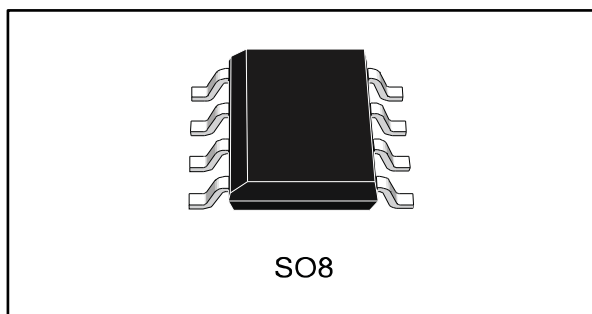


High-performance, dual operational amplifier

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

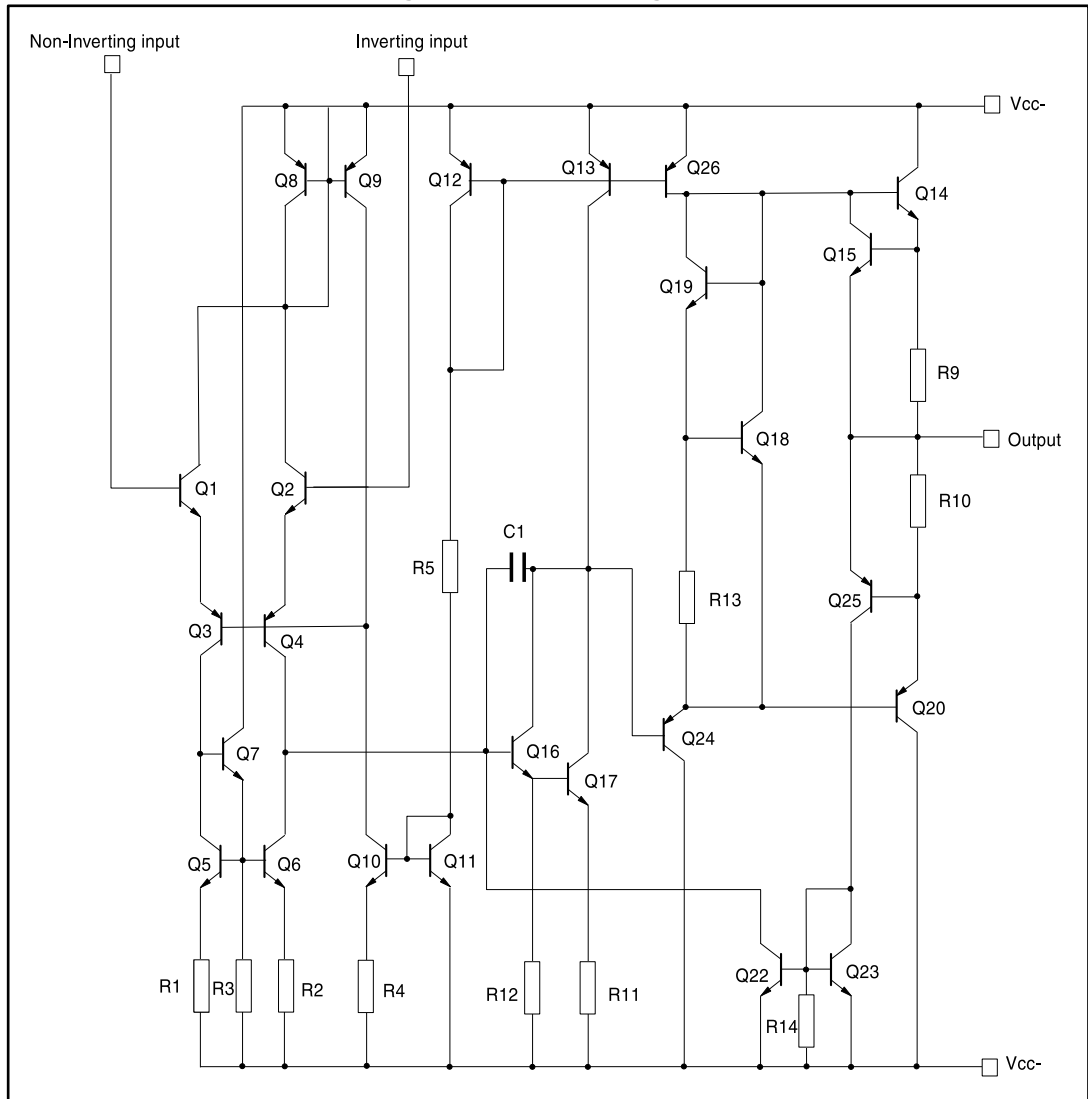
The MC1458 is a high-performance, monolithic, dual operational amplifier intended for a wide range of analog applications. The high gain and wide range of operating voltages provide superior performance in integrator, summing amplifiers, and general feedback applications.

