Descriptions

The NJM5532M is a dual operational amplifier IC designed for improved tone control and is well suited for audio applications. Its noise-free, high gain bandwidth, high output current, and low distortion ratio make it suitable not only for acoustic electronic components of audio preamplifiers and active filters, but also for industrial measurement tools. It is also suitable for headphone amplifiers with high output currents, and can be applied to general purpose portable integrated power amplifiers to appropriately bias input low voltage sources in low voltage single supply applications.

Feature

- Operating voltage(±2V ~ ±18V ）
- Low input noise voltage（Typical value 0.8μVrms ）
- Wide gain bandwidth product（Typical value 15MHz ）
- Low distortion（Typical value 0.0005% ）
- Rate of conversion（Typical value 5V/μs ）
- Bipolar technique

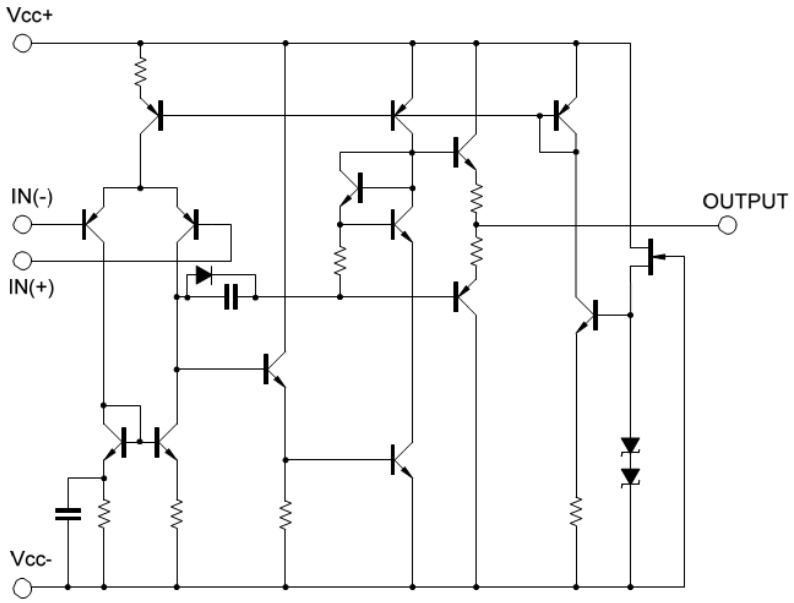
Applications

- Audio Preamplifiers
- Active Filters
- Headphone Amplifiers
- Industrial Measurement Equipment

Ordering Information

Product Model	Package Type	Packing	Packing Qty
NJM5532M	SOP-8	Tape	2500Pcs/Reel

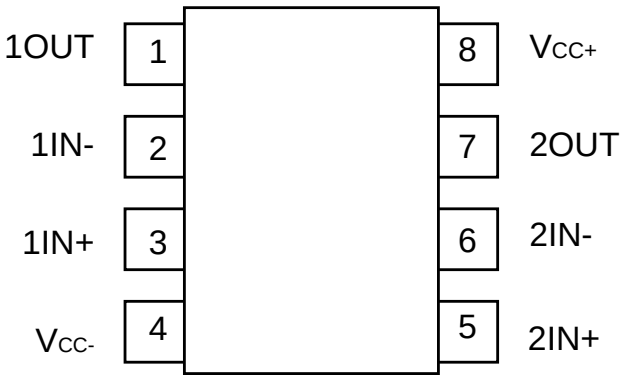
Internal Block Diagram (1/2)

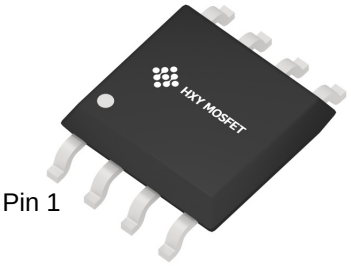


Pin Configurations

SOP-8

(Top View)





Pin Description

Pin	Symbol	I/O	Pin Description
1	1OUT	O	Output
2	1IN–	I	Inverting input
3	1IN+	I	Noninverting input
4	$V_{CC–}$	—	Negative supply
5	2IN+	I	Noninverting input
6	2IN–	I	Inverting input
7	2OUT	O	Output
8	V_{CC+}	—	Positive supply

Absolute Maximum Ratings

(T_A=25 ° C,not otherwise specified.)

