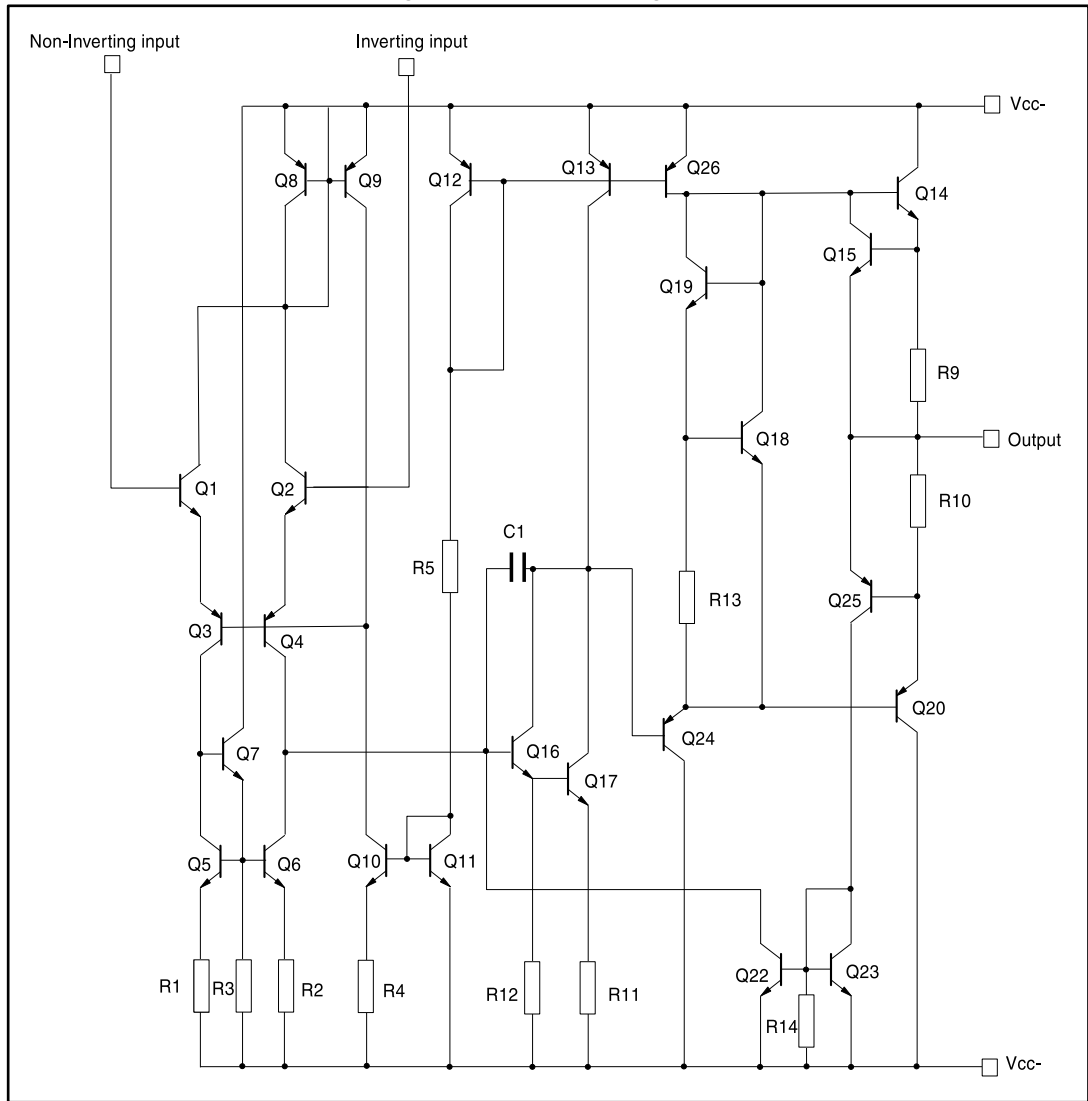
The MC1458 is a high-performance, monolithic, dual operational amplifier intended for a wide range of analog applications. The high gain and wide range of operating voltages provide superior performance in integrator, summing amplifiers, and general feedback applications.

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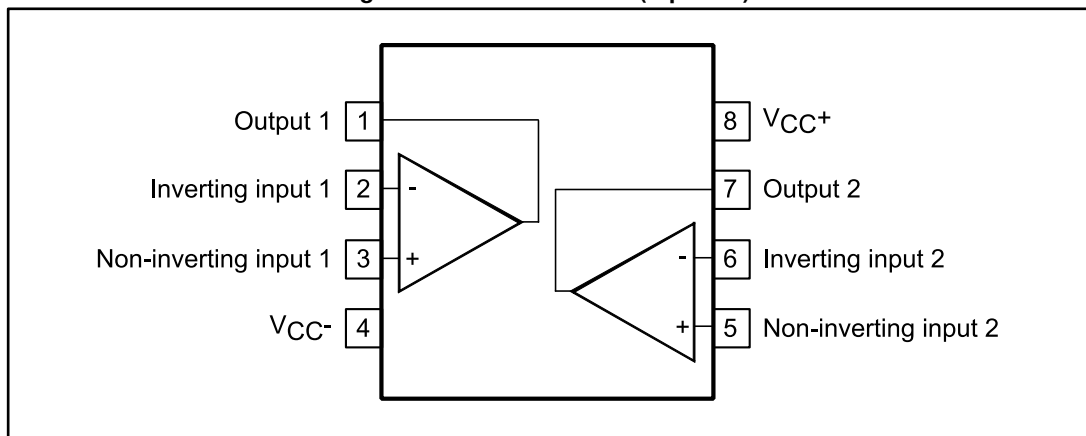
# 1 Schematic diagram

