

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:

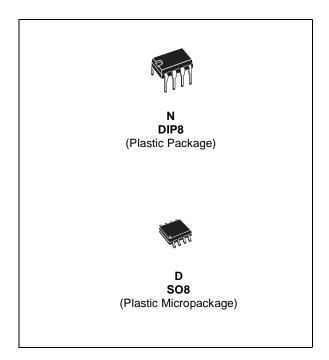
- Summing amplifier
- Voltage follower
- □ Integrator
- Active filter
- ☐ Function generator

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

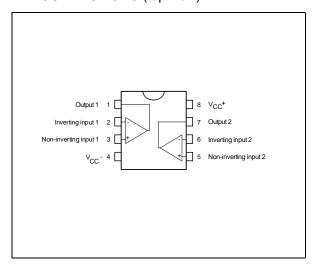
ORDER CODE

Part	Temperature	Package				
Number	Range		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)

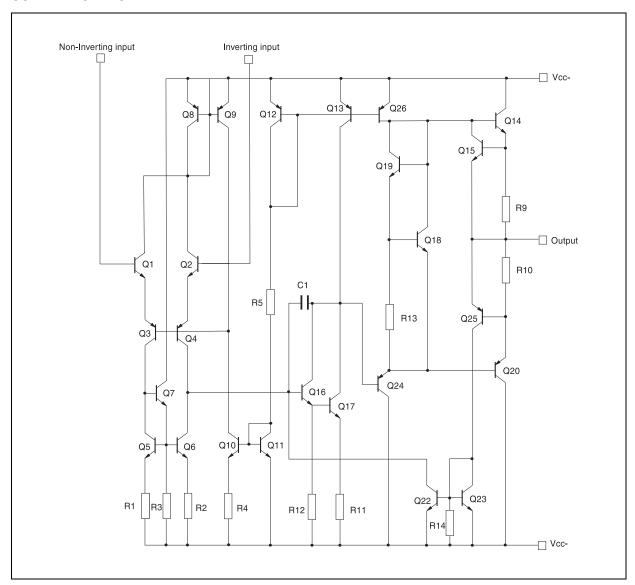


PIN CONNECTIONS (top view)



December 2001 1/6

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	°C
T _{stg}	Storage Temperature Range	-65 to +150	°C

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ELECTRICAL CHARACTERISTICS

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

Symbol	Parameter	Min.	Тур.	Max.	Unit
V _{io}	Input Offset Voltage ($R_s \le 10 k\Omega$) $T_{amb} = 25 ^{\circ}C$ $T_{min} \le T_{amb} \le T_{max}$		1	5 6	mV
l _{io}	Input Offset Current $T_{amb} = 25^{\circ}C$ $T_{min} \le T_{amb} \le T_{max}$		2	200 300	nA
l _{ib}	Input Bias Current $T_{amb} = 25^{\circ}C$ $T_{min} \le T_{amb} \le T_{max}$		30	500 800	nA
A _{vd}	Large Signal Voltage Gain ($V_0 = \pm 10V$, $R_L = 2k\Omega$) $T_{amb} = 25^{\circ}C$ $T_{min} \le T_{amb} \le T_{max}$	50 25	200		V/mV
SVR	Supply Voltage Rejection Ratio ($R_s \le 10k\Omega$) $T_{amb} = 25^{\circ}C$ $T_{min} \le T_{amb} \le T_{max}$	77 77	90		dB
I _{cc}	Supply Current, all Amp, no load $T_{amb} = 25^{\circ}C$ $T_{min} \le T_{amb} \le T_{max}$		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 ($R_s \le 10 k\Omega$) $T_{amb} = 25^{\circ}C$ $T_{min} \le T_{amb} \le T_{max}$	70 70	90		dB
I _{os}	Output Short-circuit Current $T_{amb} = 25^{\circ}C$	10	20	35	mA
±V _{opp}	$\label{eq:continuous_problem} \begin{split} \text{Output Voltage Swing} \\ T_{amb} &= 25^{\circ}\text{C} \\ T_{min} &\leq T_{amb} \leq T_{max} \end{split} \qquad \begin{aligned} R_{L} &\leq 10k\Omega \\ R_{L} &\leq 2k\Omega \\ R_{L} &\leq 10k\Omega \\ R_{L} &\leq 2k\Omega \end{aligned}$	12 10 12 10	14 13		V
SR	Slew Rate ($V_1 = \pm 10V$, $R_L = 2k\Omega$, $C_L = 100pF$, unity Gain)	0.2	0.8		V/µs
t _r	Rsie Time ($V_I = \pm 20$ mV, $R_L = 2k\Omega$, $C_L = 100$ pF, unity Gain)		0.3		μs
K _{OV}	Overshoot ($V_I = 20$ mV, $R_L = 2$ k Ω , $C_L = 100$ pF, unity Gain)		5		%
R _I	Input Resistance	0.3	2		ΜΩ
Z _{ic}	Common-mode Input Impedance		200		ΜΩ
Cı	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

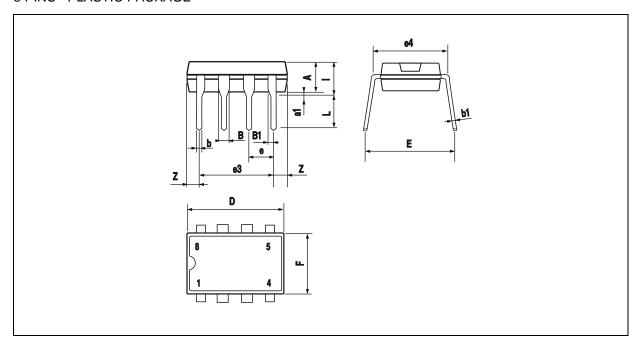
MC1458-MC1558

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

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PACKAGE MECHANICAL DATA

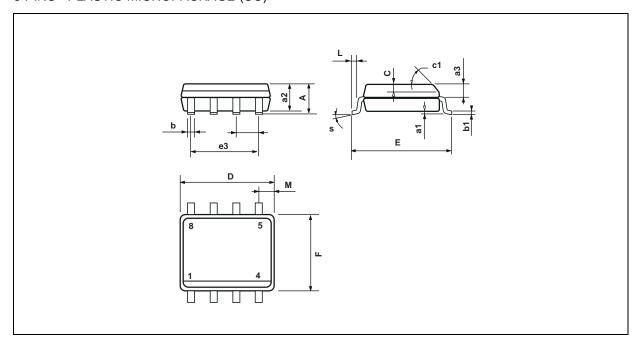
8 PINS - PLASTIC PACKAGE



Dimensions	Millimeters			Inches		
	Min.	Тур.	Max.	Min.	Тур.	Max.
А		3.32			0.131	
a1	0.51			0.020		
В	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
е		2.54			0.100	
e3		7.62			0.300	
e4		7.62			0.300	
F			6.6			0260
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.	Тур.	Max.	Min.	Тур.	Max.
А			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
С	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
е		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
М			0.6			0.024
S	8° (max.)					

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