



# 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:

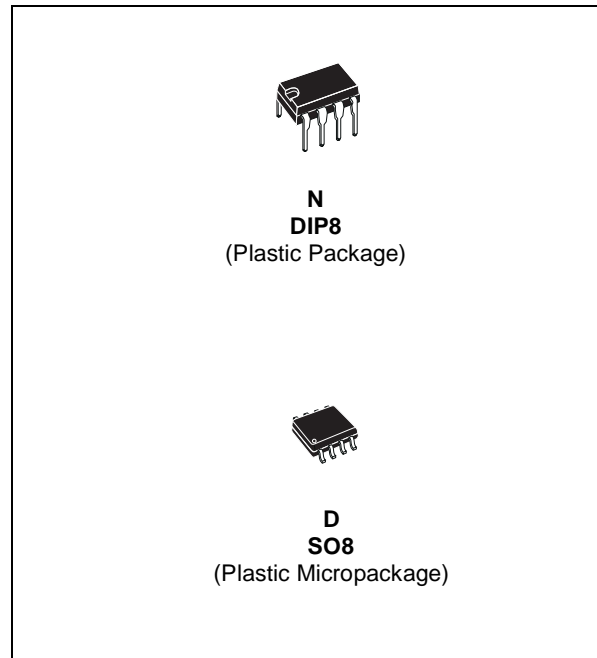
- Summing amplifier
- Voltage follower
- Integrator
- Active filter
- Function generator

