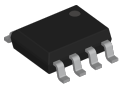
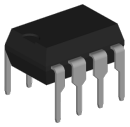
Dual Operational Amplfiers LM4558

FEATURES

- Continuous-Short-Circuit Protection
- Wide Common-Mode and Differential Voltage Ranges
- No Frequency Compensation Required
- Low Power Consumption
- No Latch-Up
- Gain and Phase Match Between Amplifiers



SOP-8



DIP-8

APPLICATIONS

- DVD Recorders and Players
- Pro Audio Mixers

DESCRIPTION

The LM4558 device a monolithic integrated circuit designed for dual operational amplifier. The high common-mode input voltage range and the absence of latch-up make these amplifiers ideal for voltage-follower applications. The devices are short-circuit protected and the internal frequency compensation ensures stability without external components.

ORDERING INFORMATION

Device	Package
LM4558D	SOP-8
LM4558N	DIP-8

ABSOLUTE MAXIMUM RATINGS (Note 1)

CHARACTERISTIC	SYMBOL	MIN.	MAX.	UNIT
Supply Voltage	V_{CC}	-	±22	V
Differential Input Voltage	V_{ID}	-	±30	V
Input Voltage Range (either input)	V_{IC}	-	±15	V
Storage Temperature Range	T_{STG}	−65	150	°C

Note 1. Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

RECOMMENDED OPERATING CONDITIONS (Note 2)

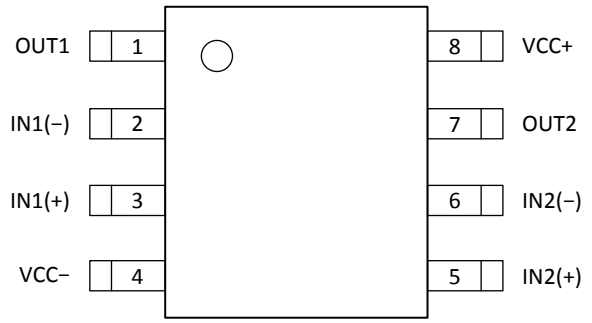
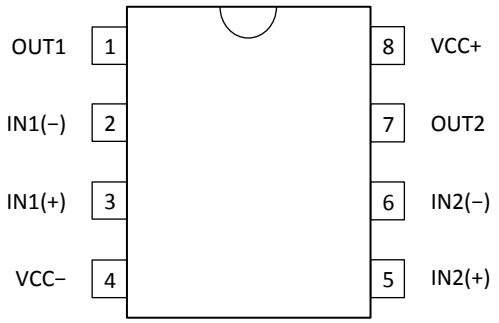
CHARACTERISTIC	SYMBOL	MIN.	MAX.	UNIT
Supply Voltage	V_{CC+}	5	15	V
	V_{CC-}	−5	−15	V
Operating Ambient Temperature Range	T_A	−25	85	°C

Note 2. The device is not guaranteed to function outside its operating ratings.
Note 3. All voltage values, unless otherwise noted, are with respect to the midpoint between VCC+ and VCC−.
Note 4. Differential voltages are at IN+ with respect to IN−.
Note 5. The magnitude of the input voltage must never exceed the magnitude of supply voltage or 15V, whichever is less.

ORDERING INFORMATION

Package	Order No.	Description	Supplied As	Status
SOP-8	LM4558D	Dual Operational Amplifiers	Tape & Reel	Active
DIP-8	LM4558N	Dual Operational Amplifiers	Tube	Active

PIN CONFIGURATION

SOP-8	DIP-8
	

PIN DESCRIPTION

Pin No.		Pin Name	Pin Function
SOP-8	DIP-8		
1	1	OUT1	Output of the Amplifier 1
2	2	IN1(−)	Inverting Input of the Amplifier 1
3	3	IN1(+)	Non-inverting Input of the Amplifier 1
4	4	VCC−	Negative Power Supply
5	5	IN2(+)	Non-inverting Input of the Amplifier 2
6	6	IN2(−)	Inverting Input of the Amplifier 2
7	7	OUT2	Output of the Amplifier 2
8	8	VCC+	Positive Power Supply

