Dual Wide Bandwidth Operational Amplifiers

FEATURES

- 2.5MHz Unity Gain Bandwidth Guaranteed(PJ4558)
- Internally Compensated
- Short Circuit Protection
- Gain and Phase Match between Amplifiers
- Low Power Consumption

DIP-8 SOP-8

Pin: 1.Output A 5. Input B
2.Input A 6. Input B
3.Input A 7. Output B
4.V_{EE} 8.Vcc

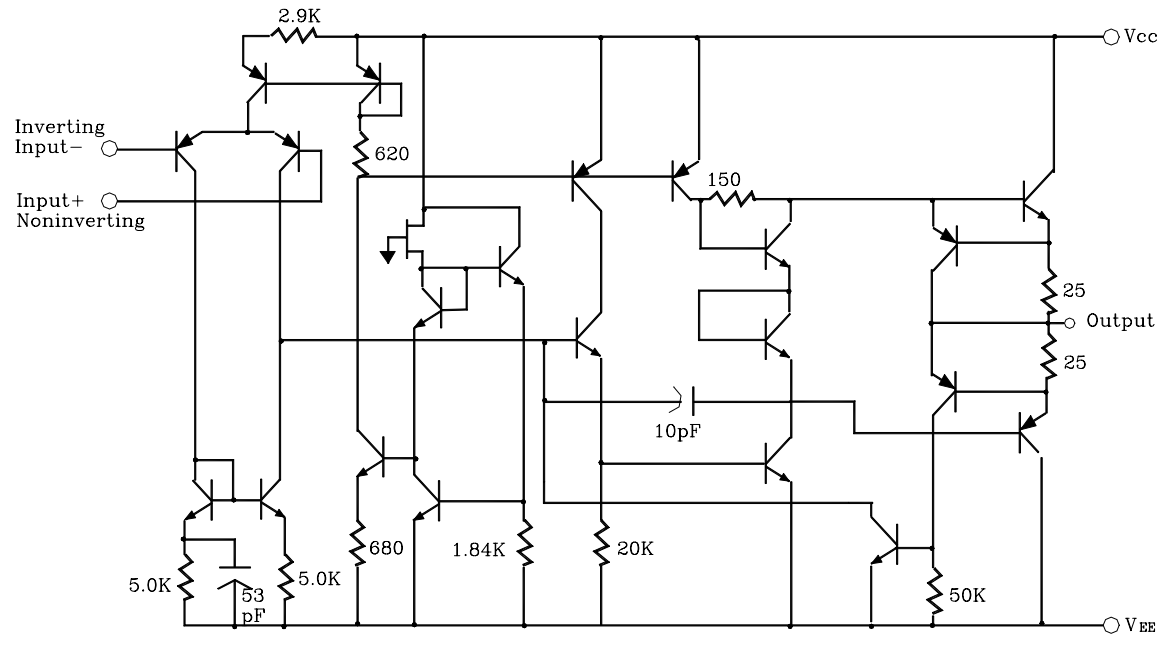
ORDERING INFORMATION

Device	Operating Temperature	Package
PJ4558CS	-20℃ ~~ +85℃	SOP-8
PJ4558CD		DIP-8

MAXIMUM RATINGS(T_A=25℃, unless otherwise noted)

Rating	Symbol	PJ4558	Unit
Power Supply Voltage	Vcc V_{EE}	+22 -22	Vdc
Input Differential Voltage	V_{ID}	±30	V
Input Common Mode Voltage (Note 1)	V_{ICM}	±15	V
Output Short Circuit Duration (Note 2)	tsc	Continuous	--
Ambient Temperature Range	T_A	-20 to 85	℃
Storage Temperature Range	Tstg	5 to 125	℃
Junction Temperature	T_J	150	℃

BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS(Vcc=+15V,V_{EE}= -15V, T_A=25℃,unless otherwise noted)

