

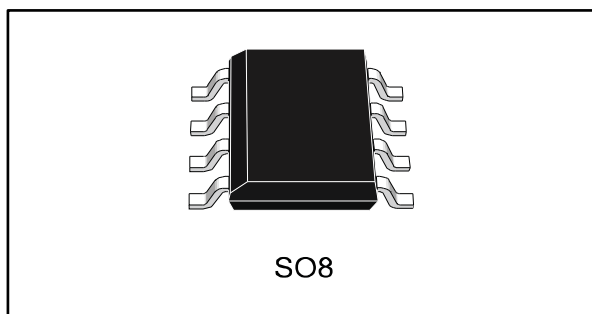


# THE DATASHEET OF MC1458DT



## 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

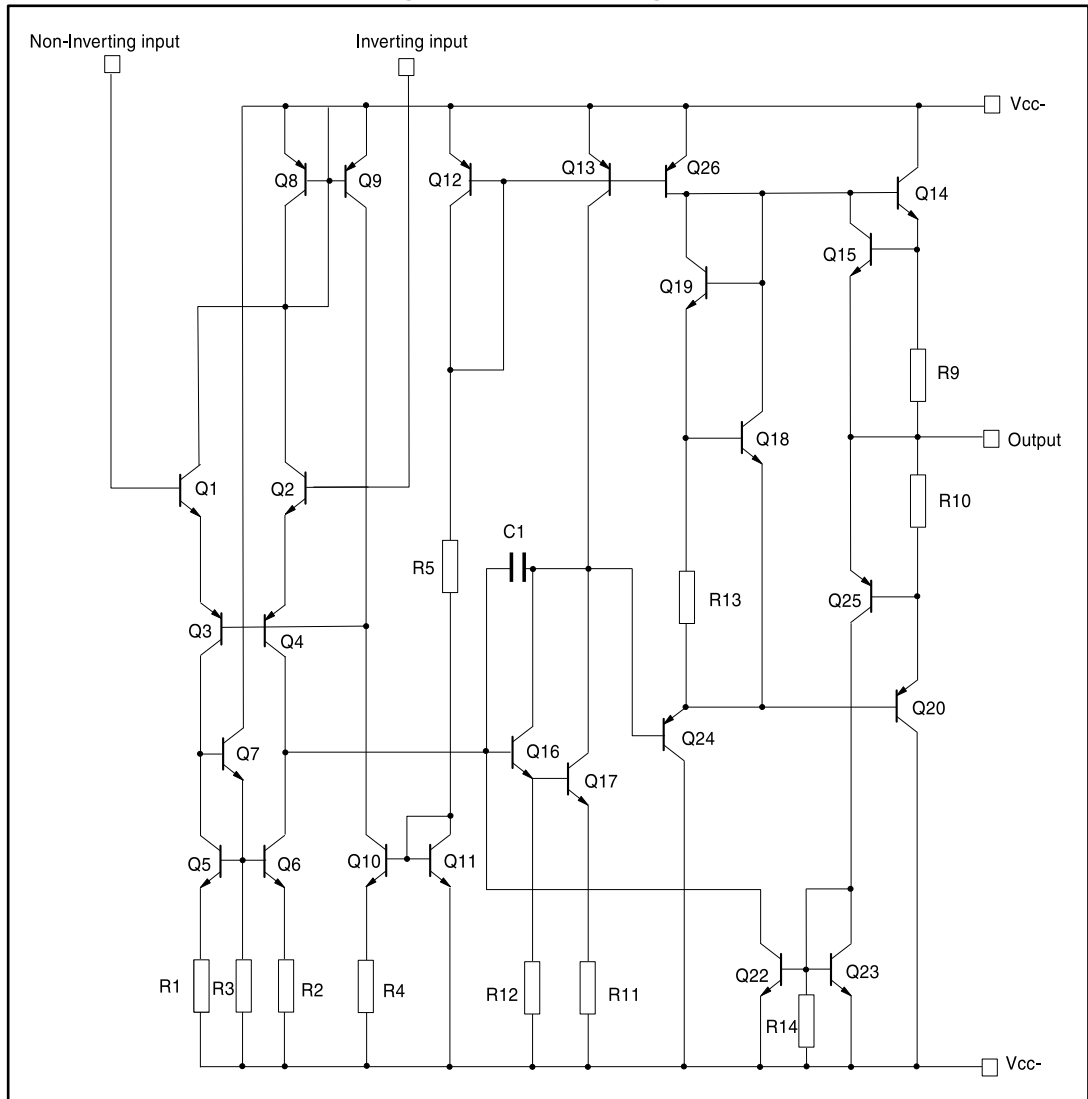
The MC1458 is a high-performance, monolithic, dual operational amplifier intended for a wide range of analog applications. The high gain and wide range of operating voltages provide superior performance in integrator, summing amplifiers, and general feedback applications.

