

# MC4558

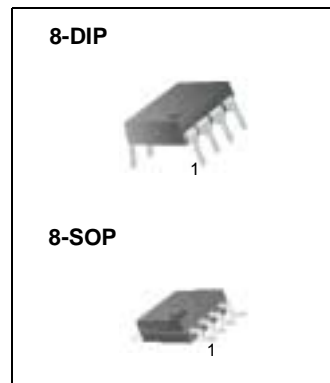
## Dual Operational Amplifier

### Features

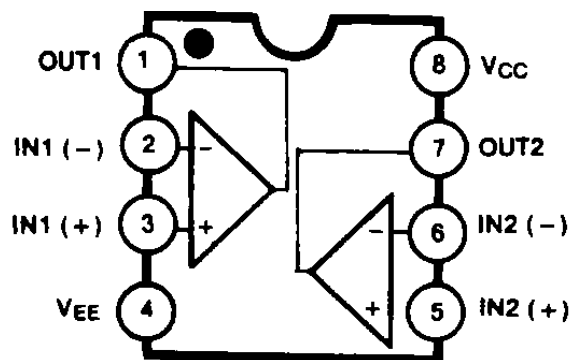
- No frequency compensation required.
- No latch up.
- Large common mode and differential voltage range.
- Parameter tracking over temperature range.
- Gain and phase match between amplifiers.
- Internally frequency compensated.
- Low noise input transistors.

### Descriptions

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

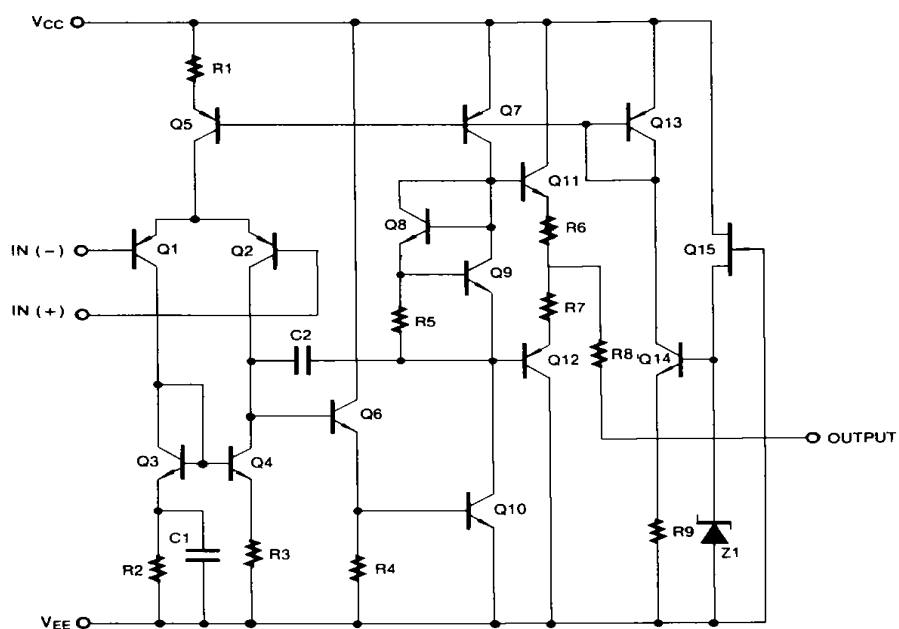


### Internal Block Diagram



## Schematic Diagram

(One Section Only)



## Absolute Maximum Ratings

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

## Electrical Characteristics

(VCC = 15V, VEE = - 15V ,TA = 25 °C unless otherwise specified)

Parameter	Symbol	Conditions	MC4558C/MC4558V			Unit
			Min	Typ	Max	
Input Offset Voltage	V <sub>IO</sub>	RS≤10KΩ	-	2	6	mV
		Note 1	-	-	7.5	
Input Offset Current	I <sub>IO</sub>		-	5	200	nA
		TA=TA(MAX)	-	-	300	
		TA =TA(MIN)	-	-	300	
Input Bias Current	I <sub>BIAS</sub>		-	30	500	nA
		TA=TA(MAX)	-	-	800	
		TA =TA(MIN)	-	-	800	
Large Signal Voltage Gain	GV	VO(P-P)= ±10V,RL≤2KΩ	20	200	-	V/mV
		Note 1	-	-	-	
Common Mode Input Voltage Range	V <sub>I(R)</sub>		±12	±13	-	V
		Note 1	-	-	-	
Common Mode Rejection Ratio	CMRR	RS≤10KΩ	70	90	-	dB
		Note 1	-	-	-	
Supply Voltage Rejection Ratio	PSRR	RS≤10KΩ	76	90	-	dB
		Note 1	76	90	-	
Output Voltage Swing	VO(P.P)	RL≥10KΩ	±12	±14	-	V
		RL≥2KΩ	±10	±13	-	
Supply Current (Both Amplifiers)	I <sub>CC</sub>		-	3.5	5.8	mA
		TA =TA(MAX)	-	-	5.0	
		TA =TA(MIN)	-	-	6.7	
Power Consumption (Both Amplifiers)	PC		-	70	170	mW
		TA =TA(MAX)	-	-	150	
		Ta = TA(MIN)	-	-	200	
Slew Rate (Note2)	SR	V <sub>I</sub> =10V, RL≥2KΩ C <sub>I</sub> ≤100pF	1.2	-	-	V/μs
Rise Time (Note2)	TR	V <sub>I</sub> =20mV, RL≥2KΩ C <sub>I</sub> ≤100pF	-	0.3	-	μs
Overshoot (Note2)	OS	V <sub>I</sub> =20mV, RL≥2KΩ C <sub>I</sub> ≤100pF	-	15	-	%

### Note :

- MC4558C : TA(MIN) ≤ TA ≤ TA(MAX) = 0 ≤ TA ≤ 70 °C , MC4558V : TA(MIN) ≤ TA ≤ TA(MAX) = -40 ≤ TA ≤ +85 °C
- Guaranteed by design.

