

MC4558

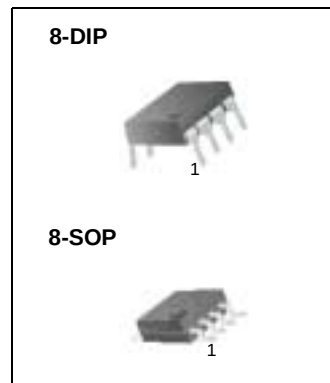
Dual Operational Amplifier

Features

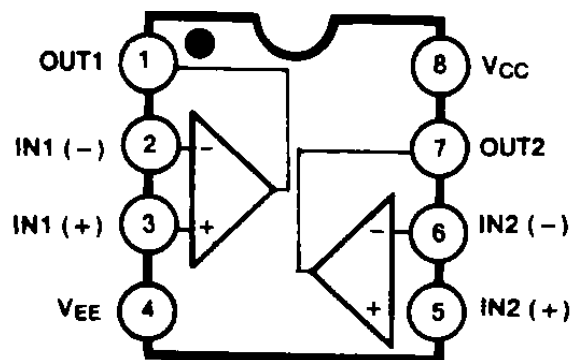
- No frequency compensation required.
- No latch up.
- Large common mode and differential voltage range.
- Parameter tracking over temperature range.
- Gain and phase match between amplifiers.
- Internally frequency compensated.
- Low noise input transistors.

Descriptions

The MC4558 series is a monolithic integrated circuit designed for dual operational amplifier.

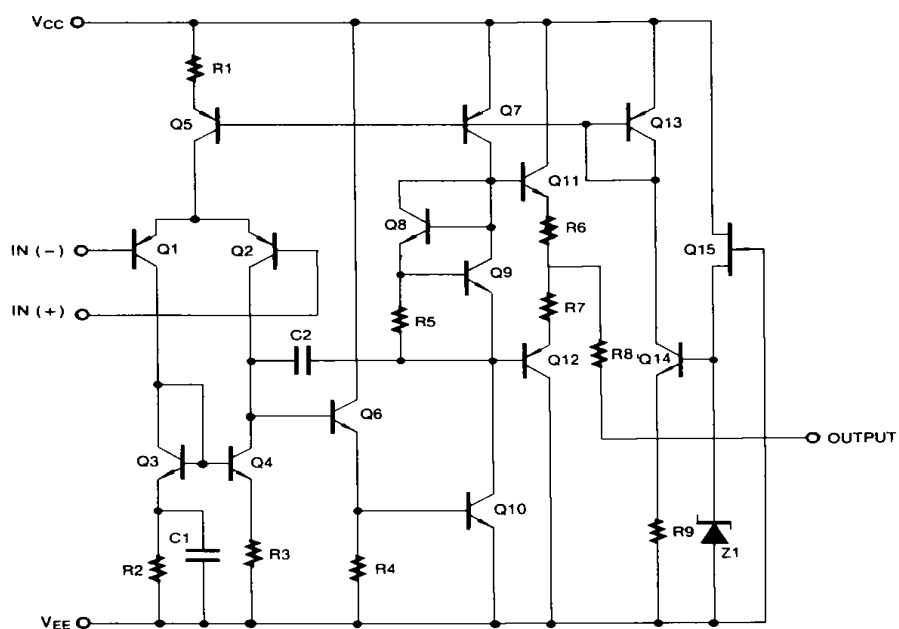


Internal Block Diagram



Schematic Diagram

(One Section Only)



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply Voltage	V _{CC}	±22	V
Differential Input Voltage	V _{I(DIFF)}	30	V
Input Voltage	V _I	±15	V
Power Dissipation	P _D	400	mW
Operating Temperature Range MC4558C MC4558V	T _{OPR}	0 ~ 70 -40 ~ 85	°C
Storage Temperature Range	T _{STG}	-65 ~ 150	°C

Electrical Characteristics

($V_{CC} = 15V$, $V_{EE} = -15V$, $T_A = 25^\circ C$ unless otherwise specified)