Parameters	Symbol	Scope of scope	Unit of work
Supply voltage	V_{cc+}/V_{cc-}	±18	V
Input voltage	V_{in}	±15	V
Differential input voltage	$V_{I(DIFF)}$	±30	V
Current of output	I_{OUT}	±50	mA
Power consumption		440	mV
Temperature of junction	T_J	125	°C
Operating temperature	T_{OPR}	-40 ~ +85	°C
Temperature of storage	T_{STG}	-40 ~ +125	°C

Note: Exceeding the limit parameters listed may lead to permanent damage inside the chip,and long-term operation under the limit conditions will affect the reliability of the chip.

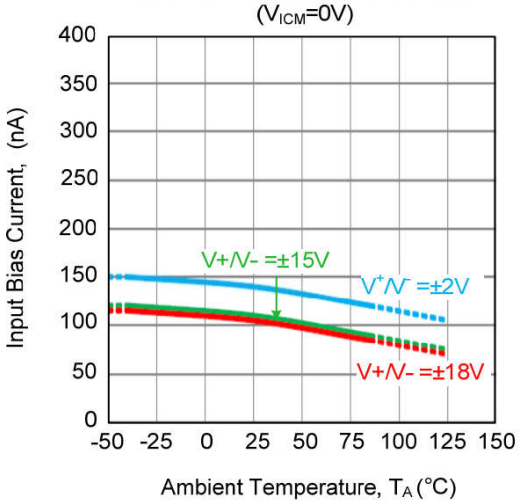
DC Electrical Characteristics

(V+ /V-=±15V, T_A=25°C, Unless otherwise stated.)

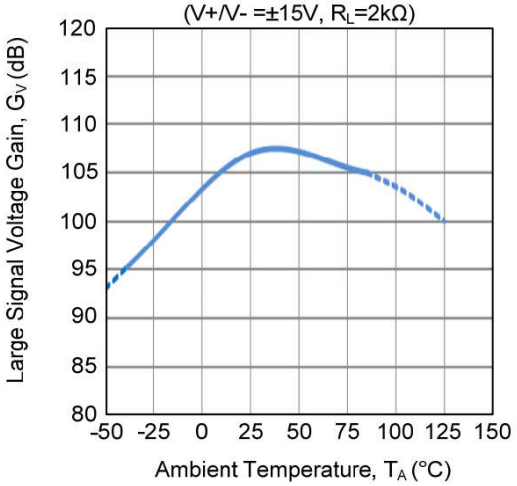
Parameters	Symbol	Condition of test	Min	Typ	Max	Unit
Input bias voltage	$V_{I(OFF)}$	R_S≤10kΩ		0.5	3	mV
Input bias voltage	$I_{I(OFF)}$			5	200	nA
Input bias current	$I_{I(BIAS)}$			100	500	nA
Large signal voltage gain	G_v	V_{OU}T=±10V, R_L≥2kΩ	90	110		dB
Output voltage swing	V_{OM}	R_L≥2kΩ	±12	±13.5		V
Input the common mode voltage	$V_{I(CM)}$		±12	±13.5		V
Common mode inhibition ratio	CMRR	R_S≤10kΩ	80	110		dB
Supply voltage rejection ratio	SVR	Rs≤10kΩ	80	110		dB
Current of operation	I_{CC}			6	9	mA
Rate of conversion	SR	R_L≥2kΩ		5		V/μs
Gain bandwidth product	GB	f=10KHz		15		MHz
Total harmonic distortion	THD	G_v=20dB,V_{OUT}=5V, R_L=2kΩ, f=1KHz		0.0005		%
Input noise voltage	eN	R_{IAA} R_s=2.2 kΩ, 30kHz LPF		0.8		μVrms

