Dual path low noise operational amplifier

summary

NE5532 is a dual operational amplifier designed to improve tone control and is best suited for audio applications.

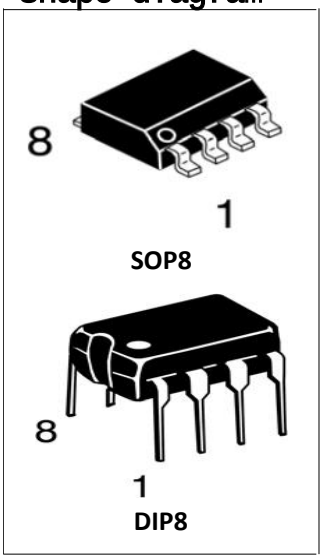
NE5532 features low noise, higher gain bandwidth, high output current, and low distortion ratio. It is not only the best choice for audio preamplifiers and acoustic electronic components of active filters but also suitable for industrial measurement tools. Additionally, it is applicable to headphone amplifiers with higher output currents.

NE5532 Use SOP8 and DIP8 for packaging

main features

- Low input noise voltage
- Low distortion: about 0.0005%
- Internal ESD protection
- Conversion rate: 9V/ μS
- Gain bandwidth product per unit: 15MHz

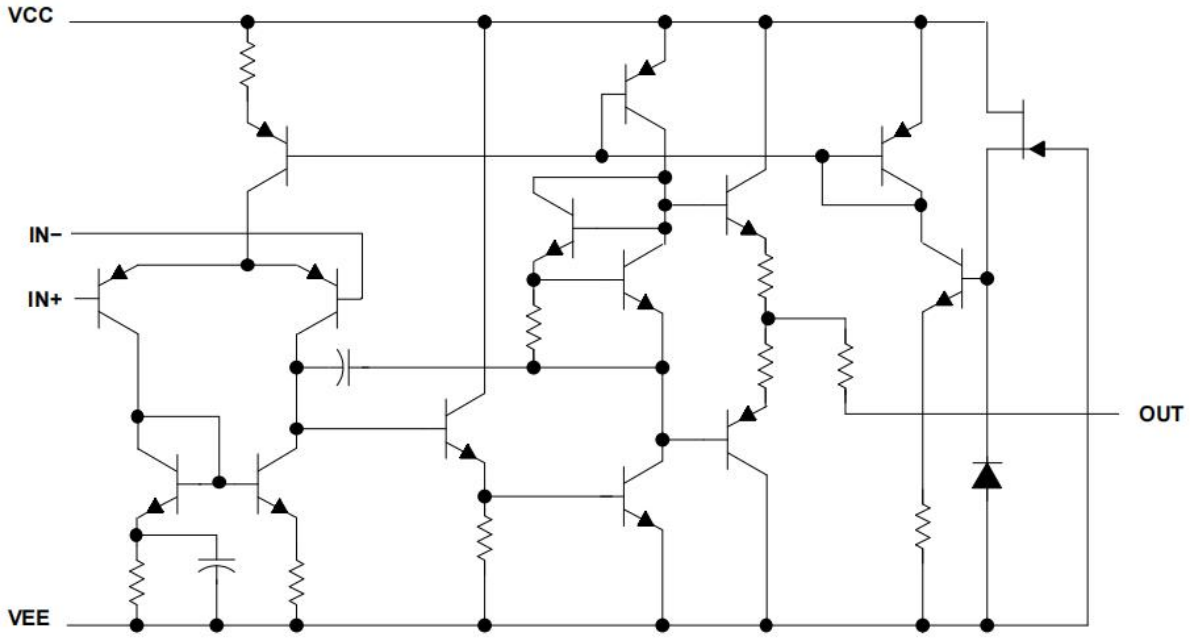
Encapsulate the shape diagram



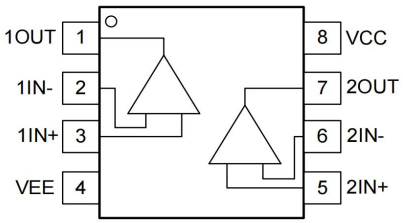
Main application areas

- active filter
- compensated amplifier
- Audio preamplifier
- Headphone amplifier
- Low voltage handheld electronic instruments