Figure 1: Schematic diagram



## 2 Package pin connections

Figure 2: Pin connections (top view)



### 3 Absolute maximum ratings

Table 1: Absolute maximum ratings

Symbol	Parameter	MC1458DT	MC1458IDT	Unit
V <sub>cc</sub>	Supply voltage	±22		V
V <sub>i</sub>	Input voltage	±15		
V <sub>id</sub>	Differential input voltage	±30		
	Output short-circuit duration	Infinite		
P <sub>tot</sub>	Power dissipation	300		mW
T <sub>oper</sub>	Operating free-air temperature range	0 to 70	-40 to 105	°C
T <sub>stg</sub>	Storage temperature range	-65 to 150		

## 4 Electrical characteristics

Table 2: Electrical characteristics for VCC = ±15 V, Tamb = 25 °C (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit		
V <sub>io</sub>	Input offset voltage, R <sub>s</sub> ≤ 10 kΩ	T <sub>amb</sub> = 25 °C		1	5	mV	
		T <sub>min</sub> ≤ T <sub>amb</sub> ≤ T <sub>max</sub>			6		
I <sub>io</sub>	Input offset current	T <sub>amb</sub> = 25 °C		2	200	nA	
		T <sub>min</sub> ≤ T <sub>amb</sub> ≤ T <sub>max</sub>			300		
I <sub>ib</sub>	Input bias current	T <sub>amb</sub> = 25 °C		30	500		
		T <sub>min</sub> ≤ T <sub>amb</sub> ≤ T <sub>max</sub>			800		
A <sub>vd</sub>	Large signal voltage gain, V <sub>o</sub> = ±10 V, R <sub>L</sub> = 2 kΩ	T <sub>amb</sub> = 25 °C		50	200	V/mV	
		T <sub>min</sub> ≤ T <sub>amb</sub> ≤ T <sub>max</sub>		25			
SVR	Supply voltage rejection ratio, R <sub>s</sub> ≤ 10 kΩ	T <sub>amb</sub> = 25 °C		77	90	dB	
		T <sub>min</sub> ≤ T <sub>amb</sub> ≤ T <sub>max</sub>		77			
I <sub>cc</sub>	Supply current, all amp, no load	T <sub>amb</sub> = 25 °C		2.3	5	mA	
		T <sub>min</sub> ≤ T <sub>amb</sub> ≤ T <sub>max</sub>			6		
V <sub>icm</sub>	Input common-mode voltage range	T <sub>amb</sub> = 25 °C		±12		V	
		T <sub>min</sub> ≤ T <sub>amb</sub> ≤ T <sub>max</sub>		±12			
CMR	Common-mode rejection ratio, R <sub>s</sub> ≤ 10 kΩ	T <sub>amb</sub> = 25 °C		70	90	dB	
		T <sub>min</sub> ≤ T <sub>amb</sub> ≤ T <sub>max</sub>		70			
I <sub>os</sub>	Output short-circuit source	T <sub>amb</sub> = 25 °C		10	20	35	mA
±V <sub>opp</sub>	Output voltage swing	T <sub>amb</sub> = 25 °C, R <sub>L</sub> ≤ 10 kΩ		12	14	V	
		T <sub>amb</sub> = 25 °C, R <sub>L</sub> ≤ 2 kΩ		10	13		
		T <sub>min</sub> ≤ T <sub>amb</sub> ≤ T <sub>max</sub> , R <sub>L</sub> ≤ 10 kΩ		12			
		T <sub>min</sub> ≤ T <sub>amb</sub> ≤ T <sub>max</sub> , R <sub>L</sub> ≤ 2 kΩ		10			
SR	Slew rate	V <sub>I</sub> = ±10 V, R <sub>L</sub> = 2 kΩ, C <sub>L</sub> = 100 pF, unity gain		0.2	0.8		V/μs
t <sub>r</sub>	Rise time	V <sub>I</sub> = ±20 mV, R <sub>L</sub> = 2 kΩ, C <sub>L</sub> = 100 pF, unity gain			0.3		μs
K <sub>ov</sub>	Overshoot	V <sub>I</sub> = ±20 mV, R <sub>L</sub> = 2 kΩ, C <sub>L</sub> = 100 pF, unity gain			5		%
R <sub>i</sub>	Input resistance		0.3	2		MΩ	
Z <sub>ic</sub>	Common-mode input impedance			200			
C <sub>i</sub>	Input capacitance			1.4		pF	
R <sub>o</sub>	Output resistance			75		Ω	
FPB	Full power bandwidth	R <sub>L</sub> = 2 kΩ, V <sub>O</sub> ≥ ±10 V, A <sub>VD</sub> = 1, THD ≤ 5 %			14		kHz
B	Unity gain bandwidth	V <sub>I</sub> = 10 mV, R <sub>L</sub> = 2 kΩ, C <sub>L</sub> = 100 pF			1		MHz
GBP	Gain bandwidth product	V <sub>I</sub> = 10 mV, R <sub>L</sub> = 2 kΩ, C <sub>L</sub> = 100 pF, f = 100 kHz		0.4	1		
THD	Total harmonic distortion	f = 1 kHz, A <sub>v</sub> = 20 dB, R <sub>L</sub> = 2 kΩ, C <sub>L</sub> = 100 pF, V <sub>O</sub> = 2 V <sub>pp</sub>			0.02		%