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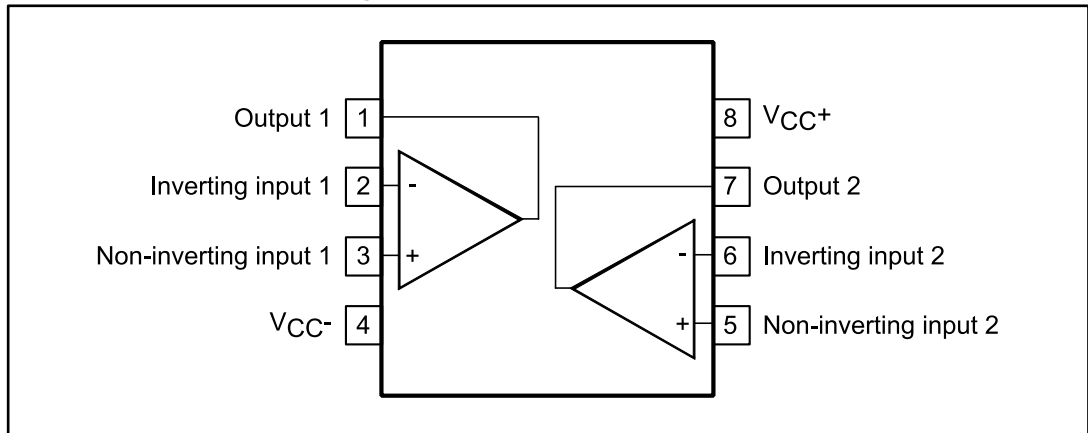
# 1 Schematic diagram

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  $V_{CC} = \pm 15\text{ V}$ ,  $T_{amb} = 25\text{ }^{\circ}\text{C}$  (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit	
$V_{io}$	Input offset voltage, $R_s \leq 10\text{ k}\Omega$	$T_{amb} = 25\text{ }^{\circ}\text{C}$	1	5	mV	
		$T_{min} \leq T_{amb} \leq T_{max}$		6		
$I_{io}$	Input offset current	$T_{amb} = 25\text{ }^{\circ}\text{C}$	2	200	nA	
		$T_{min} \leq T_{amb} \leq T_{max}$		300		
$I_{ib}$	Input bias current	$T_{amb} = 25\text{ }^{\circ}\text{C}$	30	500		
		$T_{min} \leq T_{amb} \leq T_{max}$		800		
$A_{vd}$	Large signal voltage gain, $V_o = \pm 10\text{ V}$ , $R_L = 2\text{ k}\Omega$	$T_{amb} = 25\text{ }^{\circ}\text{C}$	50	200	V/mV	
		$T_{min} \leq T_{amb} \leq T_{max}$	25			
SVR	Supply voltage rejection ratio, $R_s \leq 10\text{ k}\Omega$	$T_{amb} = 25\text{ }^{\circ}\text{C}$	77	90	dB	
		$T_{min} \leq T_{amb} \leq T_{max}$	77			
$I_{cc}$	Supply current, all amp, no load	$T_{amb} = 25\text{ }^{\circ}\text{C}$	2.3	5	mA	
		$T_{min} \leq T_{amb} \leq T_{max}$		6		
$V_{icm}$	Input common-mode voltage range	$T_{amb} = 25\text{ }^{\circ}\text{C}$	$\pm 12$		V	
		$T_{min} \leq T_{amb} \leq T_{max}$	$\pm 12$			
CMR	Common-mode rejection ratio, $R_s \leq 10\text{ k}\Omega$	$T_{amb} = 25\text{ }^{\circ}\text{C}$	70	90	dB	
		$T_{min} \leq T_{amb} \leq T_{max}$	70			
$I_{os}$	Output short-circuit source	$T_{amb} = 25\text{ }^{\circ}\text{C}$	10	20	35	mA
$\pm V_{opp}$	Output voltage swing	$T_{amb} = 25\text{ }^{\circ}\text{C}$ , $R_L \leq 10\text{ k}\Omega$	12	14	V	
		$T_{amb} = 25\text{ }^{\circ}\text{C}$ , $R_L \leq 2\text{ k}\Omega$	10	13		
		$T_{min} \leq T_{amb} \leq T_{max}$ , $R_L \leq 10\text{ k}\Omega$	12			
		$T_{min} \leq T_{amb} \leq T_{max}$ , $R_L \leq 2\text{ k}\Omega$	10			
SR	Slew rate	$V_i = \pm 10\text{ V}$ , $R_L = 2\text{ k}\Omega$ , $C_L = 100\text{ pF}$ , unity gain	0.2	0.8		V/ $\mu\text{s}$
$t_r$	Rise time	$V_i = \pm 20\text{ mV}$ , $R_L = 2\text{ k}\Omega$ , $C_L = 100\text{ pF}$ , unity gain		0.3		$\mu\text{s}$
$K_{ov}$	Overshoot	$V_i = \pm 20\text{ mV}$ , $R_L = 2\text{ k}\Omega$ , $C_L = 100\text{ pF}$ , unity gain		5		%
$R_i$	Input resistance		0.3	2		M $\Omega$
$Z_{ic}$	Common-mode input impedance			200		
$C_i$	Input capacitance			1.4		pF
$R_o$	Output resistance			75		$\Omega$
FPB	Full power bandwidth	$R_L = 2\text{ k}\Omega$ , $V_o \geq \pm 10\text{ V}$ , $A_{VD} = 1$ , THD $\leq 5\%$		14		kHz
B	Unity gain bandwidth	$V_i = 10\text{ mV}$ , $R_L = 2\text{ k}\Omega$ , $C_L = 100\text{ pF}$		1		MHz
GBP	Gain bandwidth product	$V_i = 10\text{ mV}$ , $R_L = 2\text{ k}\Omega$ , $C_L = 100\text{ pF}$ , $f = 100\text{ kHz}$	0.4	1		
THD	Total harmonic distortion	$f = 1\text{ kHz}$ , $A_v = 20\text{ dB}$ , $R_L = 2\text{ k}\Omega$ , $C_L = 100\text{ pF}$ , $V_o = 2\text{ V}_{pp}$		0.02		%