Function block diagram (single channel amplifier)



Pin description

Corrections serial number	Pin name	I/O	Description	Pin layout
1	1OUT	O	Output of the first stage amplifier	
2	1IN-	I	The first path is the reverse input of the amplifier	
3	1IN+	I	The first path is the positive input of the amplifier	
4	VEE	P	Negative power supply	
5	2IN+	I	The second path amplifier has a positive input	
6	2IN-	I	The second path is the reverse input of the amplifier	
7	2OUT	O	Output of the second path amplifier	
8	VCC	P	Positive power supply	

Limit parameters (Tamb = 25 if not otherwise specified)

Parameter	Characteristic	Price
Supply voltage	VCC	±22V
Differential input voltage	V_{ID}	±20V
Maximum working junction temperature	T_J	150℃
Operating ambient temperature	T_A	-20～+85℃
Storage temperature	T_S	-65～+150℃
Lead temperature (welding, 10 s)	T_W	260℃

Electrical characteristics (if no other provisions, VCC=15V, VEE=-15V, Tamb=25)

Parameter	Characteristic	Test condition	Least value	Representative value	Crest value	Unit
Source current	I_{CC}	$R_L=\infty$	-	6	-	mA
Input offset voltage	V_{IO}	$V_O=0V$	-	±0.3	±3	mV
Input offset current	I_{IO}	$V_O=0V$	-	-	±200	nA
Input bias current	I_B	$V_O=0V$	-	-	±500	nA
Common-mode input voltage	V_{ICM}		±12	±13	-	V
Output voltage swing	V_{OM}	$R_L=10k\Omega$	±12	±14	-	V
		$R_L=2k\Omega$	±10	±13	-	V

Output	Isource		80	-	120	mA
	Isink		-150	-	-120	mA
Open loop voltage gain	A_{OL}	V_O =±10V, R_L<2kΩ	-	100	-	V/mV
Cmrr	CMRR		-	100	-	dB
Supply voltage rejection ratio	PSRR		-	100	-	dB
Gain bandwidth product	GBWP		-	15	-	MHz
Slew rate	SR		-	9	-	V/μS

