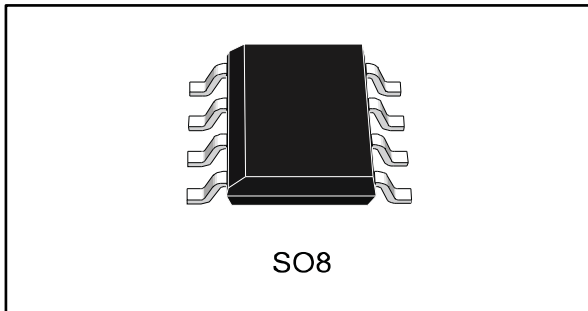

High-performance, dual operational amplifier

Datasheet - obsolete product

**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 MC1558 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

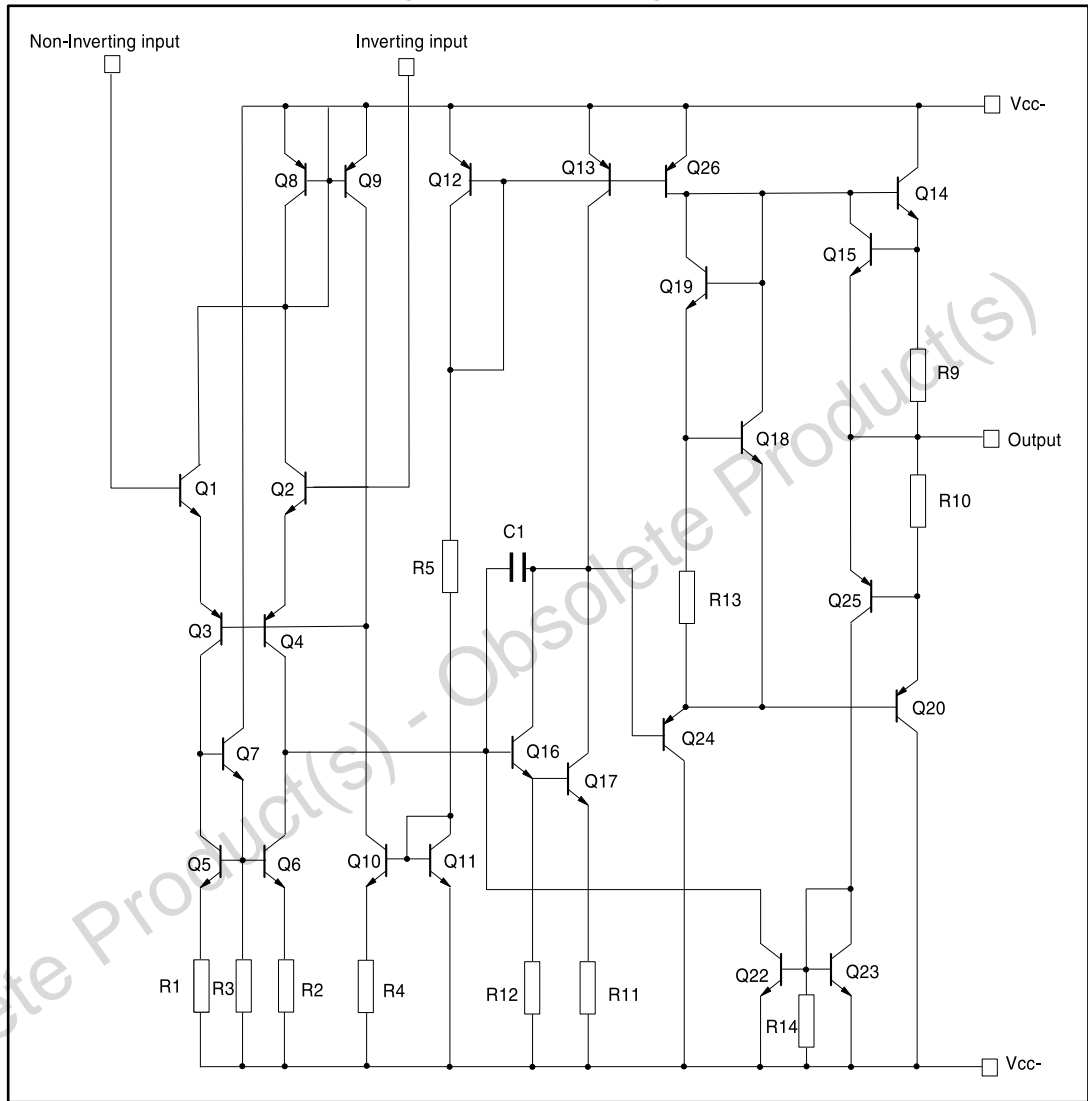
1	Schematic diagram.....	3
2	Package pin connections.....	4
3	Absolute maximum ratings.....	5
4	Electrical characteristics	6
5	Package information	8
	5.1 SO8 package information.....	9
6	Ordering information.....	10
7	Revision history	11

Obsolete Product(s) - Obsolete Product(s)



