



MC1458 MC1558

HIGH PERFORMANCE DUAL OPERATIONAL AMPLIFIERS

- LOW POWER CONSUMPTION
- LARGE INPUT VOLTAGE RANGE
- NO LATCH-UP
- HIGH GAIN
- SHORT-CIRCUIT PROTECTION
- NO FREQUENCY COMPENSATION REQUIRED

DESCRIPTION

The MC1458 is high performance monolithic dual operational amplifier intended for a wide range of analog applications:

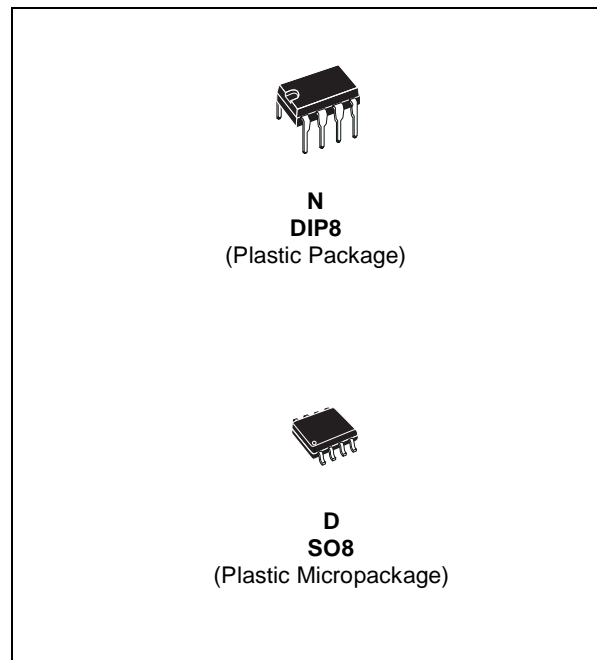
- Summing amplifier
- Voltage follower
- Integrator
- Active filter
- Function generator

The high gain and wide range of operating voltages provide superior performance in integrator, summing amplifiers and general feedback applications.

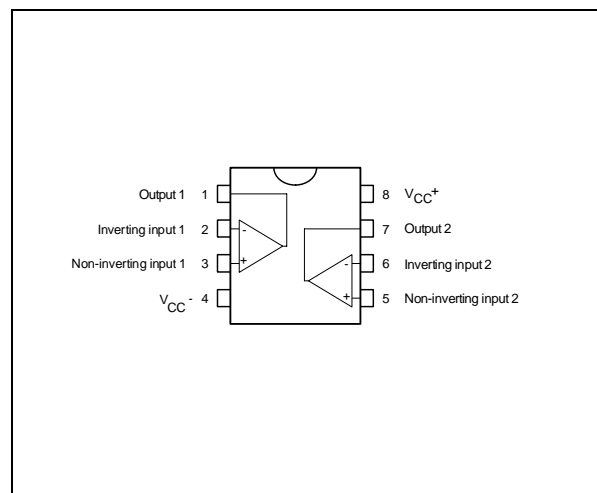
ORDER CODE

Part Number	Temperature Range	Package	
		N	D
MC1458	0°C, +70°C	•	•
MC1458I	-40°C, +105°C	•	•
MC1558	-55°C, +125°C	•	•
Example : MC1458N			