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

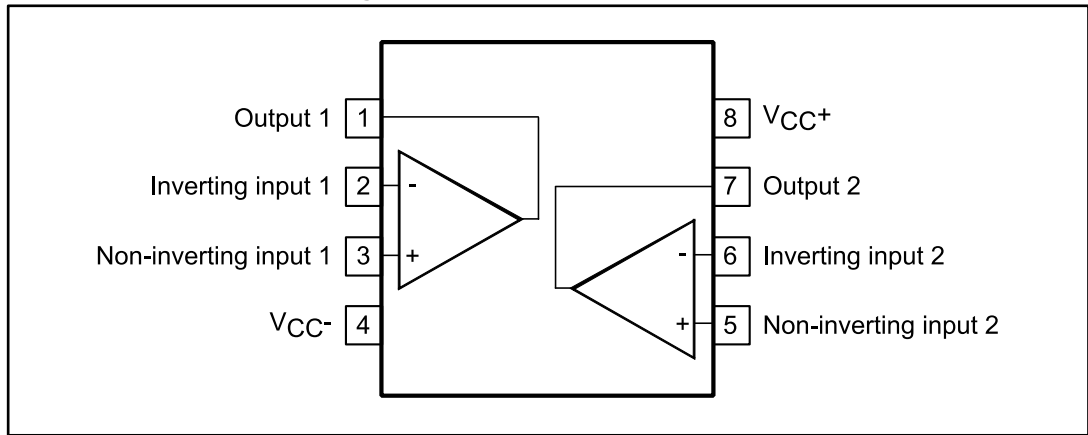
1 Schematic diagram

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		%

MC1458**Electrical characteristics**

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

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. ECOPACK® is an ST trademark.

5.1 SO8 package information

Figure 3: SO8 package outline

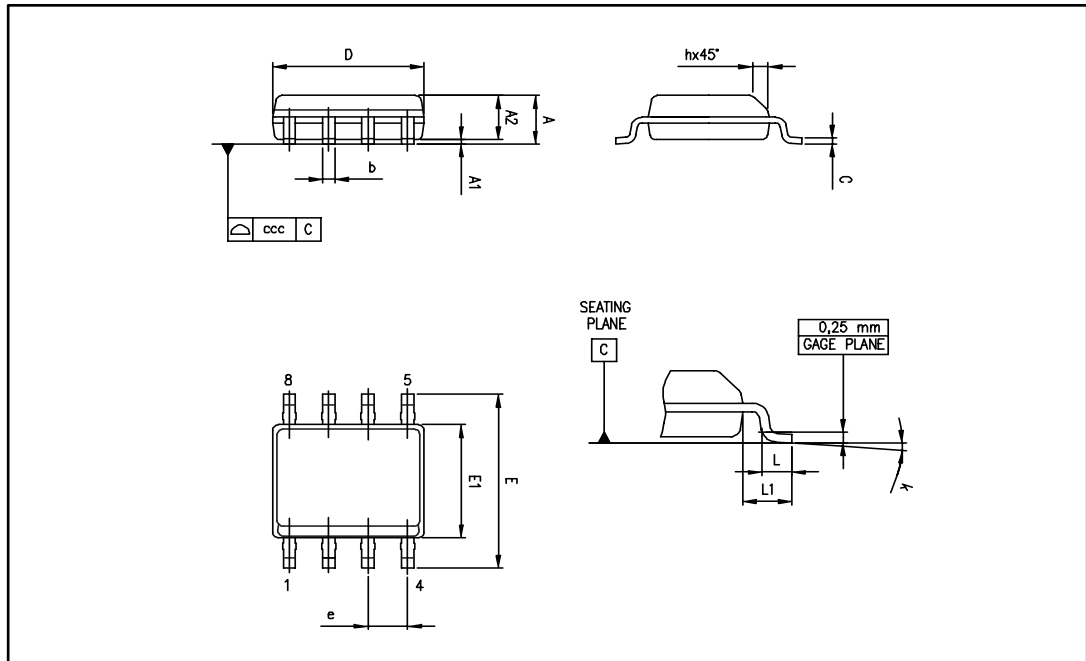


Table 3: SO8 mechanical data

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 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

IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2016 STMicroelectronics – All rights reserved