Input Offset Voltage(Rs≤10KΩ)	V_{IO}	--	1.0	5.0	mV
Input Offset Current	I_{IO}	--	20	200	nA
Input Bias Current(Note 1)	I_{IB}	--	80	500	nA
Input Resistance	rj	0.3	2.0	--	MΩ
Input Capacitance	Cj	--	1.4	--	pF
Common Mode Input Voltage Range	V_{ICR}	±12	±13	--	V
Large Signal Voltage Gain (Vo=±10V,R_L=2.0KΩ)	A_{VOL}	50	200	--	V/mV
Output Resistance	ro	--	75	--	Ω
Common Mode Rejection(Rs≤10KΩ)	CMR	70	90	--	dB
Supply Voltage Rejection Ratio(Rs≤10KΩ)	PSRR	--	30	150	μV/V
Output Voltage Swing (R_L≥10KΩ) (R_L≥2.0KΩ)	Vo	±12 ±10	±14 ±13	-- --	V
Output Short Circuit Current	Isc	10	20	40	mA
Supply Currents(Both Amplifiers)	I_D	--	2.3	5.0	mA
Power Consumption(Both Amplifiers)	Pc	--	70	150	mW
Transient Reponse(Unity Gain) (V_I=20mV , R_L≥2.0KΩ, C_L≥100pF)Rise Time (V_I=20mV , R_L≥2.0KΩ, C_L≥100pF)Overshoot (V_I=10V , R_L≥2.0KΩ, C_L≥100pF)Slew Rate	 t_{TLH} os SR	 -- -- 1.5	 0.3 15 1.6	 -- -- --	 μs % V/μs

ELECTRICAL CHARACTERISTICS(Vcc=+15V,V_{EE}= -15V,T_A=Thigh to Tlow,unless otherwise noted)

Input Offset Votlage(Rs≤10KΩ)	V_{IO}	-	1.0	6.0	mV
Input Offset Current (T_A=Thigh) (T_A=Tlow) (T_A=0℃ to 70℃)	I_{IO}	-- -- --	7.0 85 --	200 500 --	nA
Input Bias Current (T_A=Thigh) (T_A=Tlow) (T_A=0℃ to 70℃)	I_{IB}	-- -- --	30 300 --	500 1500 --	nA
Common Mode Input Voltage Range	V_{ICR}	±12	±13	--	V
Large Signal Voltage Gain(Vo=±10V,R_L=2.0 KΩ)	A_{VOL}	26	--	--	V/mV
Common Mode Rejection(Rs≤10KΩ)	CMR	70	90	--	dB
Supply Voltage Rejection Ratio(Rs≤10KΩ)	PSRR	--	30	150	μV/V
Output Voltage Swing (R_L≥10KΩ) (R_L≥2.0KΩ)	Vo	±12 ±10	±14 ±13	-- --	V
Supply currents(Both Amplifiers) (T_A=Thigh) (T_A=Tlow)	I_D	-- --	-- --	4.5 6.0	mA
Power Consumption(Both Amplifiers) (T_A=Thigh) (T_A=Tlow)	Pc	-- --	-- --	135 180	mW

Notes:1. I_{IB} is out of amplifier due to PNP input transistors. 2.T high=70℃, T low=0℃.