Typical characteristics

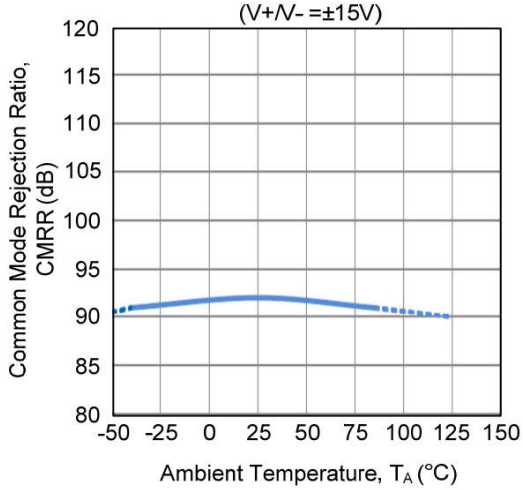
Input Bias Current vs. Temperature
(V_{ICM}=0V)



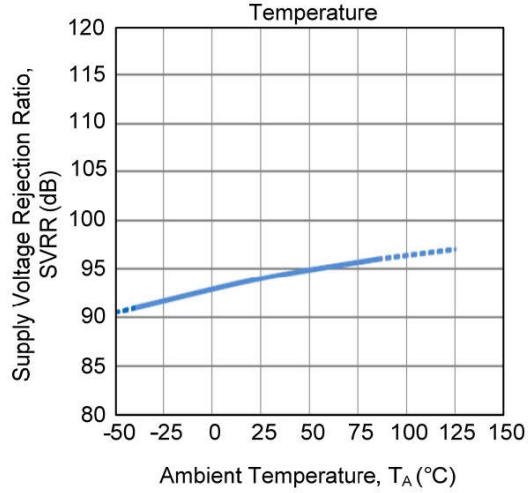
Large Signal Voltage Gain vs. Temperature
(V+/V- =±15V, R_L=2kΩ)



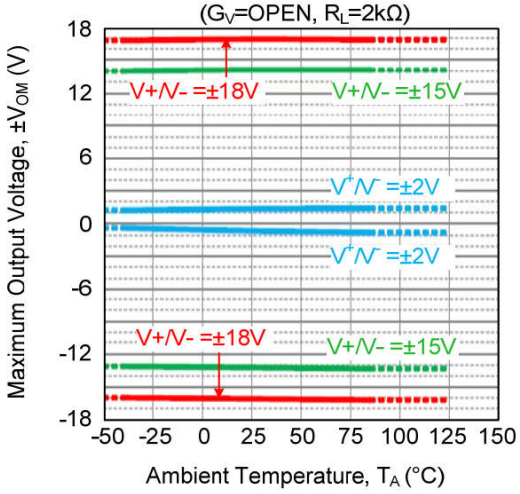
Common Mode Rejection Ratio vs. Temperature
(V+/V- =±15V)



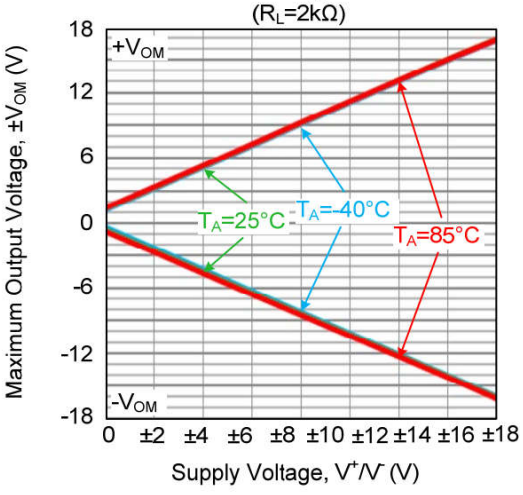
Supply Voltage Rejection Ratio vs. Temperature



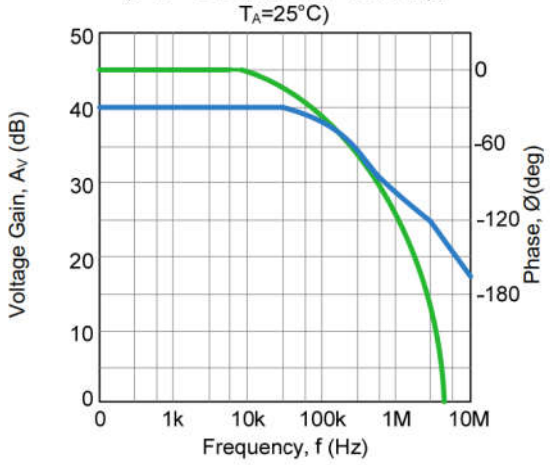
Maximum Output Voltage vs. Temperature
(G_V=OPEN, R_L=2kΩ)



