

# MC4558

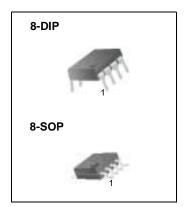
# **Dual Operational Amplifier**

#### **Features**

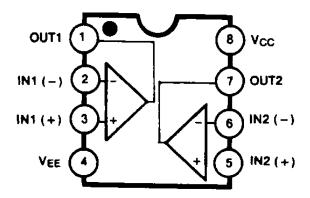
- No frequency compensation required.
- No latch up.
- Large common mode and differential voltage range.
- Parameter tracking over temperature range.
- Gain and phase match between amplifiers.
- Internally frequency compensated.
- Low noise input transistors.

### **Descriptions**

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

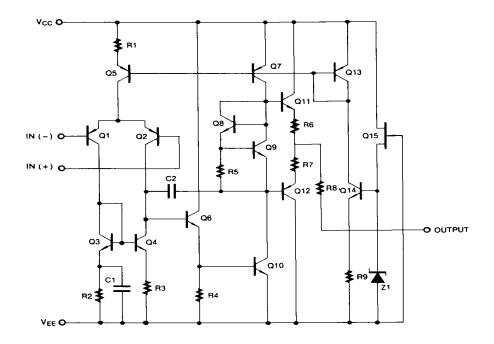


### **Internal Block Diagram**



## **Schematic Diagram**

(One Section Only)



## **Absolute Maximum Ratings**

Parameter	Symbol	Value	Unit	
Supply Voltage	Vcc	±22	V	
Differential Input Voltage	VI(DIFF)	30	V	
Input Voltage	Vı	±15	V	
Power Dissipation	PD	400	mW	
Operating Temperature Range MC4558C MC4558V	TOPR	0 ~ 70 -40 ~ 85	°C	
Storage Temperature Range	TSTG	-65 ~ 150	°C	

### **Electrical Characteristics**

(VCC = 15V, VEE = - 15V, TA = 25  $^{\circ}$ C unless otherwise specified)

Down of the Combail Co		aliti a m a	MC4558C/MC4558V			1124		
Parameter	Symbol	Conditions		Min	Тур	Max	Unit	
Input Offcot Voltage	Vio	Rs≤10KΩ		-	2	6	mV	
Input Offset Voltage	VIO		Note 1	-	-	7.5	IIIV	
				-	5	200		
Input Offset Current	liO		T <sub>A</sub> =T <sub>A</sub> (MAX)	-	-	300	nA	
			$T_A = T_A(MIN)$	-	-	300		
				-	30	500	nA	
Input Bias Current	IBIAS		TA=TA(MAX)	-	-	800		
			TA =TA(MIN)	-	-	800		
Large Signal	Large Signal GV		V,RL≤2KΩ	20	200	-	V/mV	
Voltage Gain	O v		Note 1	-	-	-	V/IIIV	
Common Mode Input Voltage Range	VI(D)			±12	±13	-	V	
	VI(K)		Note 1	-	-	-		
Common Mode	CMRR	R <sub>S</sub> ≤10KΩ Note 1		70	90	-	- dB	
Rejection Ratio	Rejection Ratio			-	-	-		
Supply Voltage	PSRR	Rs≤10KΩ		76	90	-	dB	
Rejection Ratio	TORK		Note 1	76	90	-	QD.	
Output Voltage Swing	VO(P.P)	RL≥10KΩ		±12	±14	-	V	
Output Voltage Owing	VO(F.F)	RL≥2KΩ		±10	±13	-	v	
Cumply Cumpant				-	3.5	5.8		
Supply Current (Both Amplifiers)	Icc		$T_A = T_A(MAX)$	-	-	5.0	mA	
(Bour / unpilinoro)			$T_A = T_A(MIN)$	-	-	6.7		
Dower Consumption				-	70	170		
Power Consumption (Both Amplifiers)	PC		TA = TA(MAX)	-	-	150	mW	
			$T_a = T_A(MIN)$	-	-	200		
Slew Rate (Note2)	SR	VI =10V, RL≥2KΩ CI≤100pF		1.2	-	-	V/μs	
Rise Time (Note2)	TR	VI =20mV, RL≥2KΩ CI≤100pF		-	0.3	-	μs	
Overshoot (Note2)	os	V <sub>I</sub> =20mV, R <sub>L</sub> ≥2KΩ C <sub>I</sub> ≤100pF		-	15	-	%	

#### Note:

 $<sup>1. \</sup> MC4558C: T_{A(MIN)} \leq T_{A} \leq T_{A(MAX)} = 0 \leq T_{A} \leq 70 \ ^{\circ}C \ , \ MC4558V: T_{A(MIN)} \leq T_{A} \leq T_{A(MAX)} = -40 \leq T_{A} \leq +85 \ ^{\circ}C$ 

<sup>2.</sup> Guaranteed by design.