Parameter	Symbol	Conditions	MC4558C/MC4558V			Unit
			Min	Typ	Max	
Input Offset Voltage	V_{IO}	$R_S \leq 10K\Omega$	-	2	6	mV
		Note 1	-	-	7.5	
Input Offset Current	I_{IO}		-	5	200	nA
		$T_A = T_A(MAX)$	-	-	300	
		$T_A = T_A(MIN)$	-	-	300	
Input Bias Current	I_{BIAS}		-	30	500	nA
		$T_A = T_A(MAX)$	-	-	800	
		$T_A = T_A(MIN)$	-	-	800	
Large Signal Voltage Gain	G_V	$V_{O(P-P)} = \pm 10V, R_L \leq 2K\Omega$	20	200	-	V/mV
		Note 1	-	-	-	
Common Mode Input Voltage Range	$V_{I(R)}$		± 12	± 13	-	V
		Note 1	-	-	-	
Common Mode Rejection Ratio	CMRR	$R_S \leq 10K\Omega$	70	90	-	dB
		Note 1	-	-	-	
Supply Voltage Rejection Ratio	PSRR	$R_S \leq 10K\Omega$	76	90	-	dB
		Note 1	76	90	-	
Output Voltage Swing	$V_{O(P-P)}$	$R_L \geq 10K\Omega$	± 12	± 14	-	V
		$R_L \geq 2K\Omega$	± 10	± 13	-	
Supply Current (Both Amplifiers)	I_{CC}		-	3.5	5.8	mA
		$T_A = T_A(MAX)$	-	-	5.0	
		$T_A = T_A(MIN)$	-	-	6.7	
Power Consumption (Both Amplifiers)	PC		-	70	170	mW
		$T_A = T_A(MAX)$	-	-	150	
		$T_A = T_A(MIN)$	-	-	200	
Slew Rate (Note2)	SR	$V_I = 10V, R_L \geq 2K\Omega$ $C_I \leq 100pF$	1.2	-	-	V/ μs
Rise Time (Note2)	T_R	$V_I = 20mV, R_L \geq 2K\Omega$ $C_I \leq 100pF$	-	0.3	-	μs
Overshoot (Note2)	OS	$V_I = 20mV, R_L \geq 2K\Omega$ $C_I \leq 100pF$	-	15	-	%

Note :

- MC4558C : $T_A(MIN) \leq T_A \leq T_A(MAX) = 0 \leq T_A \leq 70^\circ C$, MC4558V : $T_A(MIN) \leq T_A \leq T_A(MAX) = -40 \leq T_A \leq +85^\circ C$
- Guaranteed by design.