## Typical Performance Characteristics

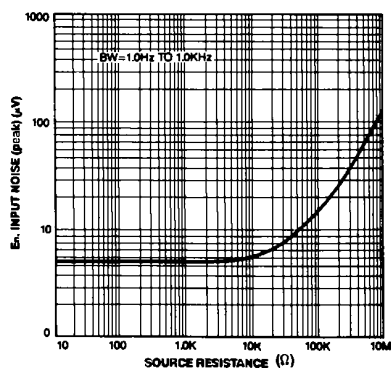


Figure 1. Burst Noise vs Source Resistance

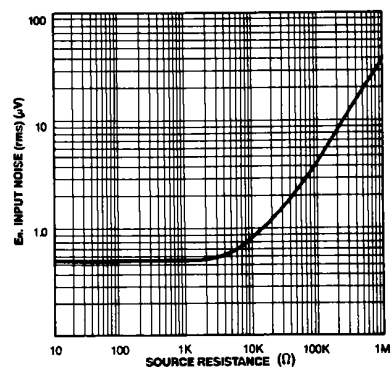


Figure 2. RMS Noise vs Source Resistance

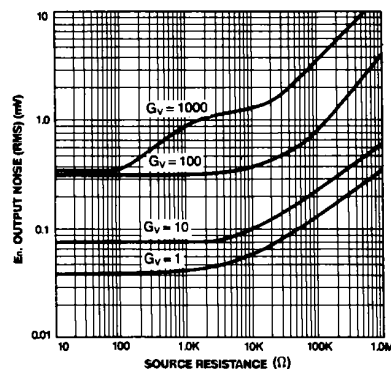


Figure 3. Output Noise vs Source Resistance

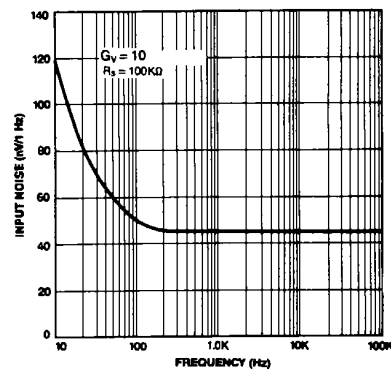


Figure 4. Spectral Noise Density

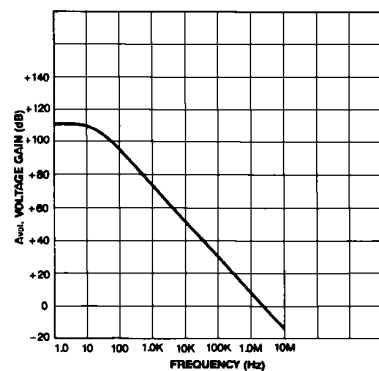


Figure 5. Open Loop Frequency Response

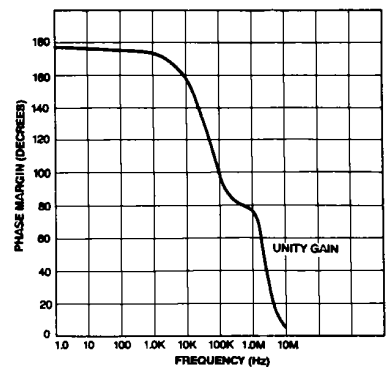


Figure 6. Phase Margin vs Frequency

## Typical Performance Characteristics (continued)

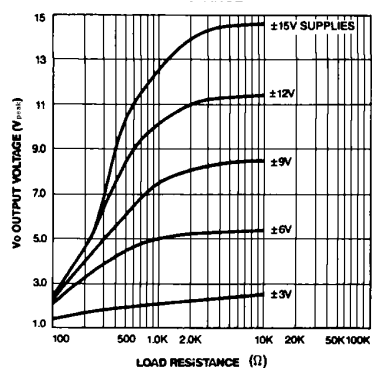


Figure 7. Positive Output Voltage Swing vs Load Resistance

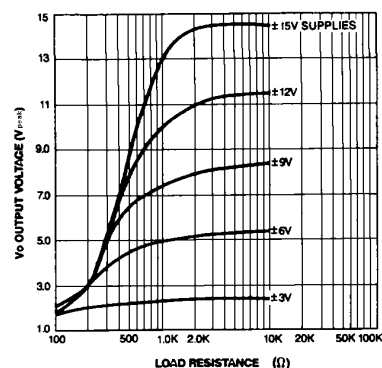


Figure 8. Negative Output Voltage Swing vs Load Resistance

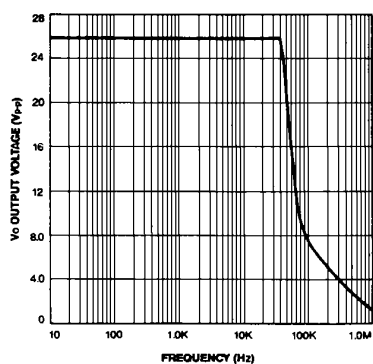


Figure 9. Power Bandwidth  
(Large Signal Output Swing vs Frequency)





## 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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