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

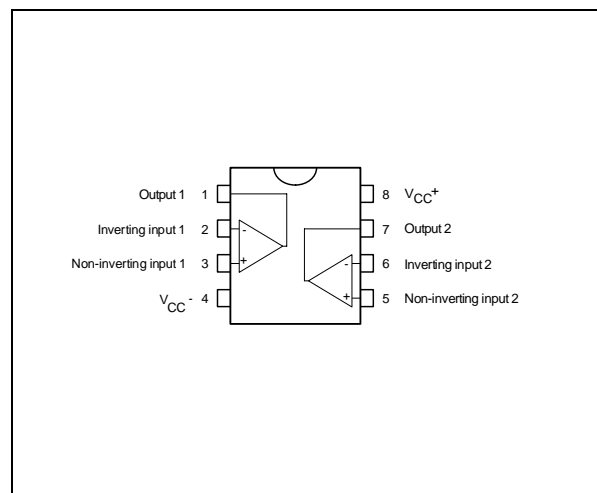
### ORDER CODE

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

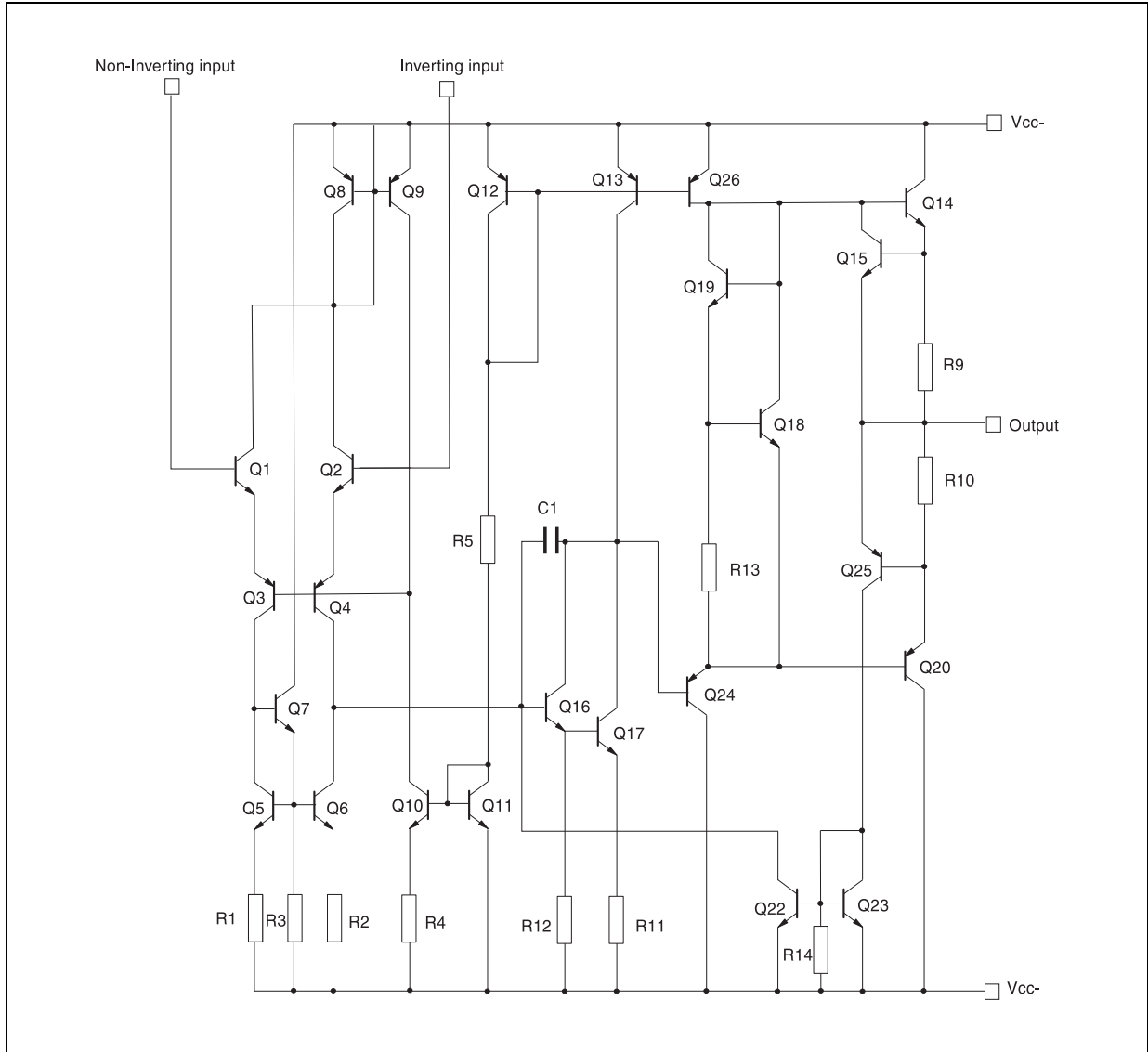
N = Dual in Line Package (DIP)  
D = Small Outline Package (SO) - also available in Tape & Reel (DT)



### 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

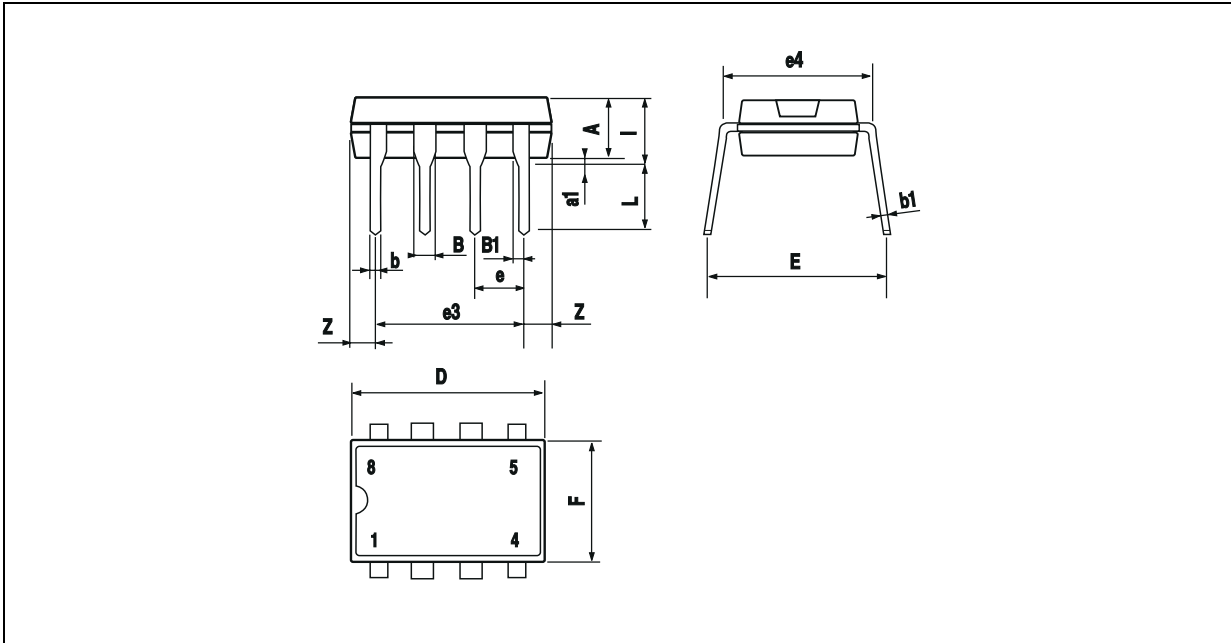
**ELECTRICAL CHARACTERISTICS** $V_{CC} = \pm 15V$ ,  $T_{amb} = 25^{\circ}C$  (unless otherwise specified)