characteristic curve

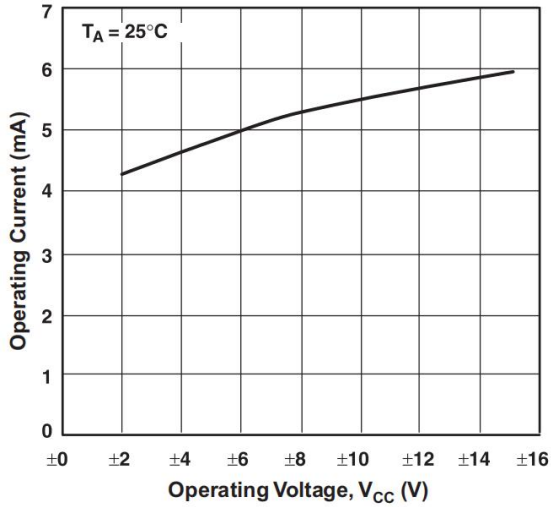


Figure 1 Relationship between power supply current and power supply voltage

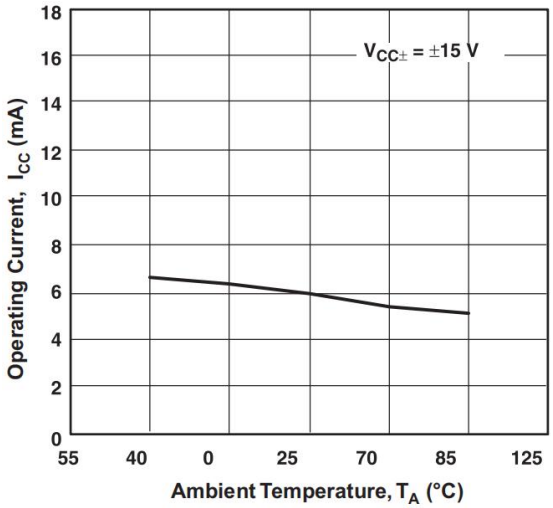


Figure 2 Relationship between power supply current and ambient temperature

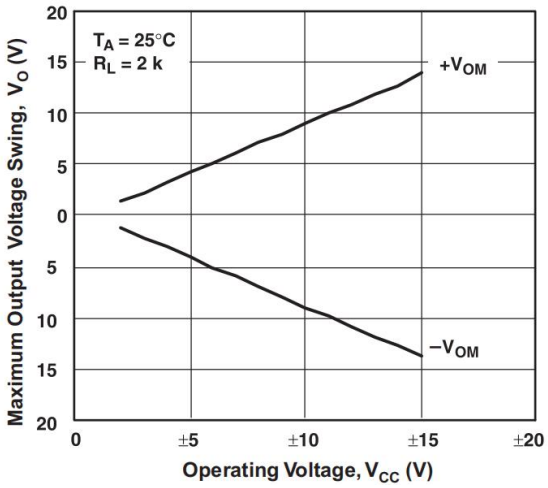


Figure 3 Relationship between maximum output voltage swing and power supply voltage

