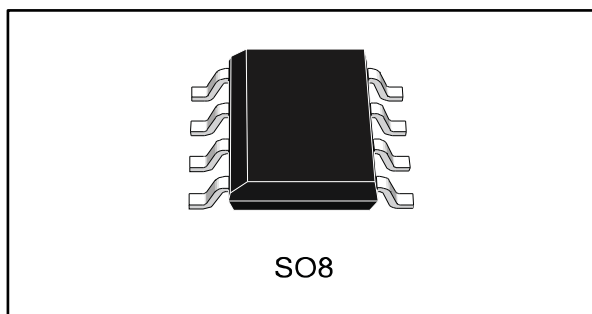

High-performance, dual operational amplifier

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

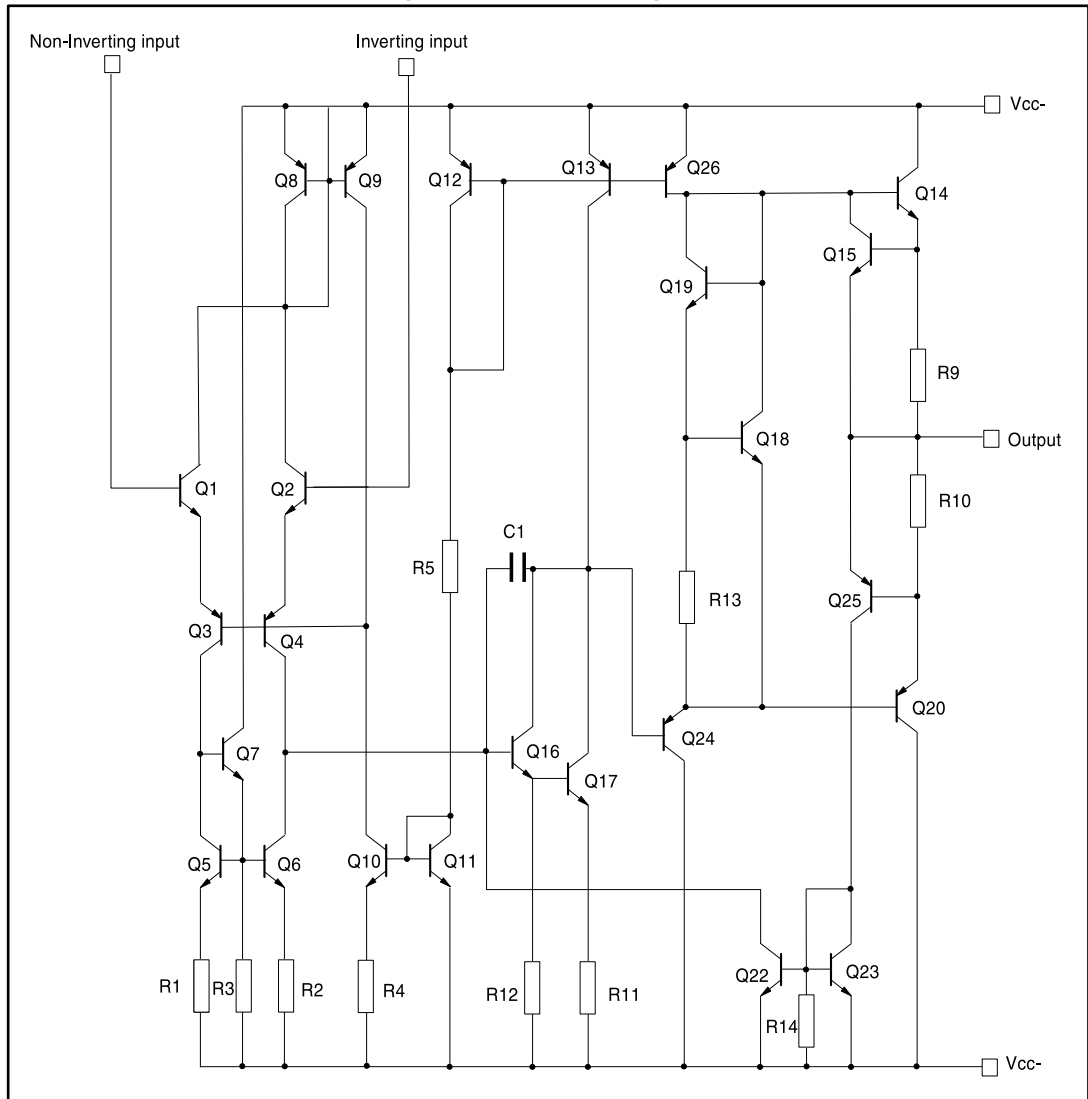
The MC1458 is a high-performance, monolithic, dual operational amplifier intended for a wide range of analog applications. The high gain and wide range of operating voltages provide superior performance in integrator, summing amplifiers, and general feedback applications.