Typical Performance Characteristics

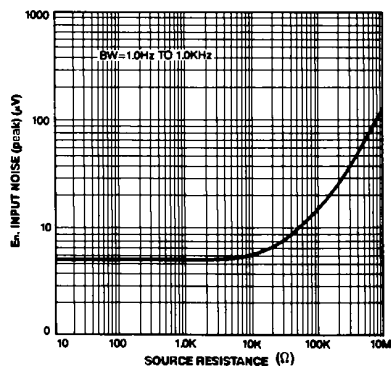


Figure 1. Burst Noise vs Source Resistance

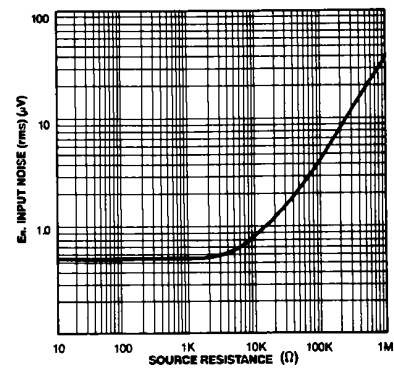


Figure 2. RMS Noise vs Source Resistance

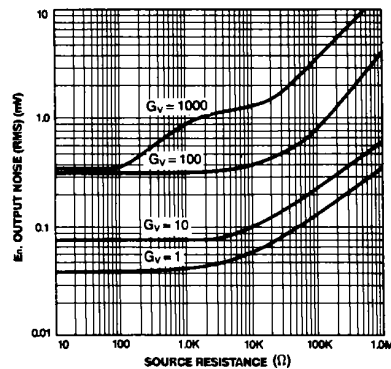


Figure 3. Output Noise vs Source Resistance

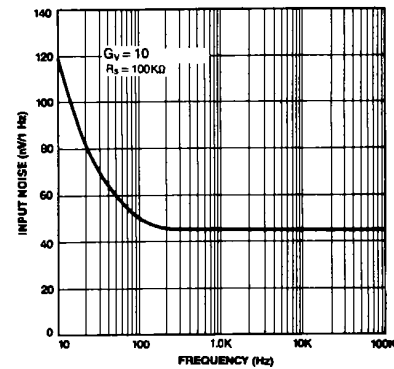


Figure 4. Spectral Noise Density

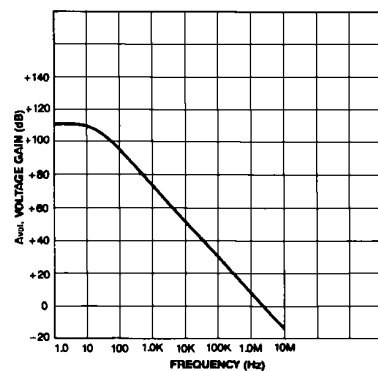


Figure 5. Open Loop Frequency Response

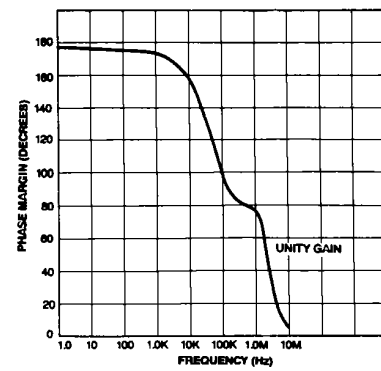


Figure 6. Phase Margin vs Frequency

Typical Performance Characteristics (continued)