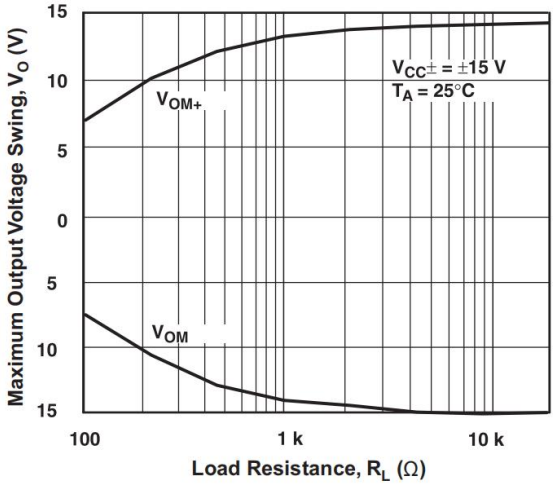


Figure 4 Relationship between maximum output voltage swing and load

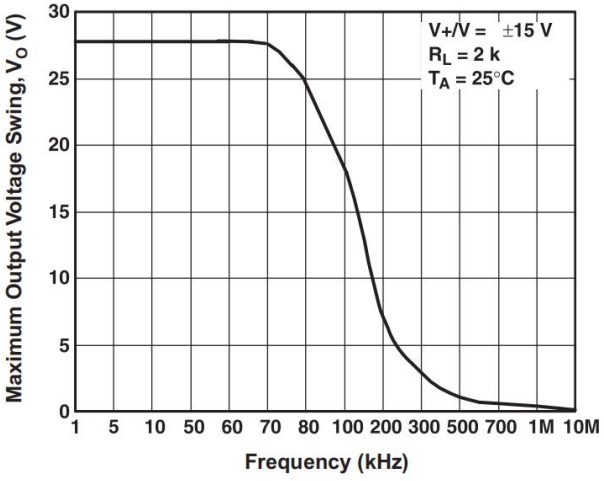


Figure 5 Relationship between maximum output voltage swing and frequency

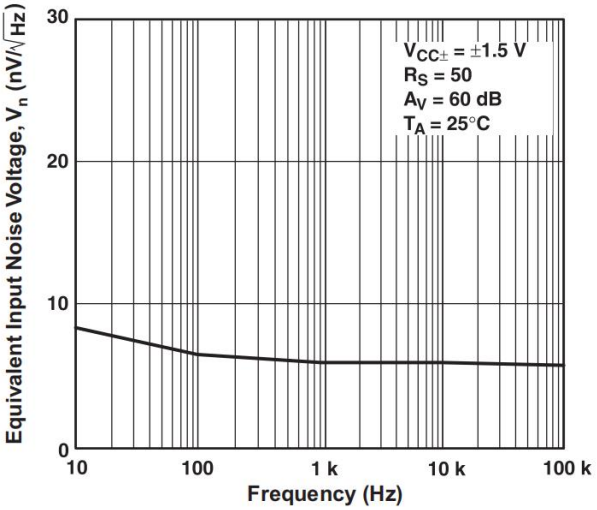
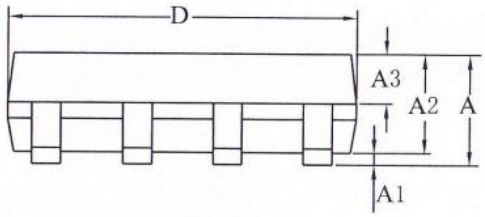
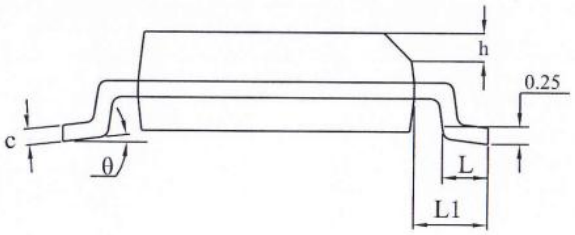
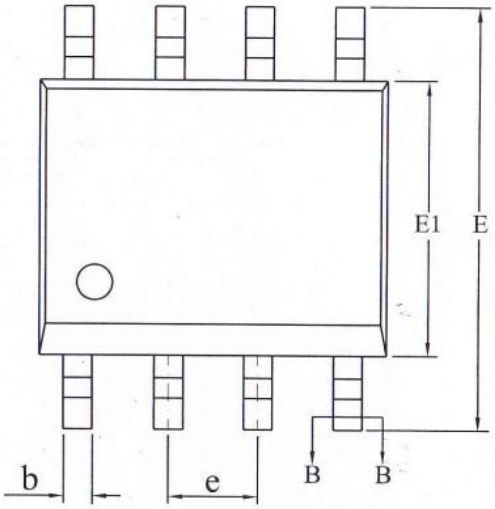


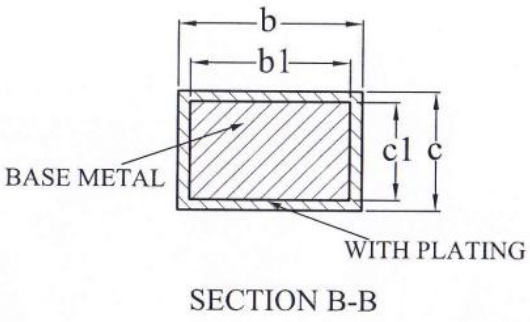
Figure 6. Input voltage noise and frequency relationship

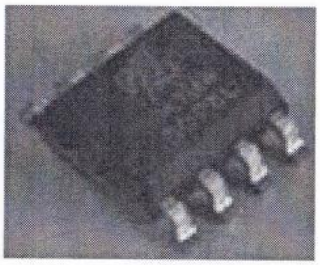
Packaging mechanical data: SOP8 packaging