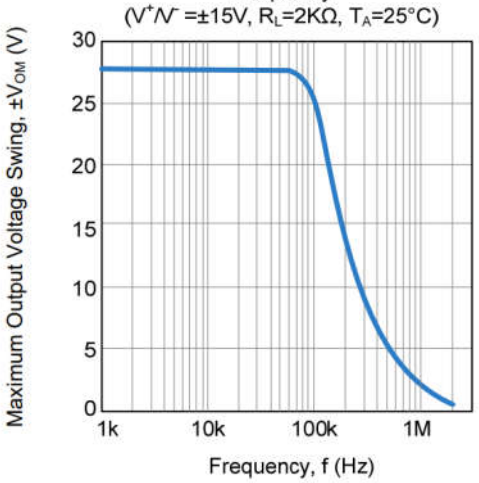
Maximum Output Voltage vs. Supply Voltage
(R_L=2kΩ)



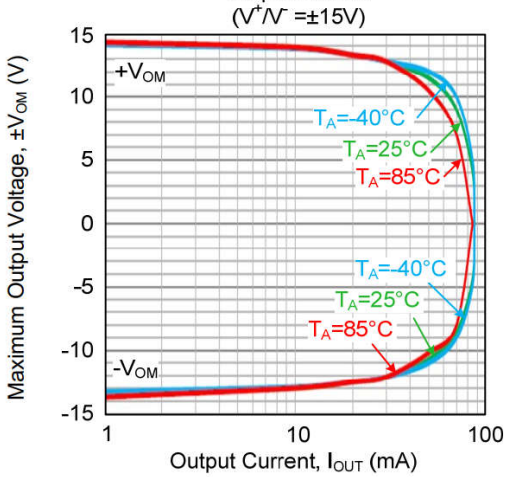
Voltage Gain, Phase vs. Frequency
(V^+/V^- =±15V, R_L=2kΩ, 40dBAmp, T_A=25°C)



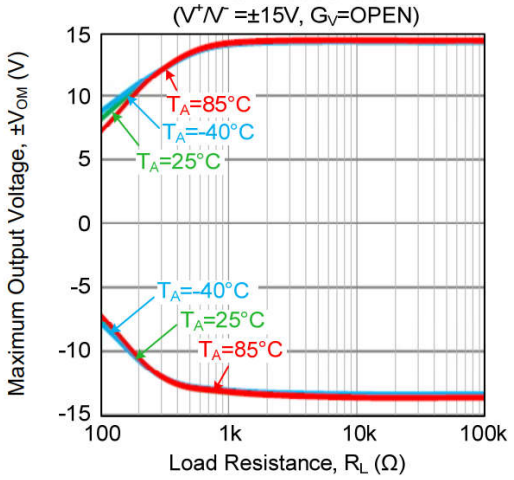
Maximum Output Voltage Swing vs. Frequency
(V^+/V^- =±15V, R_L=2KΩ, T_A=25°C)



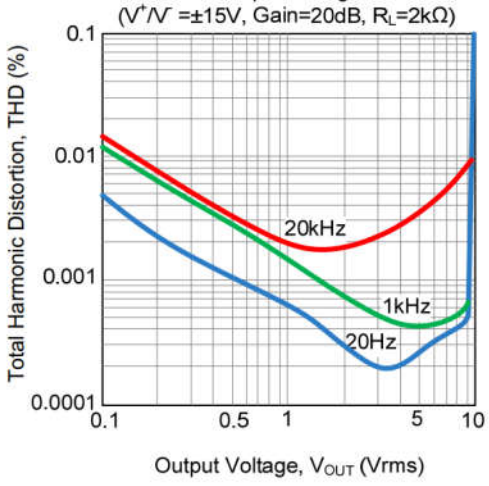
Maximum Output Voltage vs. Output Current
(V^+/V^- =±15V)