### **Typical Performance Characteristics**

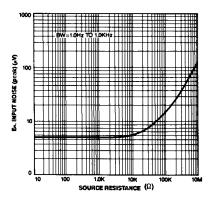


Figure 1. Burst Noise vs Source Resistance

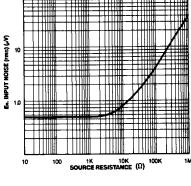


Figure 2. RMS Noise vs Source Resistance

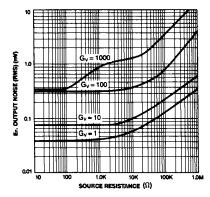


Figure 3. Output Noise vs Source Resistance

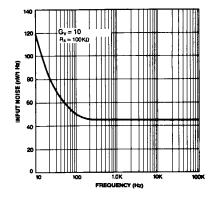


Figure 4. Spectral Noise Density

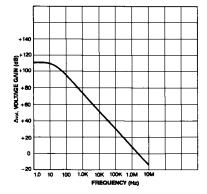


Figure 5. Open Loop Frequency Response

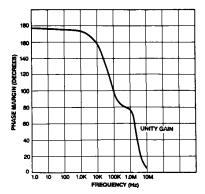


Figure 6. Phase Margin vs Frequency

## **Typical Performance Characteristics (continued)**

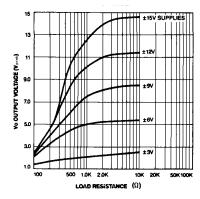


Figure 7. Positive Output Voltage Swing vs Load Resistance

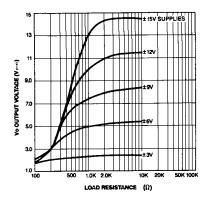


Figure 8. Negative Output Voltage Swing vs Load Resistance

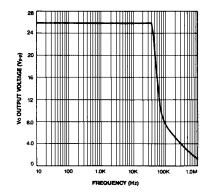
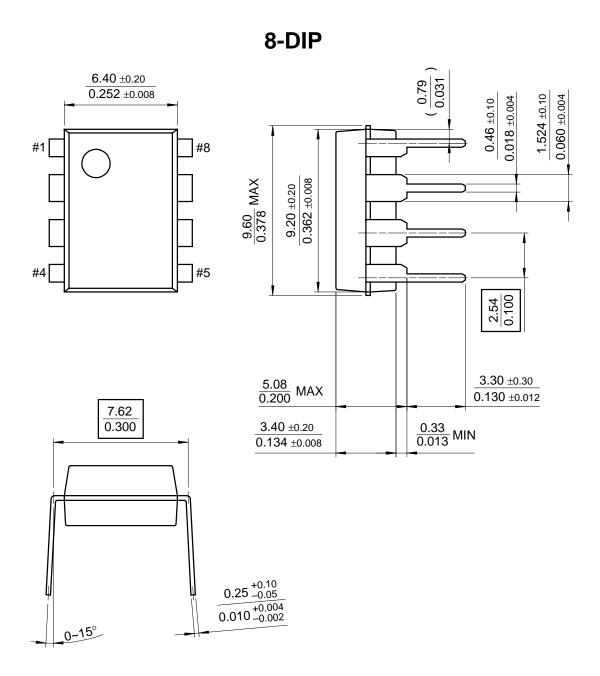


Figure 9. Power Bandwidth (Large Signal Output Swing vs Frequency)

### **Mechanical Dimensions**

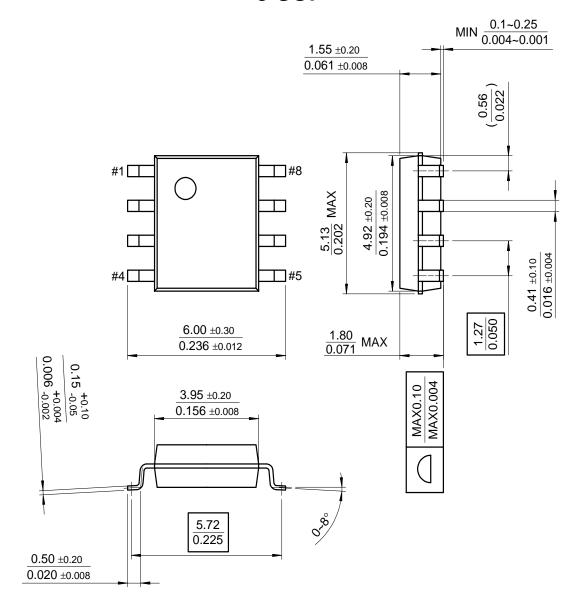
### **Package**



### **Mechanical Dimensions** (Continued)

### **Package**

# 8-SOP



## **Ordering Information**

Product Number	Package	Operating Temperature
MC4558CP	8-DIP	0 ~ + 70°C
MC4558CD	8-SOP	0~+70 C
MC4558VP	8-DIP	-40 ~ +85°C
MC4558VD	8-SOP	-40 ~ +65 C

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