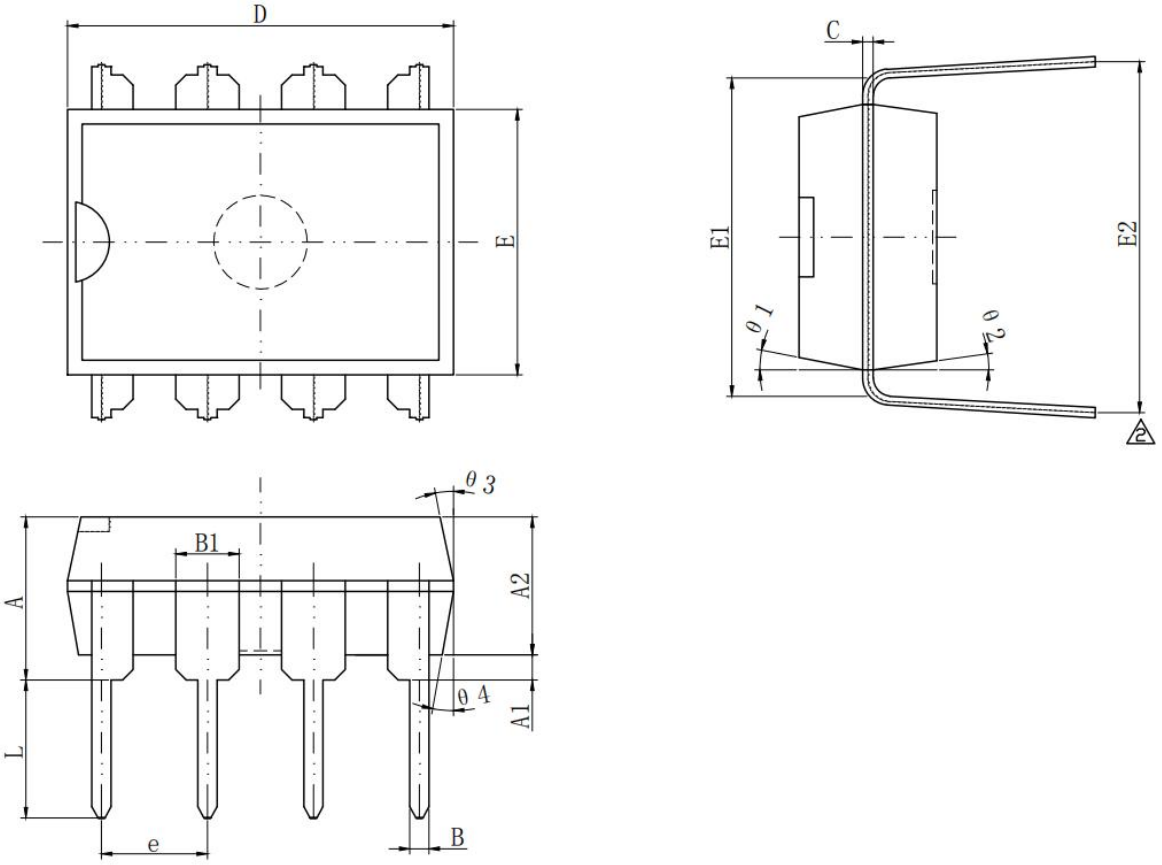




Grade	Millimetre			Grade	Millimetre		
	Least value	Representative value	Crest value		Least value	Representative value	Crest value
A	-	-	1.75	D	4.80	4.90	5.00
A1	0.10	-	0.225	E	5.80	6.00	6.20
A2	1.30	1.40	1.50	E1	3.80	3.90	4.00
A3	0.60	0.65	0.70	e	1.27 BSC		
b	0.39	-	0.47	h	0.25	-	0.50
b1	0.38	0.41	0.44	L	0.50	-	0.80

c	0.20	-	. .24	L 1	1.05REF		
c 1	0.19	0.20	. .21	θ	0 °	-	8 .

DIP8 package



Grade	Millimetre			Grade	Millimetre		
	Least value	Representative value	Crest value		Least value	Representative value	Crest value
A	3.75	3.90	4.15	E_1	7.35	7.62	7.85
A_1	0.60	-	-	E_2	8.00	8.40	8.80
A_2	3.15	3.30	3.40	e	2.54（BSC）		
B	0.38	0.46	0.56	L	3.00	3.30	3.60
B_1	1.52（BSC）			θ_1	10°	-	14°
C	0.20	0.25	0.34	θ_2	8°	-	12°
D	9.00	9.25	9.40	θ_3	10°	-	14°
E	6.20	6.35	6.50	θ_4	8°	-	12°