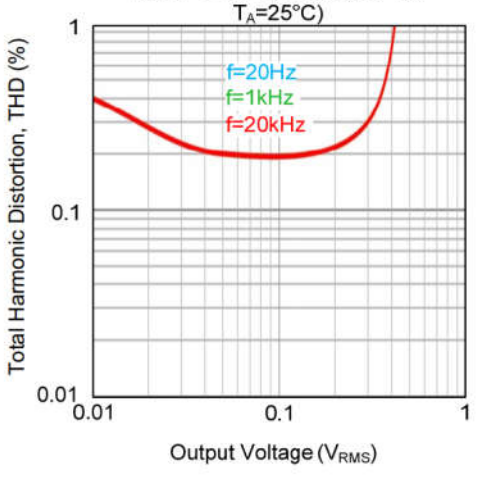
Maximum Output Voltage vs. Load Resistance
(V^+/V^- =±15V, G_V=OPEN)



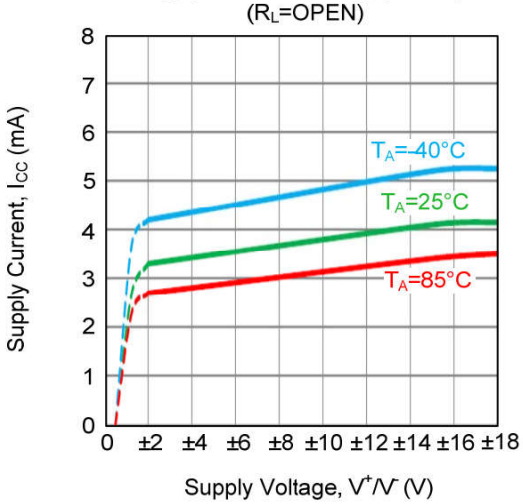
Total Harmonic Distortion vs. Output Voltage
(V^+/V^- =±15V, Gain=20dB, R_L=2kΩ)



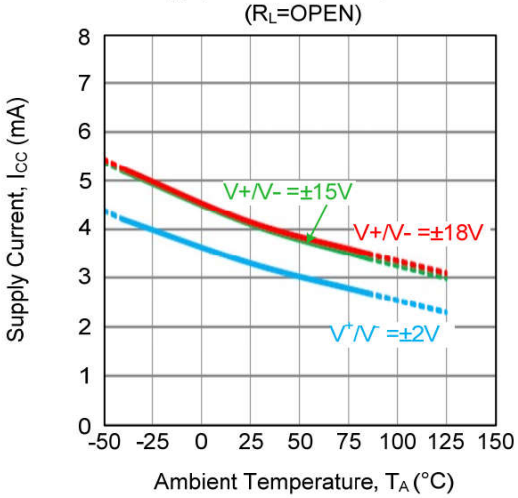
Total Harmonic Distortion vs. Output Voltage
(V^+/V^- =±2V, G_V=20dB, R_L=2k, T_A=25°C)



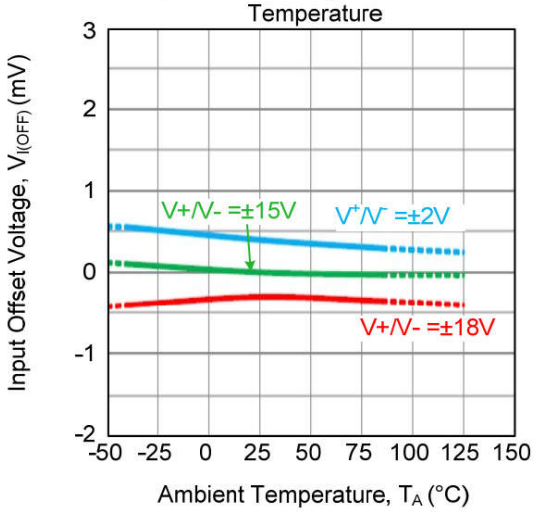
Supply Current vs. Supply Voltage
(R_L=OPEN)



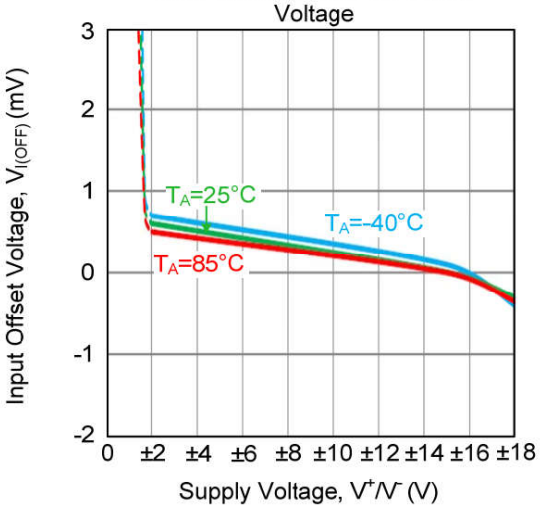
Supply Current vs. Temperature
(R_L=OPEN)