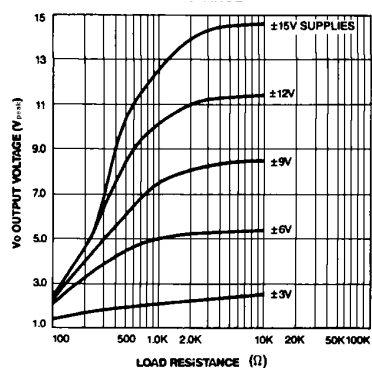


Figure 7. Positive Output Voltage Swing vs Load Resistance

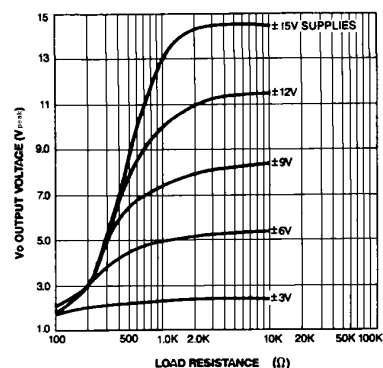


Figure 8. Negative Output Voltage Swing vs Load Resistance

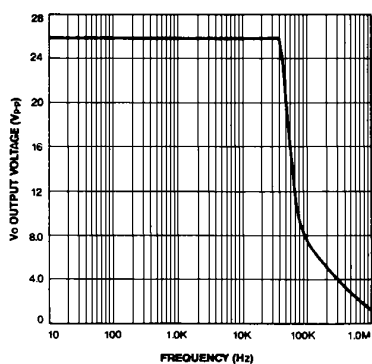
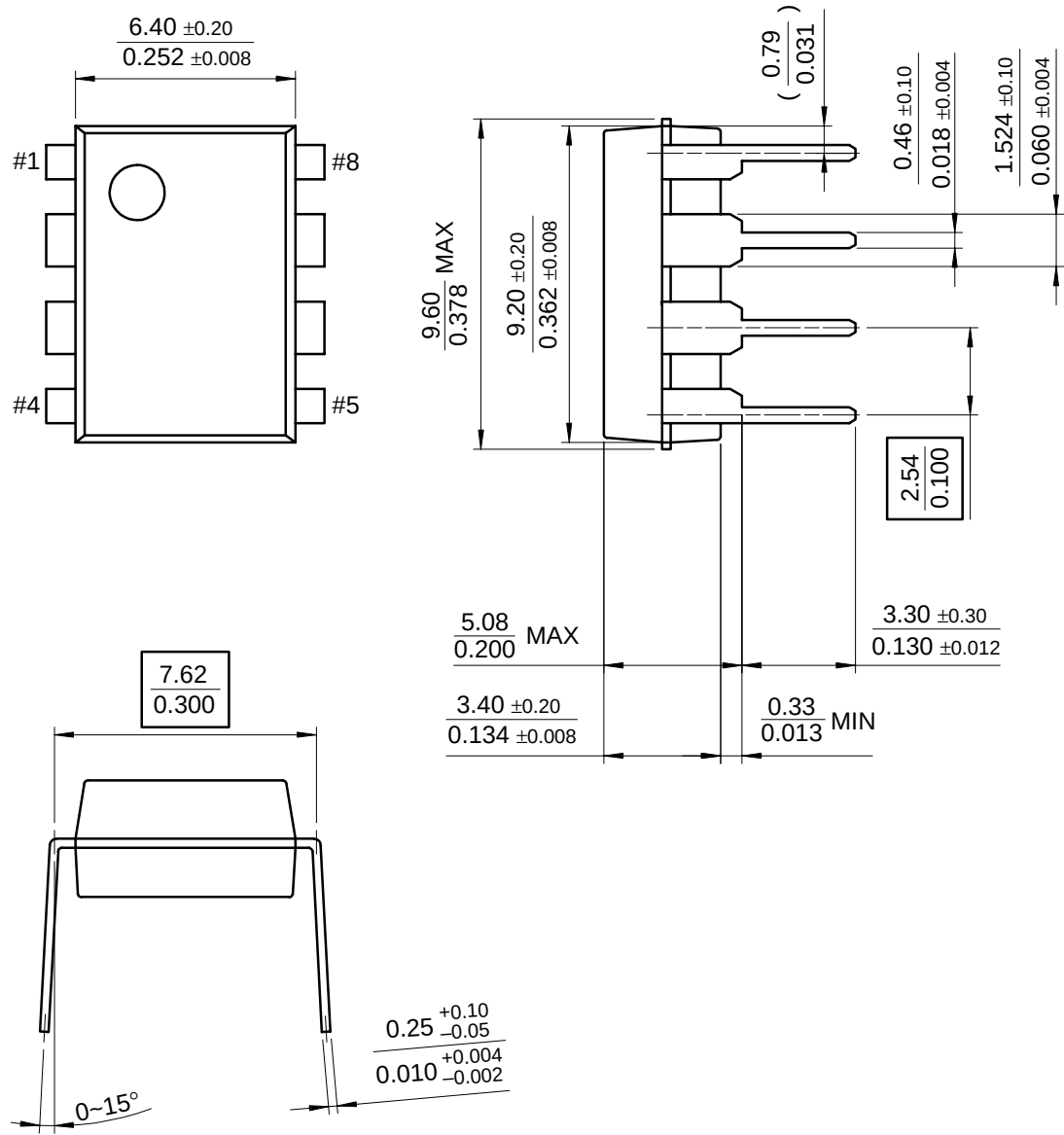


Figure 9. Power Bandwidth
(Large Signal Output Swing vs Frequency)