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 $T_{amb} = 25^{\circ}C$ $T_{min} \leq T_{amb} \leq T_{max}$	$\pm 12$ $\pm 12$			
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/ $\mu s$
$t_r$	Rsie Time ( $V_I = \pm 20mV$ , $R_L = 2k\Omega$ , $C_L = 100pF$ , unity Gain)		0.3		$\mu s$
$K_{OV}$	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		$\Omega$
FPB	Full Power Bandwidth ( $R_L = 2k\Omega$ , $V_O \geq \pm 10V$ , $A_{VD} = 1$ , THD $\leq 5\%$ )		14		KHz

**MC1458-MC1558**

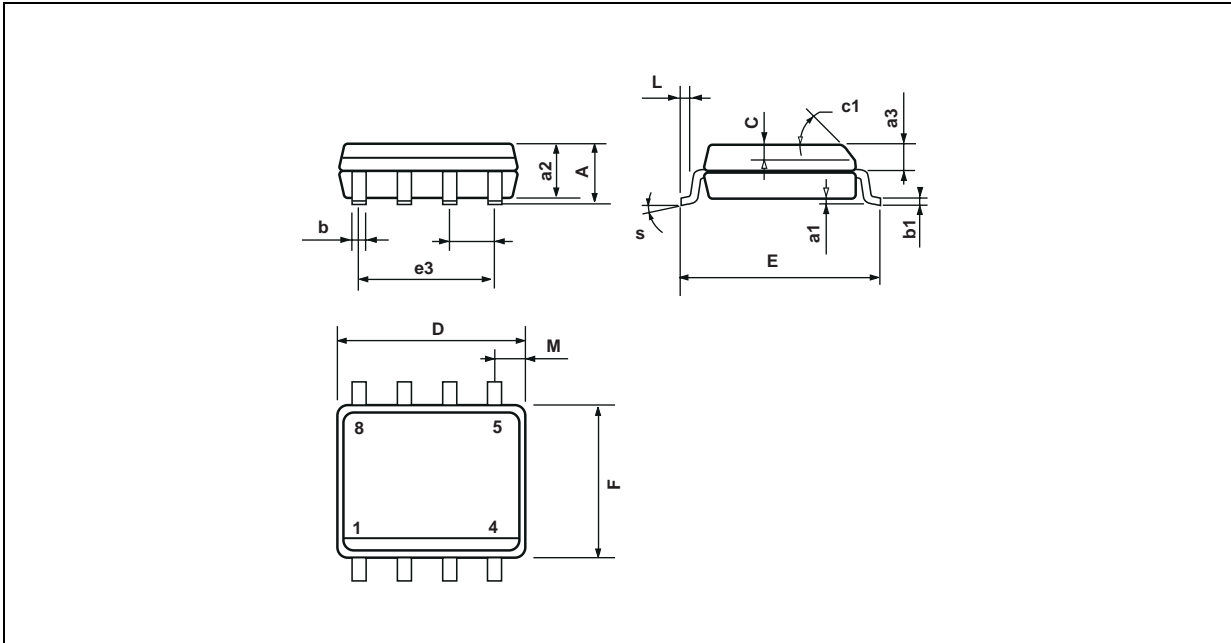
Symbol	Parameter	Min.	Typ.	Max.	Unit
B	Unity Gain Bandwidth ( $V_I = 10\text{ mV}$ , $R_L = 2\text{ k}\Omega$ , $C_L = 100\text{ pF}$ )		1		MHZ
GBP	Gain Bandwith Product ( $V_I = 10\text{ mV}$ , $R_L = 2\text{ k}\Omega$ , $C_L = 100\text{ pF}$ $f = 100\text{ kHz}$ )	0.4	1		MHz
THD	Total Harmonic Distortion ( $f = 1\text{ kHz}$ , $A_V = 20\text{ dB}$ , $R_L = 2\text{ k}\Omega$ $C_L = 100\text{ pF}$ , $V_o = 2V_{pp}$ )		0.02		%
$e_n$	Equivalent Input Noise Voltage ( $f = 1\text{ kHz}$ , $R_s = 100\Omega$ )		45		$\frac{\text{nV}}{\sqrt{\text{Hz}}}$
$\phi_m$	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.)					

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