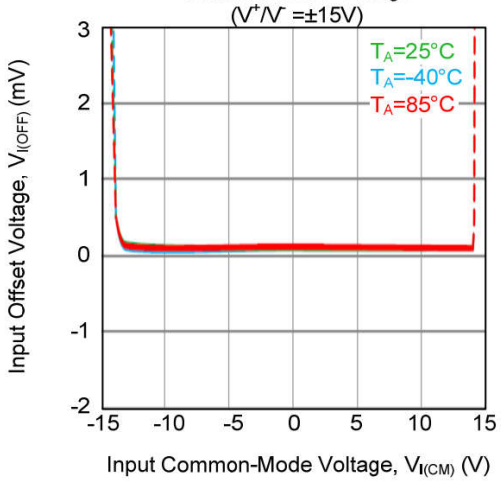
Input Offset Voltage vs. Ambient Temperature



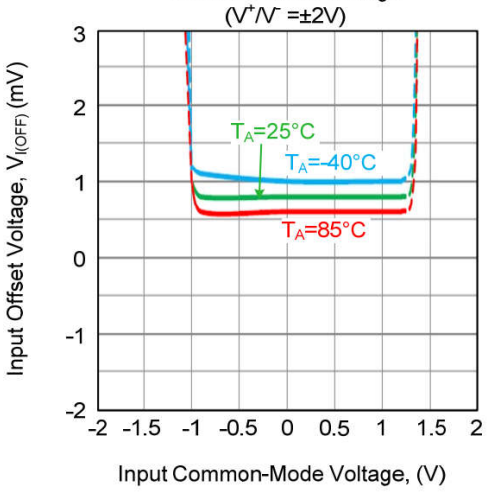
Input Offset Voltage vs. Supply Voltage



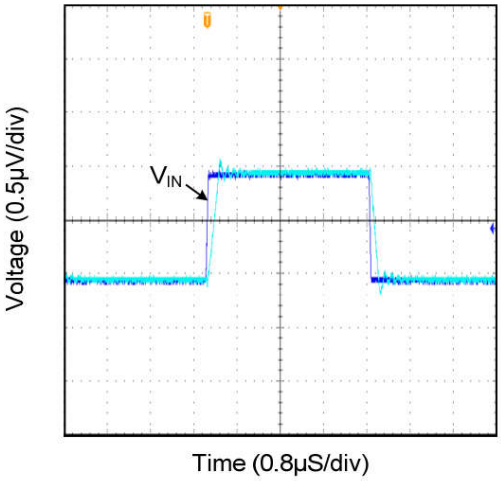
Input Offset Voltage vs. Input Common-Mode Voltage
(V^+/V^- =±15V)



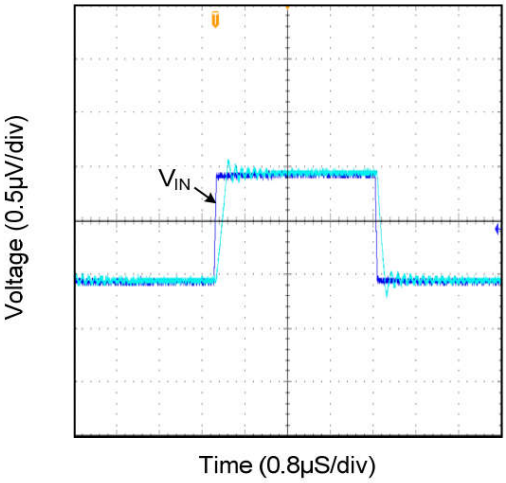
Input Offset Voltage vs. Input Common-Mode Voltage
(V^+/V^- =±2V)