Figure 1.Burst Noise versus Source Resistance

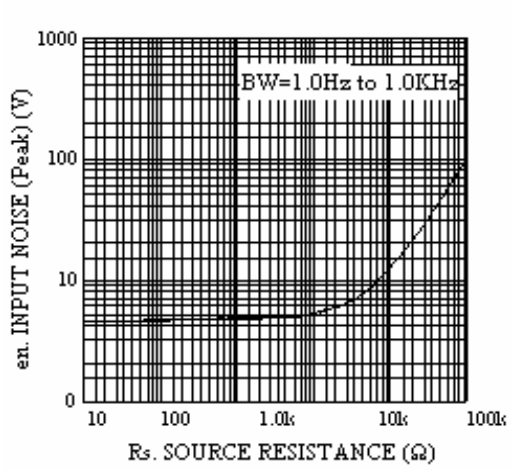


Figure 2.RMS Noise versus Source Resistance

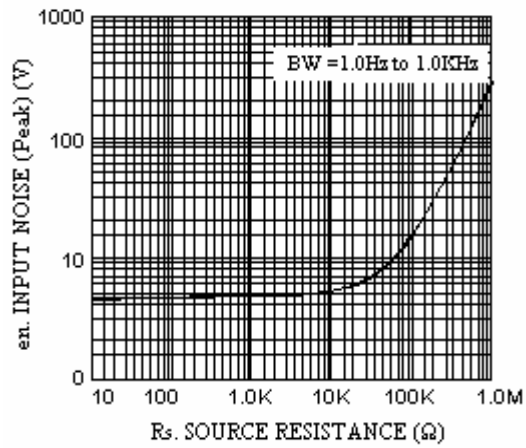


Figure 3.Output Noise Versus Source Resistance

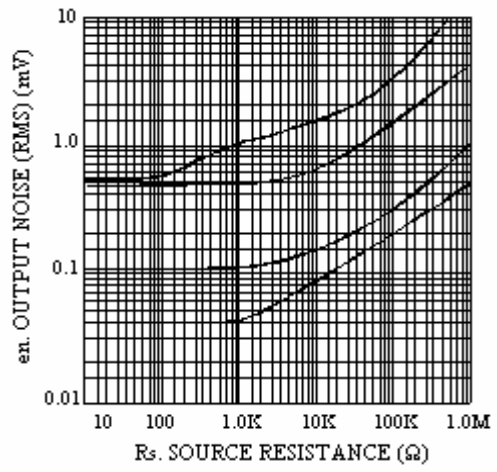


Figure 4.Spectrial Noise Density

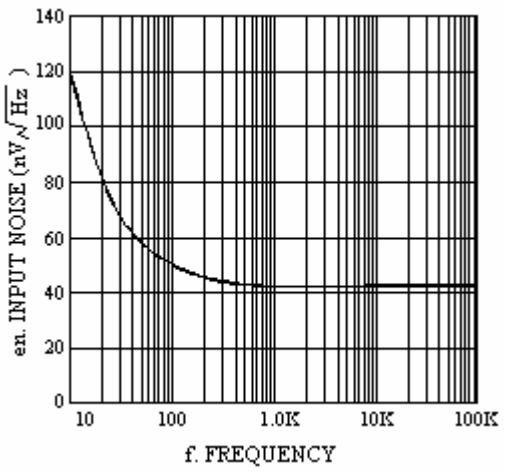
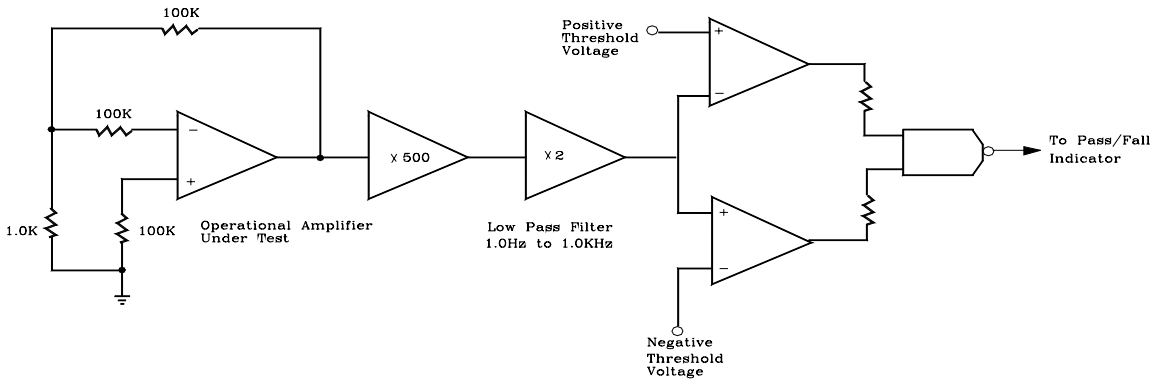


Figure 5.Burse Noise Test Circuit



Unlike conventional peak reading or RMS meters, this system was especially designed to provide the quick response time essential to burst(popcorn) noise testing.