Mechanical Dimensions

Package

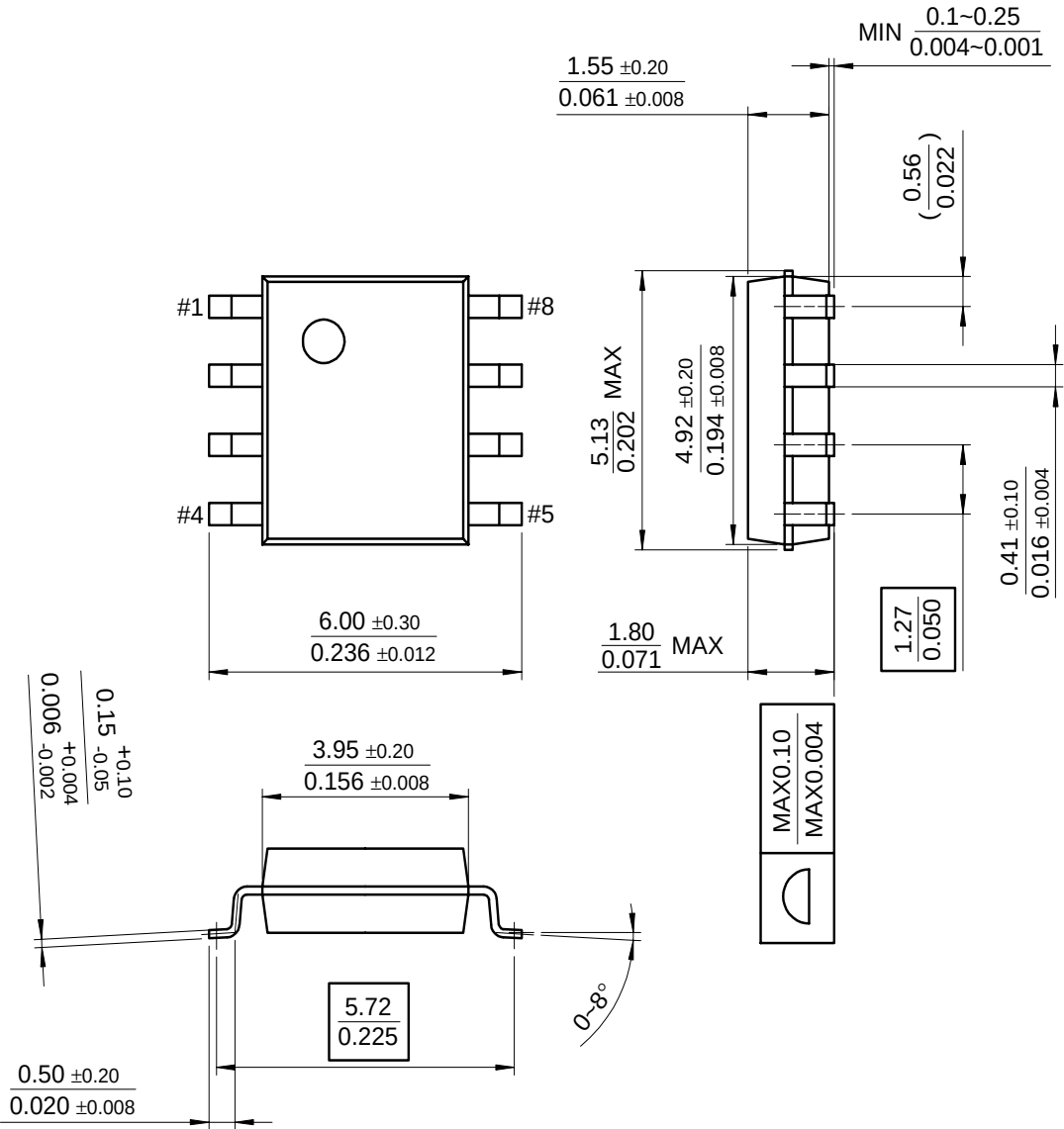
8-DIP



Mechanical Dimensions (Continued)

Package

8-SOP



Ordering Information

Product Number	Package	Operating Temperature
MC4558CP	8-DIP	0 ~ + 70°C
MC4558CD	8-SOP	
MC4558VP	8-DIP	-40 ~ +85°C
MC4558VD	8-SOP	

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.