

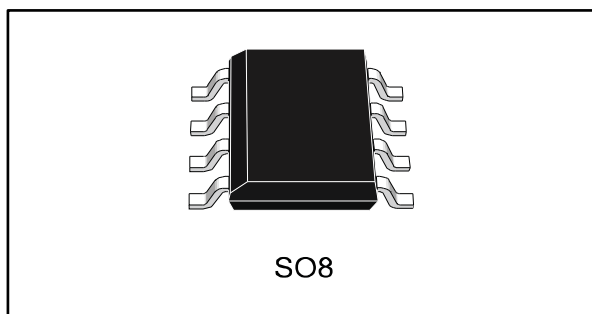


THE DATASHEET OF MC1458IDT



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

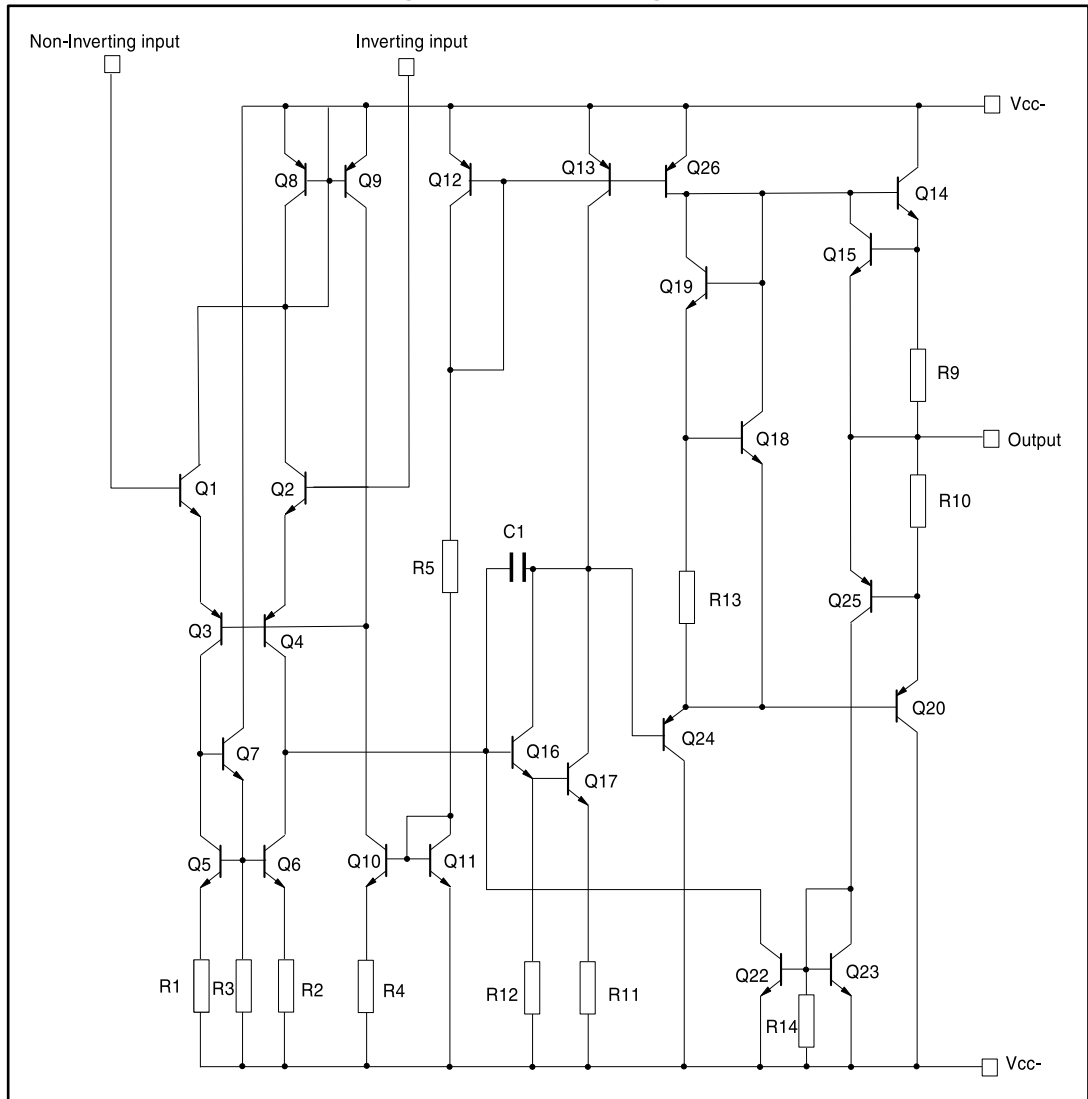
The MC1458 is a high-performance, monolithic, dual operational amplifier intended for a wide range of analog applications. The high gain and wide range of operating voltages provide superior performance in integrator, summing amplifiers, and general feedback applications.