Contents

1	Schematic diagram.....	3
2	Package pin connections.....	4
3	Absolute maximum ratings.....	5
4	Electrical characteristics	6
5	Package information	8
	5.1 SO8 package information.....	9
6	Ordering information.....	10
7	Revision history	11

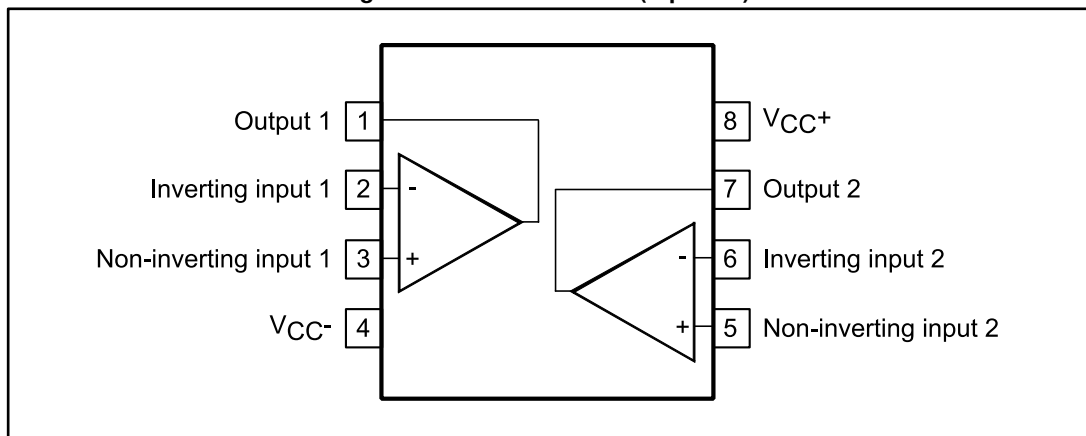
1 Schematic diagram

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 _{cc}	Supply voltage	±22		V
V _i	Input voltage	±15		
V _{id}	Differential input voltage	±30		
	Output short-circuit duration	Infinite		
P _{tot}	Power dissipation	300		mW
T _{oper}	Operating free-air temperature range	0 to 70	-40 to 105	°C
T _{stg}	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 _{io}	Input offset voltage, R _s ≤ 10 kΩ	T _{amb} = 25 °C		1	5	mV	
		T _{min} ≤ T _{amb} ≤ T _{max}			6		
I _{io}	Input offset current	T _{amb} = 25 °C		2	200	nA	
		T _{min} ≤ T _{amb} ≤ T _{max}			300		
I _{ib}	Input bias current	T _{amb} = 25 °C		30	500		
		T _{min} ≤ T _{amb} ≤ T _{max}			800		
A _{vd}	Large signal voltage gain, V _o = ±10 V, R _L = 2 kΩ	T _{amb} = 25 °C		50	200	V/mV	
		T _{min} ≤ T _{amb} ≤ T _{max}		25			
SVR	Supply voltage rejection ratio, R _s ≤ 10 kΩ	T _{amb} = 25 °C		77	90	dB	
		T _{min} ≤ T _{amb} ≤ T _{max}		77			
I _{cc}	Supply current, all amp, no load	T _{amb} = 25 °C		2.3	5	mA	
		T _{min} ≤ T _{amb} ≤ T _{max}			6		
V _{icm}	Input common-mode voltage range	T _{amb} = 25 °C		±12		V	
		T _{min} ≤ T _{amb} ≤ T _{max}		±12			
CMR	Common-mode rejection ratio, R _s ≤ 10 kΩ	T _{amb} = 25 °C		70	90	dB	
		T _{min} ≤ T _{amb} ≤ T _{max}		70			
I _{os}	Output short-circuit source	T _{amb} = 25 °C		10	20	35	mA
±V _{opp}	Output voltage swing	T _{amb} = 25 °C, R _L ≤ 10 kΩ		12	14	V	
		T _{amb} = 25 °C, R _L ≤ 2 kΩ		10	13		
		T _{min} ≤ T _{amb} ≤ T _{max} , R _L ≤ 10 kΩ		12			
		T _{min} ≤ T _{amb} ≤ T _{max} , R _L ≤ 2 kΩ		10			
SR	Slew rate	V _I = ±10 V, R _L = 2 kΩ, C _L = 100 pF, unity gain		0.2	0.8		V/μs
t _r	Rise time	V _I = ±20 mV, R _L = 2 kΩ, C _L = 100 pF, unity gain			0.3		μs
K _{ov}	Overshoot	V _I = ±20 mV, R _L = 2 kΩ, C _L = 100 pF, unity gain			5		%
R _i	Input resistance		0.3	2		MΩ	
Z _{ic}	Common-mode input impedance			200			
C _i	Input capacitance			1.4		pF	
R _o	Output resistance			75		Ω	
FPB	Full power bandwidth	R _L = 2 kΩ, V _O ≥ ±10 V, A _{VD} = 1, THD ≤ 5 %			14		kHz
B	Unity gain bandwidth	V _I = 10 mV, R _L = 2 kΩ, C _L = 100 pF			1		MHz
GBP	Gain bandwidth product	V _I = 10 mV, R _L = 2 kΩ, C _L = 100 pF, f = 100 kHz		0.4	1		
THD	Total harmonic distortion	f = 1 kHz, A _v = 20 dB, R _L = 2 kΩ, C _L = 100 pF, V _O = 2 V _{pp}			0.02		%