The test time employed is 10 sec and the 20μVpeak limit refers to the operational amplifier input thus eliminating errors in the closed loop gain factor of the operational amplifier.

Figure 6. Open Loop Frequency Response

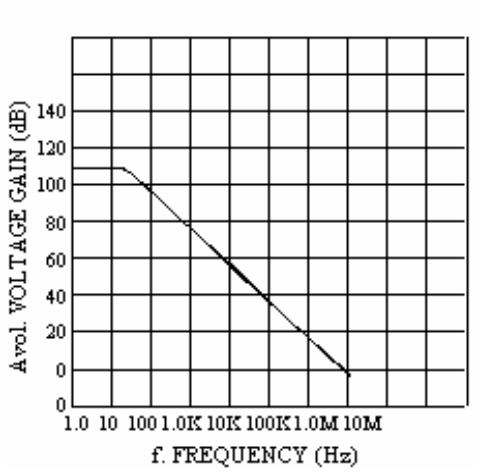


Figure 7.Phase Margin versus Frequency

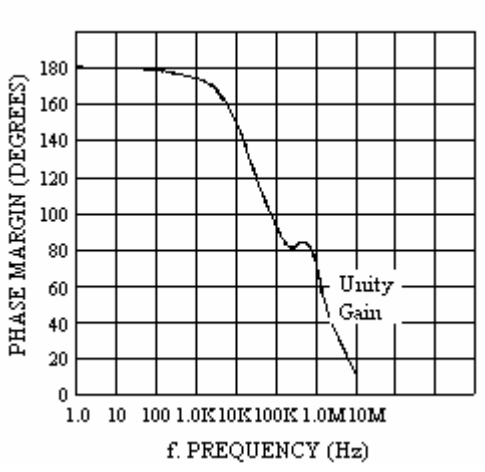


Figure 8.Positive Output Voltage Swing versus Load Resistance

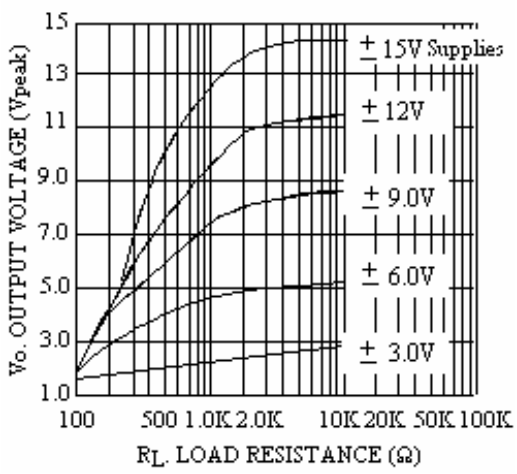


Figure 9.Negative Output Voltage Swing versus Load Resistance

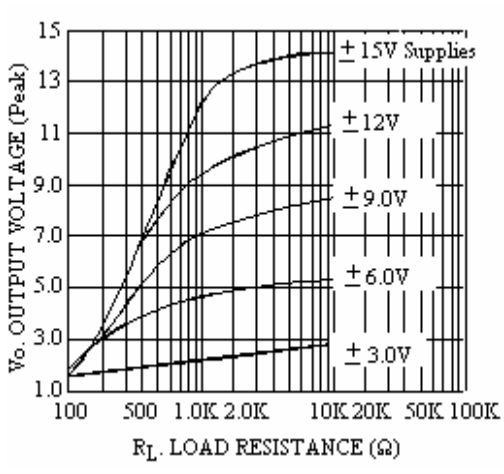


Figure 10.Power Bandwidth (Large Signal Swing versus Frequency)