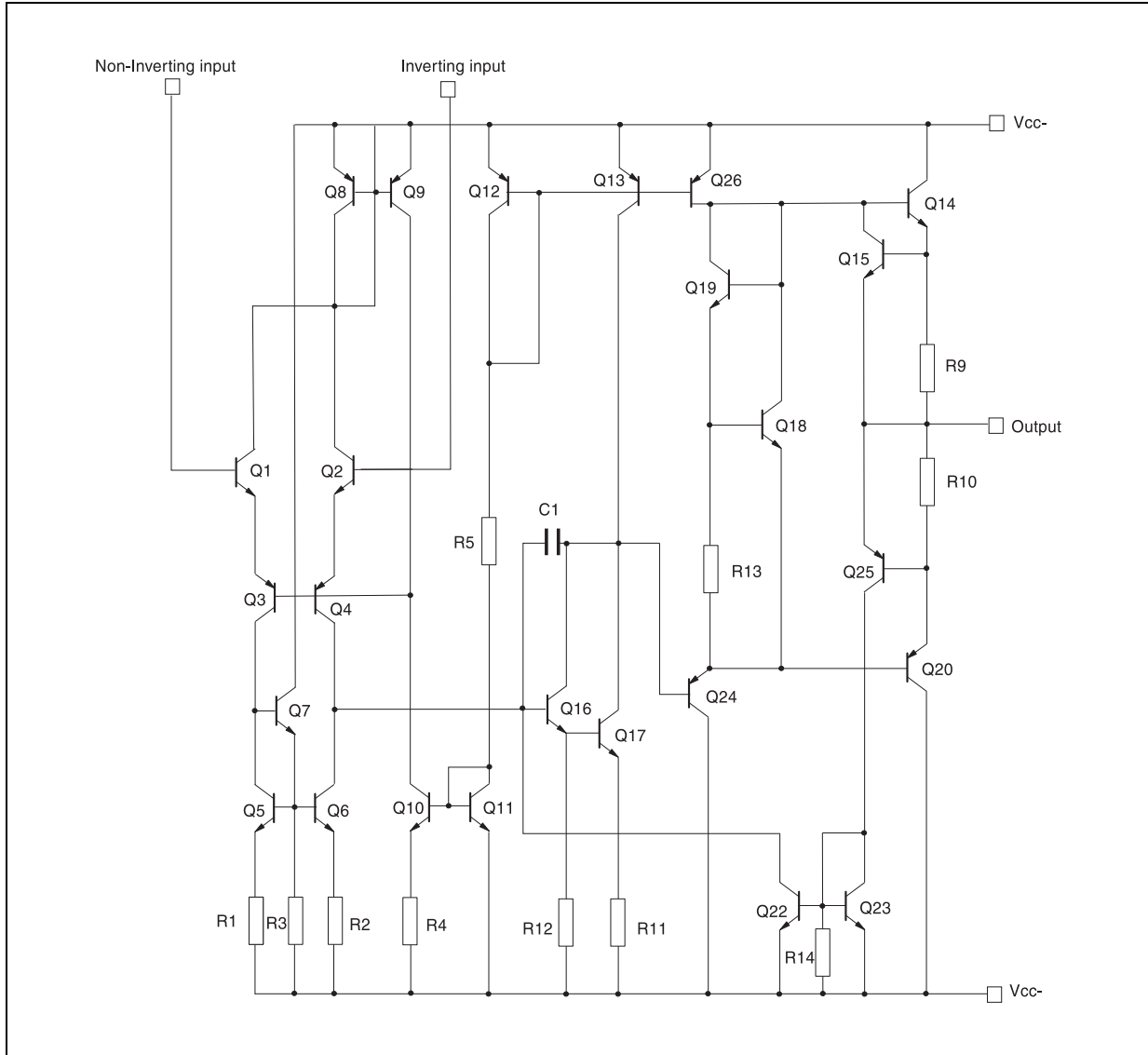
N = Dual in Line Package (DIP)
D = Small Outline Package (SO) - also available in Tape & Reel (DT)



PIN CONNECTIONS (top view)



SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	MC1458	MC1458I	MC1558	Unit
V_{CC}	Supply voltage	±22			V
V_i	Input Voltage	±15			V
V_{id}	Differential Input Voltage	±30			V
	Output Short-circuit Duration	Infinite			
P_{tot}	Power Dissipation D Suffix N Suffix	300 500			mW
T_{oper}	Operating Free-air Temperature Range	0 to +70	-40 to +105	-55 to +125	°C
T_{stg}	Storage Temperature Range	-65 to +150			°C