Symbol	Parameter		Min.	Typ.	Max.	Unit
$e_n$	Equivalent input noise voltage	$f = 1 \text{ kHz}, R_s = 100 \Omega$		45		nV/ $\sqrt{\text{Hz}}$
$\phi_m$	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

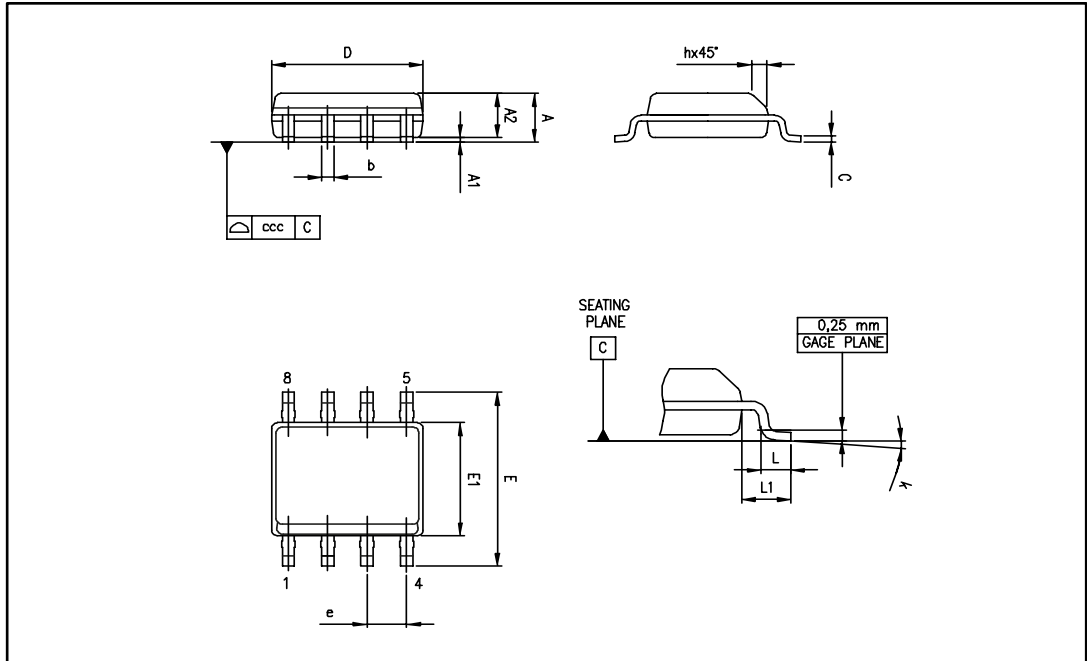


Table 3: SO8 mechanical data

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 <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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