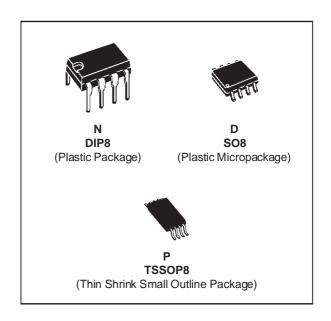




# WIDE BANDWIDTH DUAL BIPOLAR OPERATIONAL AMPLIFIERS

- INTERNALLY COMPENSATED
- SHORT-CIRCUIT PROTECTION
- GAIN AND PHASE MATCH BETWEEN AMPLIFIERS
- LOW POWER CONSUMPTION
- PIN TO PIN COMPATIBLE WITH MC1458/LM358
- GAIN BANDWIDTH PRODUCT (at 100kHz) 5.5MHz



#### **DESCRIPTION**

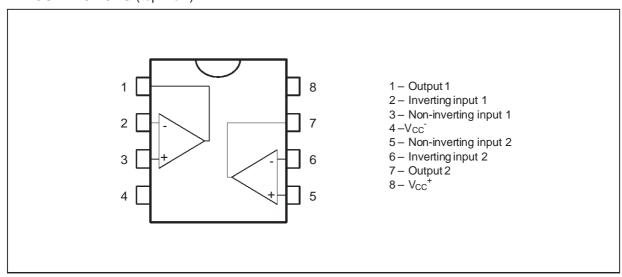
The MC4558 is a high performance monolithic dual operational amplifier.

The circuit combines all the outstanding features of the MC1458 and, in addition, possesses three times the unity gain bandwidth of the industry standard.

### **ORDER CODES**

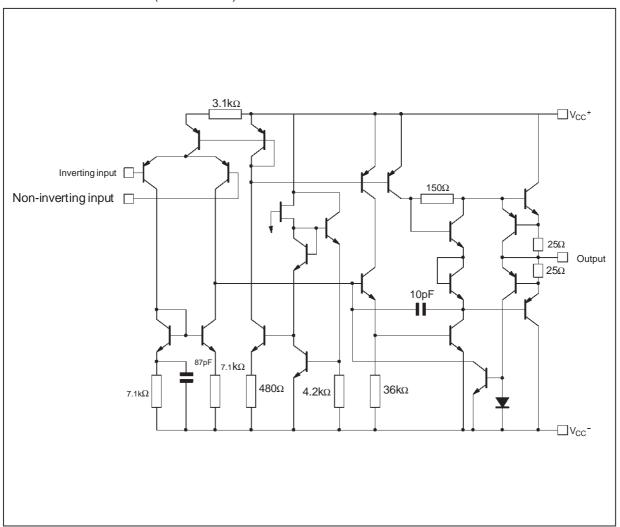
Part	Temperature	Pakcage					
Number	Range	N	D	Р			
MC4558C	0°C, +70°C	•	•	•			
MC4558I -40°C, +105°C • •							
Example: MC4558CN							

# PIN CONNECTIONS (top view)



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# SCHEMATIC DIAGRAM (1/2 MC4558)



# **ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	MC4558I	MC4558C	Unit
Vcc	Supply Voltage	±22	±22	V
Vi	Input Voltage	±15	±15	V
Vid	Differential Input Voltage	±30	±30	V
P <sub>tot</sub>	Power Dissipation	680	680	mW
	Output Short-circuit Duration	Infi	nite	
Toper	Operating Free-air Temperature Range	-40 to +105	0 to +70	°C
T <sub>stg</sub>	Storage Temperature Range	-65 to +150	-65 to +150	°C

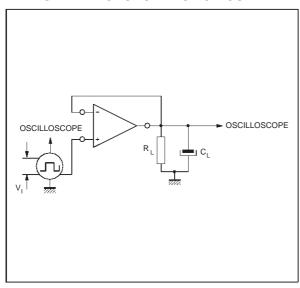
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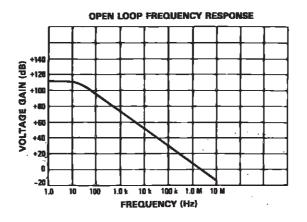
# **ELECTRICAL CHARACTERISTICS**