ELECTRICAL CHARACTERISTICS

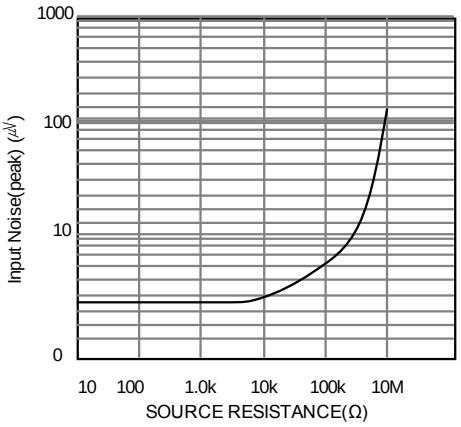
At specified free-air temperature, V_{CC+} = 15V, V_{CC-} = −15V, unless otherwise specified

SYMBOL	PARAMETER	TEST CONDITIONS	T_A	MIN	TYP	MAX	UNIT
V_{IO}	Input Offset Voltage	V_O = 0V	25°C	-	-	5	mV
			Full range	-	-	6	
I_{IO}	Input Offset Current	V_O = 0V	25°C	-	-	160	nA
			Full range	-	-	500	
I_{IB}	Input Bias Current	V_O = 0V	25°C	-	-	480	nA
			Full range	-	-	1500	
V_{ICR}	Common-mode Input Voltage Range		25°C	±12	-	-	V
V_{OM}	Maximum Output Voltage Swing	R_L = 10kΩ	25°C	±12	-	-	V
		R_L = 2kΩ	25°C	±10	-	-	
		R_L ≥ 2kΩ	Full range	±10	-	-	
A_{VD}	Large-Signal Differential Voltage Amplification	R_L ≥ 2kΩ, V_O = ±10V	25°C	50		-	V/mV
			Full range	25	-	-	
r_i	Input Resistance			0.3	-		MΩ
CMRR	Common-mode Rejection Ratio		25°C	70	-	-	dB
k_{SVS}	Supply-Voltage Sensitivity ($\Delta V_{IO}/\Delta V_{CC}$)		25°C	-	-	150	μV/V
I_{CC}	Supply Current (both amplifiers)	V_O = 0V, No Load	25°C	-	-	5.0	mA
			Full range	-	-	5.9	

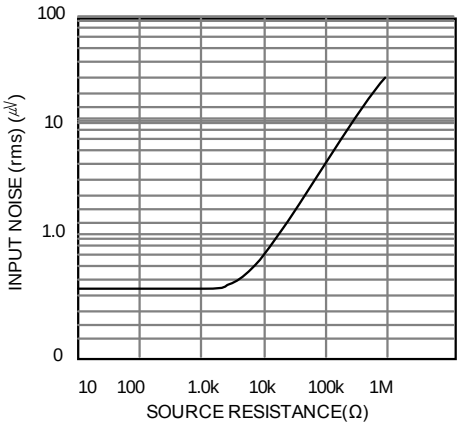
Note 6. All characteristics are measured under open-loop conditions with zero common-mode input voltage, unless otherwise specified.

Note 7. Temperature full range is −25°C to +85°C.