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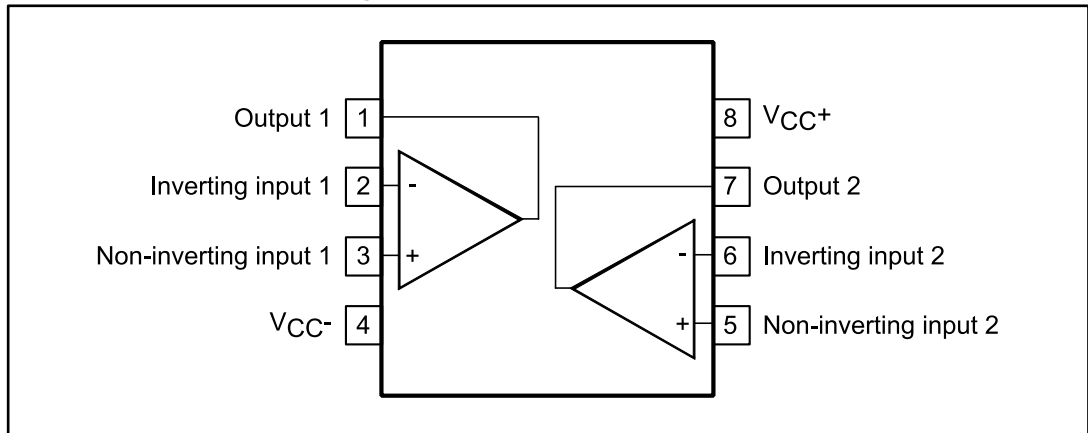
1 Schematic diagram

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 _{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 $V_{CC} = \pm 15\text{ V}$, $T_{amb} = 25\text{ }^{\circ}\text{C}$ (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	$T_{amb} = 25\text{ }^{\circ}\text{C}$	± 12		V	
		$T_{min} \leq T_{amb} \leq T_{max}$	± 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/ μs
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		μs
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 Ω
Z_{ic}	Common-mode input impedance			200		
C_i	Input capacitance			1.4		pF
R_o	Output resistance			75		Ω
FPB	Full power bandwidth	$R_L = 2\text{ k}\Omega$, $V_o \geq \pm 10\text{ V}$, $A_{VD} = 1$, 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		%

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

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5.1 SO8 package information

Figure 3: SO8 package outline

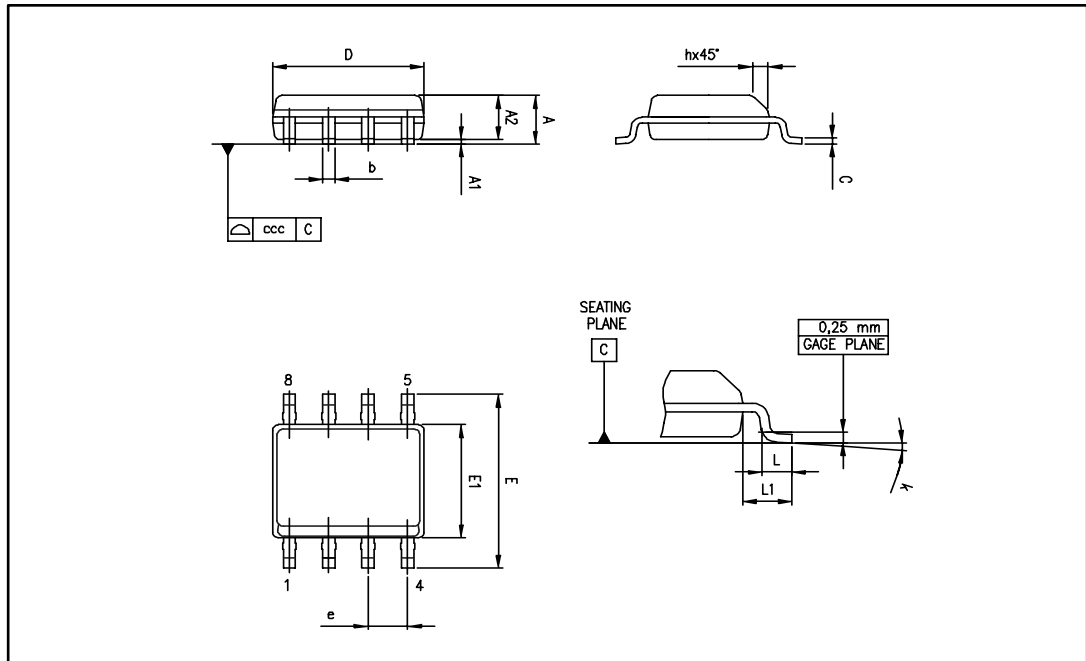


Table 3: SO8 mechanical data

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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