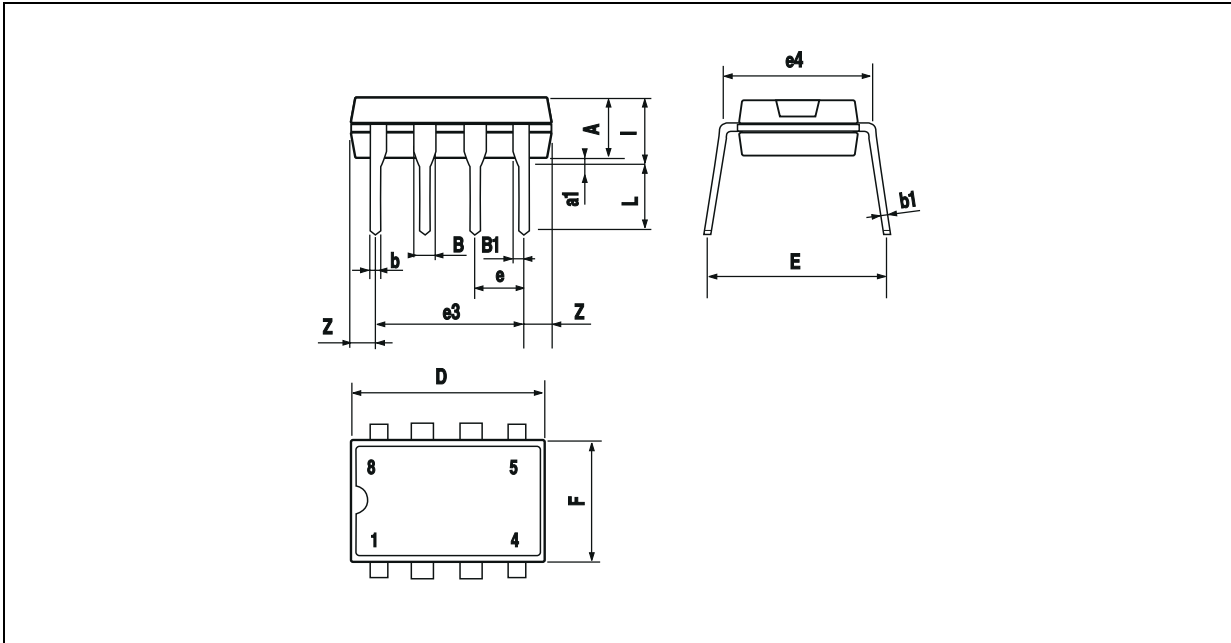
ELECTRICAL CHARACTERISTICS $V_{CC} = \pm 15V$, $T_{amb} = 25^{\circ}C$ (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_{io}	Input Offset Voltage ($R_s \leq 10k\Omega$) $T_{amb} = 25^{\circ}C$ $T_{min} \leq T_{amb} \leq T_{max}$		1	5 6	mV
I_{io}	Input Offset Current $T_{amb} = 25^{\circ}C$ $T_{min} \leq T_{amb} \leq T_{max}$		2	200 300	nA
I_{ib}	Input Bias Current $T_{amb} = 25^{\circ}C$ $T_{min} \leq T_{amb} \leq T_{max}$		30	500 800	nA
A_{vd}	Large Signal Voltage Gain ($V_o = \pm 10V$, $R_L = 2k\Omega$) $T_{amb} = 25^{\circ}C$ $T_{min} \leq T_{amb} \leq T_{max}$	50 25	200		V/mV
SVR	Supply Voltage Rejection Ratio ($R_s \leq 10k\Omega$) $T_{amb} = 25^{\circ}C$ $T_{min} \leq T_{amb} \leq T_{max}$	77 77	90		dB
I_{cc}	Supply Current, all Amp, no load $T_{amb} = 25^{\circ}C$ $T_{min} \leq T_{amb} \leq T_{max}$		2.3	5 6	mA
V_{icm}	Input Common Mode Voltage Range $T_{amb} = 25^{\circ}C$ $T_{min} \leq T_{amb} \leq T_{max}$	± 12 ± 12			
CMR	Common Mode Rejection Ratio ($R_s \leq 10k\Omega$) $T_{amb} = 25^{\circ}C$ $T_{min} \leq T_{amb} \leq T_{max}$	70 70	90		dB
I_{os}	Output Short-circuit Current $T_{amb} = 25^{\circ}C$	10	20	35	mA
$\pm V_{opp}$	Output Voltage Swing $T_{amb} = 25^{\circ}C$ $T_{min} \leq T_{amb} \leq T_{max}$	$R_L \leq 10k\Omega$ 12 $R_L \leq 2k\Omega$ 10 $R_L \leq 10k\Omega$ 12 $R_L \leq 2k\Omega$ 10	14 13		V
SR	Slew Rate ($V_i = \pm 10V$, $R_L = 2k\Omega$, $C_L = 100pF$, unity Gain)	0.2	0.8		V/ μs
t_r	Rsie Time ($V_i = \pm 20mV$, $R_L = 2k\Omega$, $C_L = 100pF$, unity Gain)		0.3		μs
K_{OV}	Overshoot ($V_i = 20mV$, $R_L = 2k\Omega$, $C_L = 100pF$, unity Gain)		5		%
R_i	Input Resistance	0.3	2		$M\Omega$
Z_{ic}	Common-mode Input Impedance		200		$M\Omega$
C_i	Input Capacitance		1.4		pF
R_o	Output Resistance		75		Ω
FPB	Full Power Bandwidth ($R_L = 2k\Omega$, $V_o \geq \pm 10V$, $A_{VD} = 1$, THD $\leq 5\%$)		14		KHz