Symbol	Parameter		Min.	Typ.	Max.	Unit
$e_n$	Equivalent input noise voltage	$f = 1 \text{ kHz}, R_s = 100 \Omega$		45		nV/ $\sqrt{\text{Hz}}$
$\phi_m$	Phase margin			65		Degrees
$A_m$	Gain margin			11		dB
$V_{o1}/V_{o2}$	Channel separation			120		



## 5 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK® is an ST trademark.

### 5.1 SO8 package information

Figure 3: SO8 package outline

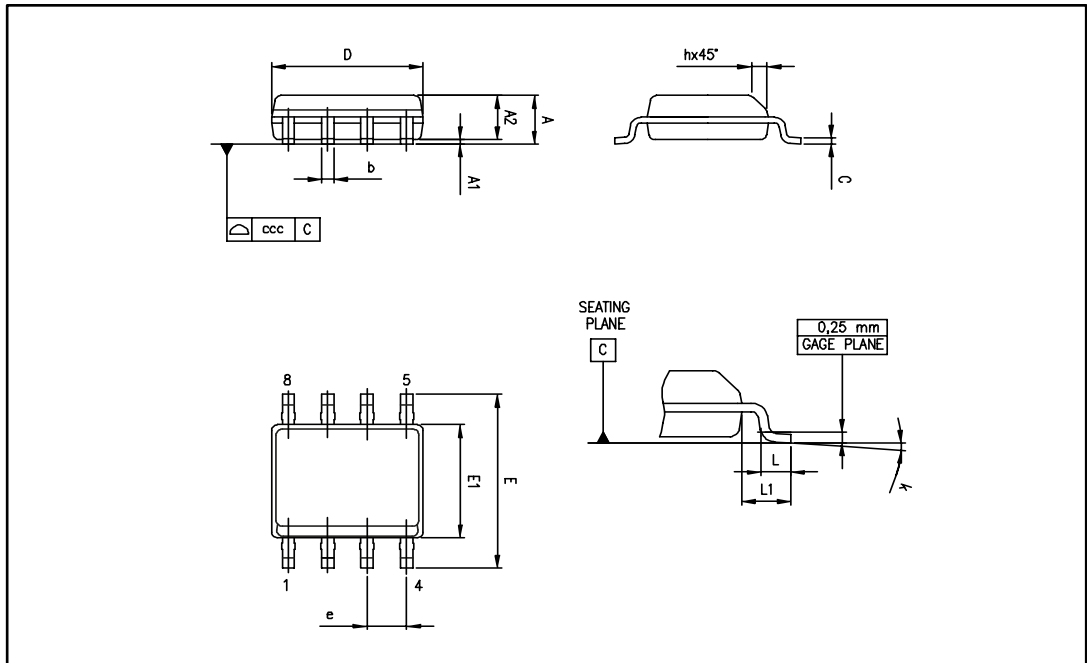


Table 3: SO8 mechanical data

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max
A			1.75			0.069
A1	0.10		0.25	0.004		0.010
A2	1.25			0.049		
b	0.28		0.48	0.011		0.019
c	0.17		0.23	0.007		0.010
D	4.80	4.90	5.00	0.189	0.193	0.197
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e		1.27			0.050	
h	0.25		0.50	0.010		0.020
L	0.40		1.27	0.016		0.050
L1		1.04			0.040	
k	0°		8°	0°		8°
ccc			0.10			0.004

## 6 Ordering information

Table 4: Order codes

Order code	Temperature range	Package	Packaging	Marking
MC1458DT	0 °C to 70 °C	SO8	Tape and reel	1458
MC1458IDT	-40 °C to 105 °C			1458I

## 7 Revision history

**Table 5: Document revision history**

Date	Revision	Changes
21-Sep-2016	4	Moved part number MC1558 to a separate datasheet. Removed DIP8 package Deleted "Device summary table", created <a href="#">Table 4: "Order codes"</a> in its place, and added the latter to <a href="#">Section 6: "Ordering information"</a> . Updated <a href="#">Section 5.1: "SO8 package information"</a> Updated document layout

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