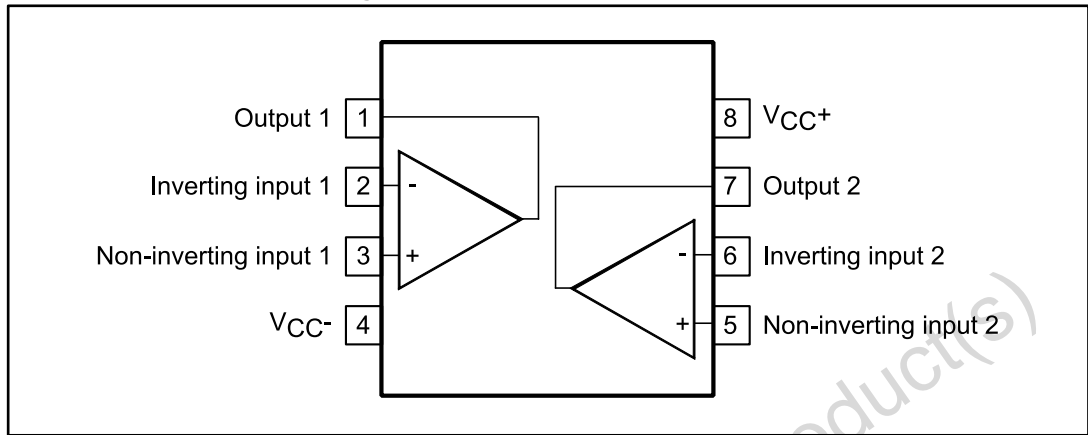
1 Schematic diagram

Figure 1: Schematic diagram



2 Package pin connections

Figure 2: Pin connections (top view)



Obsolete Product(s) - Obsolete Product(s)

3 Absolute maximum ratings

Table 1: Absolute maximum ratings

Symbol	Parameter	Value	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	-55 to 125	°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	nA	
		$T_{min} \leq T_{amb} \leq T_{max}$		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		%

MC1558**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		

Obsolete Product(s) - Obsolete Product(s)

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.

Obsolete Product(s) - Obsolete Product(s)

5.1 SO8 package information

Figure 3: SO8 package outline

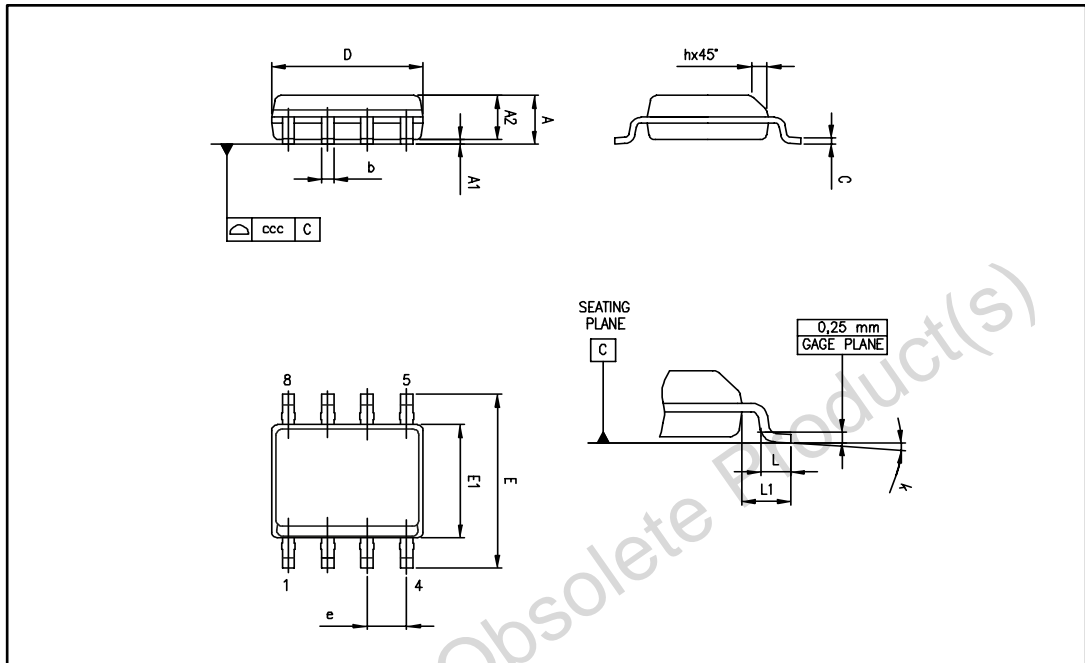


Table 3: SO8 mechanical data

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
MC1558N	-55 °C to 125 °C	SO8	Tape and reel	N/A

Obsolete Product(s) - Obsolete Product(s)

7 Revision history

Table 5: Document revision history

Date	Revision	Changes
22-Sep-2016	1	Initial release. Part number MC1458 included in separate datasheet.

Obsolete Product(s) - Obsolete Product(s)

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