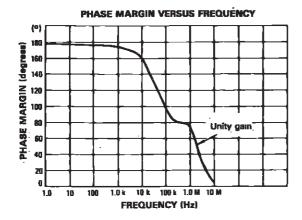
 $V_{CC} = \pm 15V$ ,  $T_{amb} = 25^{\circ}C$  (unless otherwise specified)

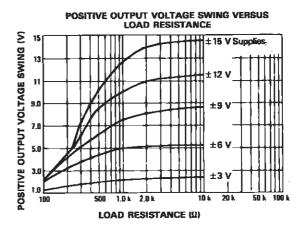
Symbol	Parameter	Min.	Тур.	Max.	Unit
V <sub>io</sub>	Input Offset Voltage (R <sub>S</sub> $\leq$ 10 k $\Omega$ ) $T_{amb} = 25^{\circ}C$ $T_{min.} \leq T_{amb} \leq T_{max}.$		1	5 6	mV
l <sub>io</sub>			20	100 200	nA
l <sub>ib</sub>	Input Bias Current $T_{amb} = 25^{\circ}C$ $T_{min.} \le T_{amb} \le T_{max}.$		50	400 500	nA
A <sub>vd</sub>	Large Signal Voltage Gain ( $V_O = \pm 10V$ , $R_L = 2k\Omega$ ) $T_{amb} = 25^{\circ}C$ $T_{min.} \le T_{amb} \le T_{max.}$	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
Icc	Supply Current, all Amp, no Load $T_{amb} = 25^{\circ}C$ $T_{min.} \le T_{amb} \le T_{max.}$		2.3	4.5 6	mA
V <sub>icm</sub>	Input Common Mode Voltage Range $T_{amb} = 25^{\circ}C$ $T_{min.} \le T_{amb} \le T_{max}$ .	±12 ±12			V
CMR	Common-mode Rejection Ratio ( $R_S \le 10k\Omega$ ) $T_{amb} = 25^{\circ}C$ $T_{min.} \le T_{amb} \le T_{max}.$	70 70	90		dB
l <sub>os</sub>	Output Short-circuit Current	10	20	40	mA
Vo	$ \begin{array}{ll} \text{Output Voltage Swing} \\ T_{amb} = 25^{\circ}\text{C} & R_{L} = 10 \text{k}\Omega \\ R_{L} = 2 \text{k}\Omega \\ T_{min.} \leq T_{amb} \leq T_{max.} & R_{L} = 10 \text{k}\Omega \\ \end{array} $	±12 ±10 ±12 ±10	±14 ±13		V
SR	$R_L = 2k\Omega$ Slew Rate $(V_I = \pm 10V, R_L = 2k\Omega, C_L = 100pF, T_{amb} = 25^{o}C, unity gain)$	1.5	2.2		V/µs
t <sub>r</sub>	Rise Time (V <sub>I</sub> = $\pm 20$ mV, R <sub>L</sub> = $2$ k $\Omega$ , C <sub>L</sub> = $100$ pF, T <sub>amb</sub> = $25$ °C, unity gain)		0.3		μs
Kov	Overshoot $(V_1 = \pm 20 \text{ mV}, R_L = 2k\Omega, C_L = 100pF, T_{amb} = 25^{\circ}C, \text{ unity gain})$		15		%
Ri	Input Resistance	0.3	2		MΩ
C <sub>i</sub>	Input Capacitance		1.4		pF
Ro	Output Resistance		75		Ω
В	Unity Gain Bandwidth		2.8		MHz
GBP	Gain Bandwidth Product $(V_I = 10mV, R_L = 2k\Omega, C_L = 100pF, f = 100kHz, T_{amb} = 25^{\circ}C)$		5.5		MHz
THD	Total Harmonic Distortion (f = 1kHz, $A_v$ = 20dB, $R_L$ = 2k $\Omega$ , $V_o$ = 2V <sub>pp</sub> , $C_L$ = 100pF, $T_{amb}$ = 25°C)		0.008		%
en	Equivalent Input Noise Voltage (f = 1kHz, $R_s = 100\Omega$ )		12		$\frac{\text{nV}}{\sqrt{\text{Hz}}}$
V <sub>O1</sub> /V <sub>O2</sub>	Channel Separation		120		dB