MC1458-MC1558

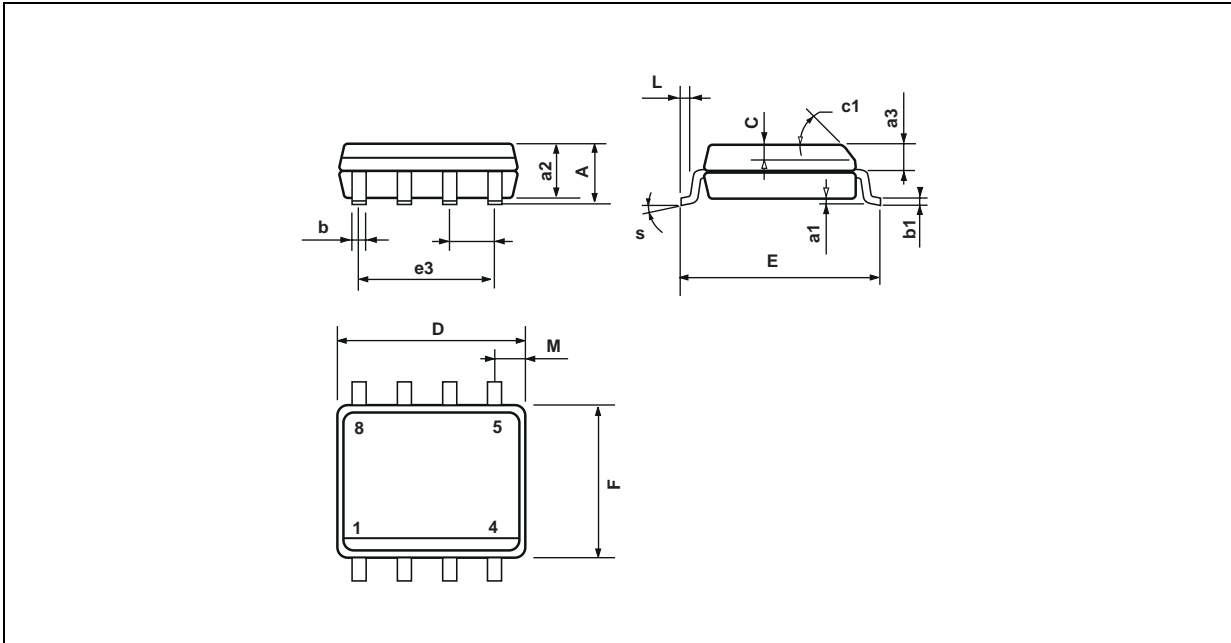
Symbol	Parameter	Min.	Typ.	Max.	Unit
B	Unity Gain Bandwidth ($V_I = 10 \text{ mV}$, $R_L = 2\text{k}\Omega$, $C_L = 100\text{pF}$)		1		MHZ
GBP	Gain Bandwith Product ($V_I = 10 \text{ mV}$, $R_L = 2\text{k}\Omega$, $C_L = 100\text{pF}$ $f = 100\text{kHz}$)	0.4	1		MHz
THD	Total Harmonic Distortion ($f = 1\text{kHz}$, $A_v = 20\text{dB}$, $R_L = 2\text{k}\Omega$ $C_L = 100\text{pF}$, $V_o = 2V_{pp}$)		0.02		%
e_n	Equivalent Input Noise Voltage ($f = 1\text{kHz}$, $R_s = 100\Omega$)		45		$\frac{\text{nV}}{\sqrt{\text{Hz}}}$
ϕ_m	Phase Margin		65		Degrees
Am	Gain Margin		11		dB
V_{o1}/V_{o2}	Channel Separation		120		dB

PACKAGE MECHANICAL DATA
8 PINS - PLASTIC PACKAGE



Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		3.32			0.131	
a1	0.51			0.020		
B	1.15		1.65	0.045		0.065
b	0.356		0.55	0.014		0.022
b1	0.204		0.304	0.008		0.012
D			10.92			0.430
E	7.95		9.75	0.313		0.384
e		2.54			0.100	
e3		7.62			0.300	
e4		7.62			0.300	
F			6.6			0.260
i			5.08			0.200
L	3.18		3.81	0.125		0.150
Z			1.52			0.060

PACKAGE MECHANICAL DATA
8 PINS - PLASTIC MICROPACKAGE (SO)



Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.069
a1	0.1		0.25	0.004		0.010
a2			1.65			0.065
a3	0.65		0.85	0.026		0.033
b	0.35		0.48	0.014		0.019
b1	0.19		0.25	0.007		0.010
C	0.25		0.5	0.010		0.020
c1	45° (typ.)					
D	4.8		5.0	0.189		0.197
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F	3.8		4.0	0.150		0.157
L	0.4		1.27	0.016		0.050
M			0.6			0.024
S	8° (max.)					

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

© The ST logo is a registered trademark of STMicroelectronics

© 2001 STMicroelectronics - Printed in Italy - All Rights Reserved
STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia
Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States

© <http://www.st.com>