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

5 Package information

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5.1 SO8 package information

Figure 3: SO8 package outline

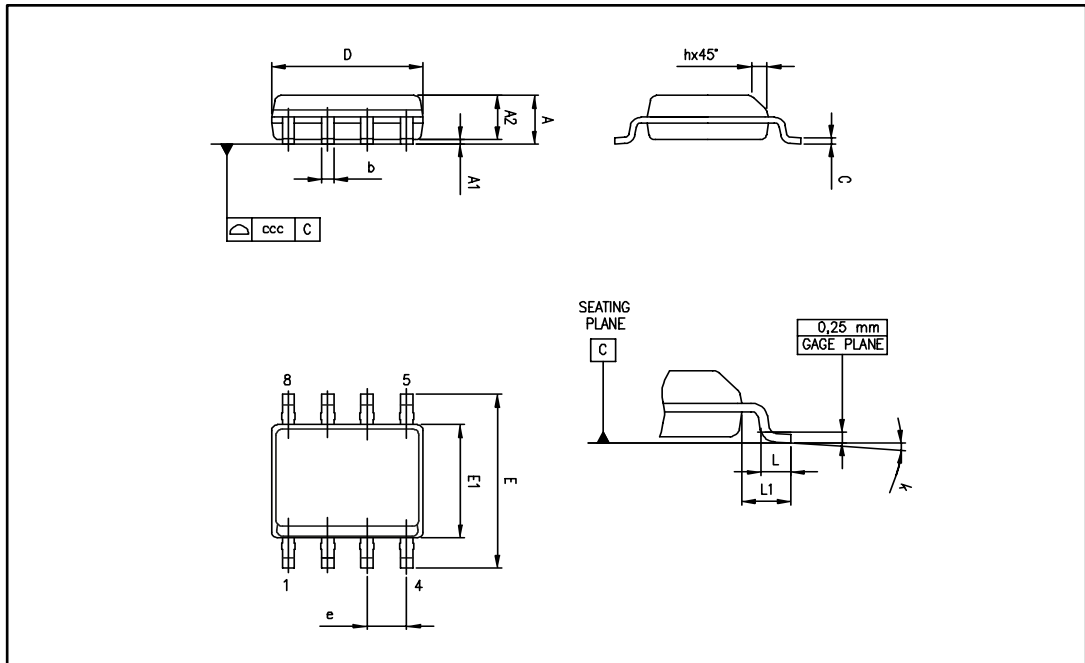


Table 3: SO8 mechanical data

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 Table 4: "Order codes" in its place, and added the latter to Section 6: "Ordering information" . Updated Section 5.1: "SO8 package information" Updated document layout

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