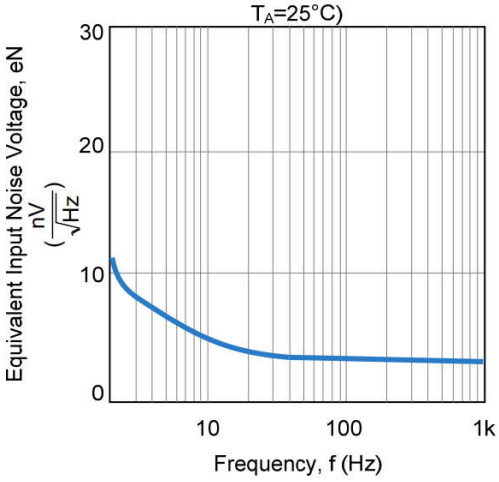
Pulse Response
(V^+/V^- =±15V, R_L=2kΩ, C_L=10pF)



Pulse Response
(V^+/V^- =±15V, R_L=2kΩ, C_L=50pF)

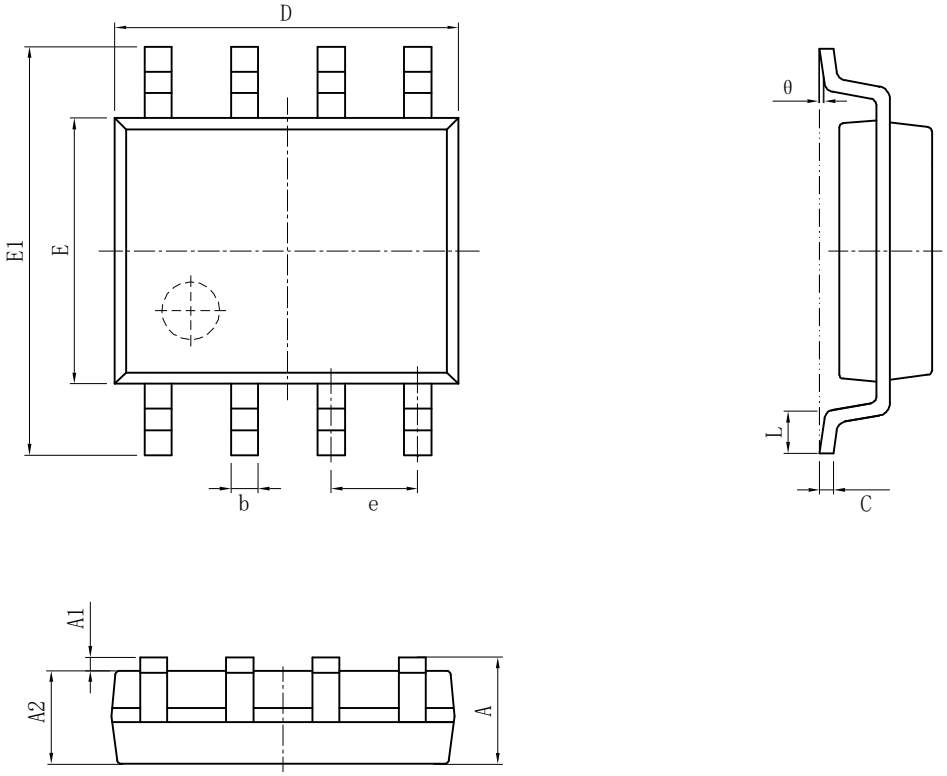


Equivalent Input Noise Voltage vs. Frequency
(V^+/V^- =±15V, R_S=50Ω, G_V=60dB, T_A=25°C)



Package Information

SOP-8



Size / Symbol	Dimensions In Millimeters		Size / Symbol	Dimensions In Inches	
	Min(mm)	Max(mm)		Min(in)	Max(in)
A	1.350	1.750	A	0.053	0.069
A1	0.100	0.250	A1	0.004	0.010
A2	1.350	1.550	A2	0.053	0.061
b	0.330	0.510	b	0.013	0.020
c	0.170	0.250	c	0.006	0.010
D	4.700	5.100	D	0.185	0.200
E	3.800	4.000	E	0.150	0.157
E1	5.800	6.200	E1	0.228	0.224
e	1.270(BSC)		e	0.050(BSC)	
L	0.400	1.270	L	0.016	0.050
θ	0°	8°	θ	0°	8°

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