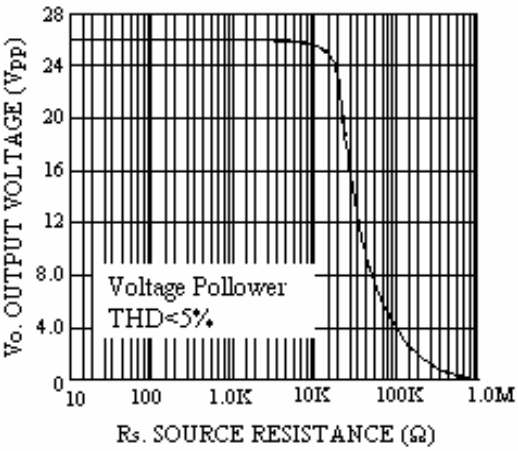
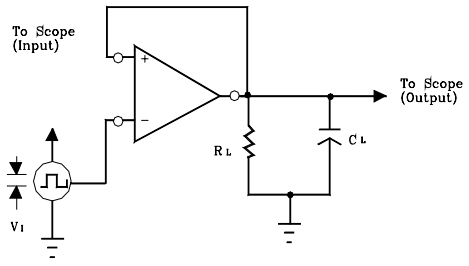
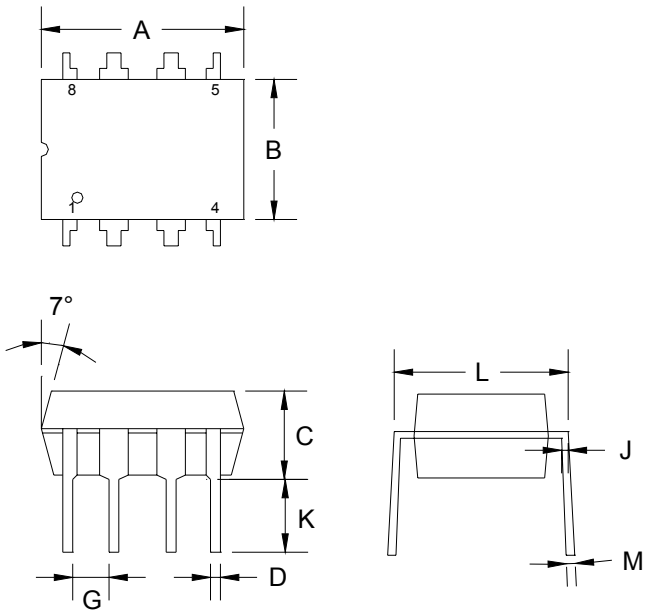


Figure 11.Transient Response Test Circuit

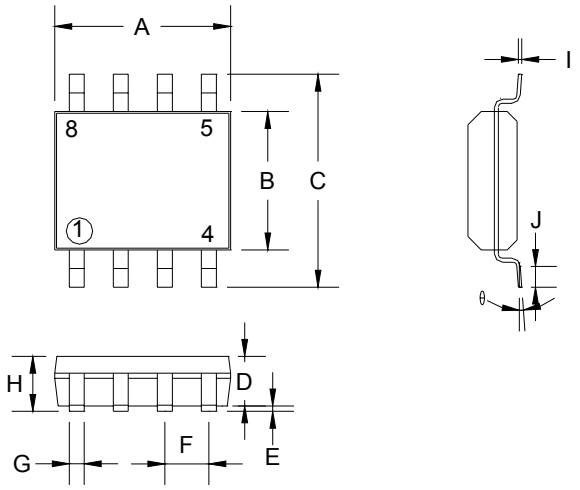


DIP-8 Unit：mm



DIP-8 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.070	9.320	0.357	0.367
B	6.220	6.480	0.245	0.255
C	3.180	4.430	0.125	0.174
D	0.350	0.550	0.019	0.022
G	2.54BSC		0.10BSC	
J	0.150	0.290	0.006	0.011
K	3.250	3.350	0.128	0.132
L	7.750	8.000	0.305	0.315
M	-	10°	-	10°

SOP-8 Unit：mm



SOP-8 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.800	5.000	0.189	0.197
B	3.800	4.000	0.150	0.157
C	5.800	6.200	0.228	0.244
D	1.400	1.500	0.055	0.059
E	-	0.100	-	0.004
F	1.27BSC		0.05BSC	
G	0.330	0.510	0.013	0.020
H	1.450	1.550	0.057	0.061
I	0.190	0.250	0.007	0.010
J	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°