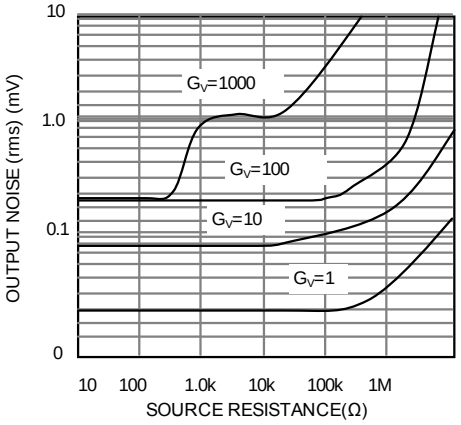
TYPICAL OPERATING CHARACTERISTICS



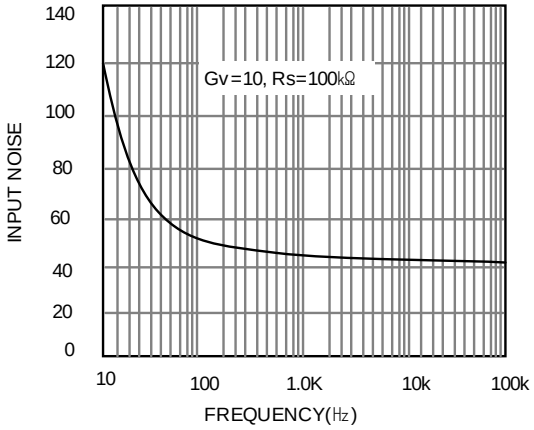
Burst Noise vs Source Resistance



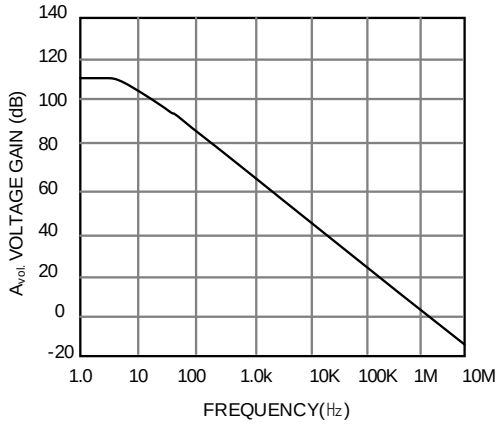
RMS Noise vs Source Resistance



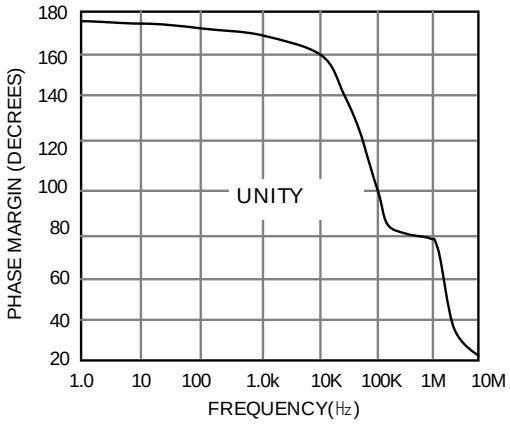
Output Noise vs Source Resistance



Spectral Noise Density

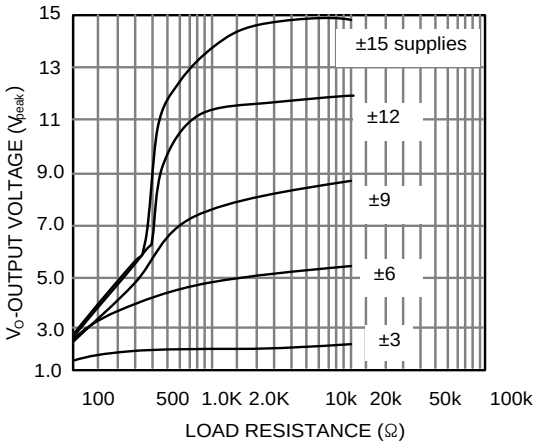


Open Loop Frequency Response

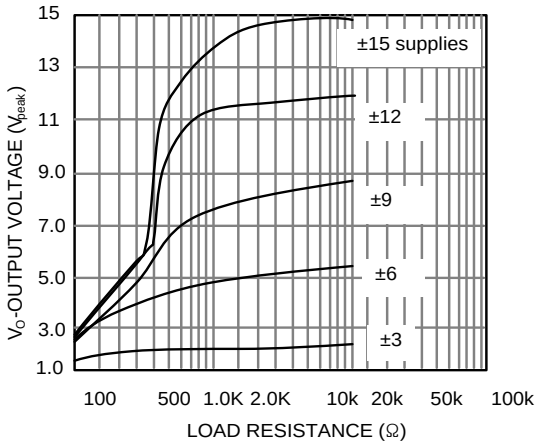


Phase Margin vs Frequency

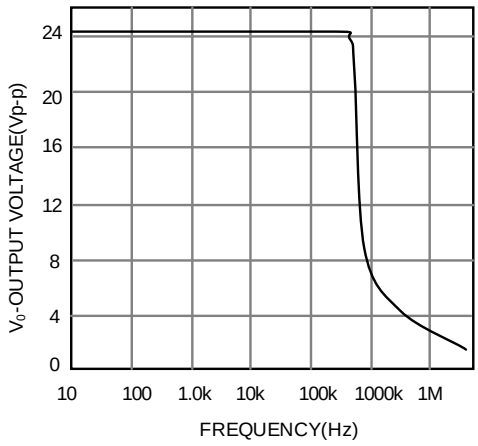
TYPICAL OPERATING CHARACTERISTICS (continued)



Positive Output Voltage Swing vs Load Resistance



Negative Output Voltage Swing vs Load Resistance



Power Bandwidth

REVISION NOTICE

The description in this datasheet is subject to change without any notice to describe its electrical characteristics properly.