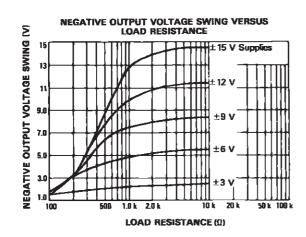
# TRANSIENT RESPONSE TEST CIRCUIT

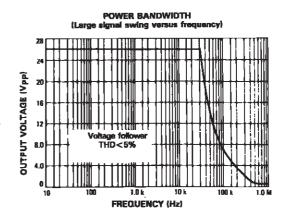








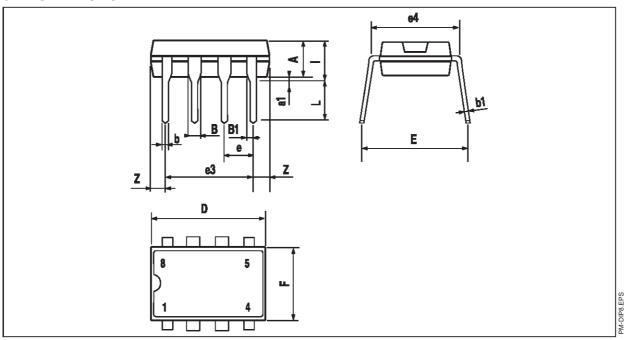




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# PACKAGE MECHANICAL DATA

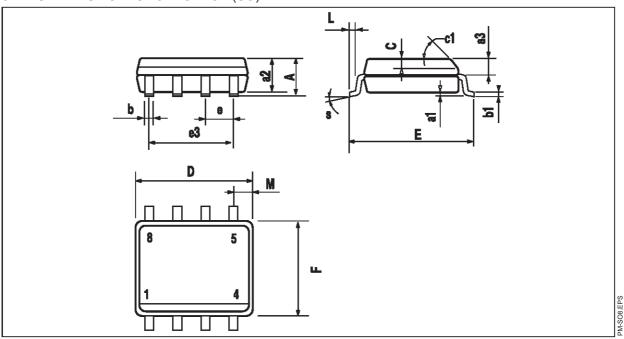
8 PINS – PLASTIC DIP



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

P8.TBL

PACKAGE MECHANICAL DATA 8 PINS – PLASTIC MICROPACKAGE (SO)

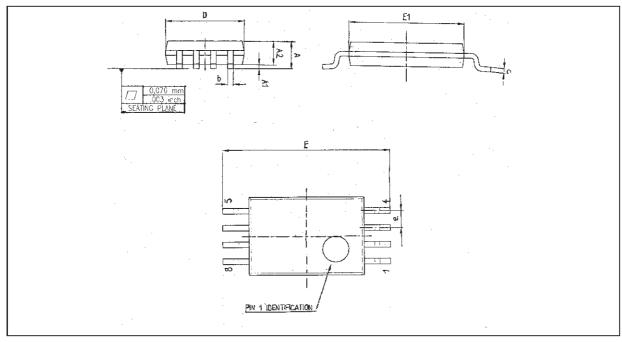


Dimensions	Millimeters			Inches		
Difficusions	Min.	Тур.	Max.	Min.	Тур.	Max.
А			1.75			0.069
a1	0.1		0.25	0.004		0.010
a2			1.65			0.065
a3	0.65		0.85	0.026		0.033
b	0.35		0.48	0.014		0.019
b1	0.19		0.25	0.007		0.010
С	0.25		0.5	0.010		0.020
c1		•	45°	(typ.)	•	
D	4.8		5.0	0.189		0.197
Е	5.8		6.2	0.228		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	0.6   0.024   ##   0.024   ##   ##					

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### **PACKAGE MECHANICAL DATA**

#### 8 PINS - THIN SHRINK SMALL OUTLINE PACKAGE



Dim.	Millimeters			Inches			
Dilli.	Min.	Тур.	Max.	Min.	Тур.	Max.	
А			1.20			0.05	
A1	0.05		0.15	0.01		0.006	
A2	0.80	1.00	1.05	0.031	0.039	0.041	
b	0.19		0.30	0.007		0.15	
С	0.09		0.20	0.003		0.012	
D	2.90	3.00	3.10	0.114	0.118	0.122	
E		6.40			0.252		
E1	4.30	4.40	4.50	0.169	0.173	0.177	
е		0.65			0.025		
k	0°		8°	0°		8°	
I	0.50	0.60	0.75	0.09	0.0236	0.030	

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