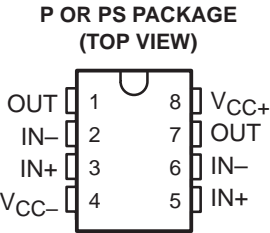


NE5532, NE5532A

DUAL LOW-NOISE OPERATIONAL AMPLIFIERS

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- Equivalent Input Noise Voltage
5 nV/ $\sqrt{\text{Hz}}$ Typ at 1 kHz
- Unity-Gain Bandwidth . . . 10 MHz Typ
- Common-Mode Rejection
Ratio . . . 100 dB Typ
- High dc Voltage Gain . . . 100 V/mV Typ
- Peak-to-Peak Output Voltage Swing
32 V Typ With $V_{CC\pm} = \pm 18 \text{ V}$ and $R_L = 600 \Omega$
- High Slew Rate . . . 9 V/ μs Typ
- Wide Supply Voltage Range . . . $\pm 3 \text{ V}$ to $\pm 20 \text{ V}$
- Designed to Be Interchangeable With
Signetics NE5532 and NE5532A
- Package Options Include Plastic
Small-Outline (PS) Package and Standard
Plastic (P) DIP



description

The NE5532 and NE5532A are high-performance operational amplifiers combining excellent dc and ac characteristics. They feature very low noise, high output-drive capability, high unity-gain and maximum-output-swing bandwidths, low distortion, high slew rate, input-protection diodes, and output short-circuit protection. These operational amplifiers are compensated internally for unity-gain operation. The NE5532A has specified maximum limits for equivalent input noise voltage.

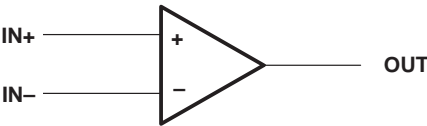
The NE5532 and NE5532A are characterized for operation from 0°C to 70°C.

AVAILABLE OPTIONS

T _A	PACKAGED DEVICES	
	PLASTIC DUAL-IN-LINE (P)	PLASTIC SMALL-OUTLINE (PS)
0°C to 70°C	NE5532P NE5532AP	NE5532PS NE5532APS

The PS package is available taped and reeled. Add the suffix R to the device type (e.g., NE5532PSR).

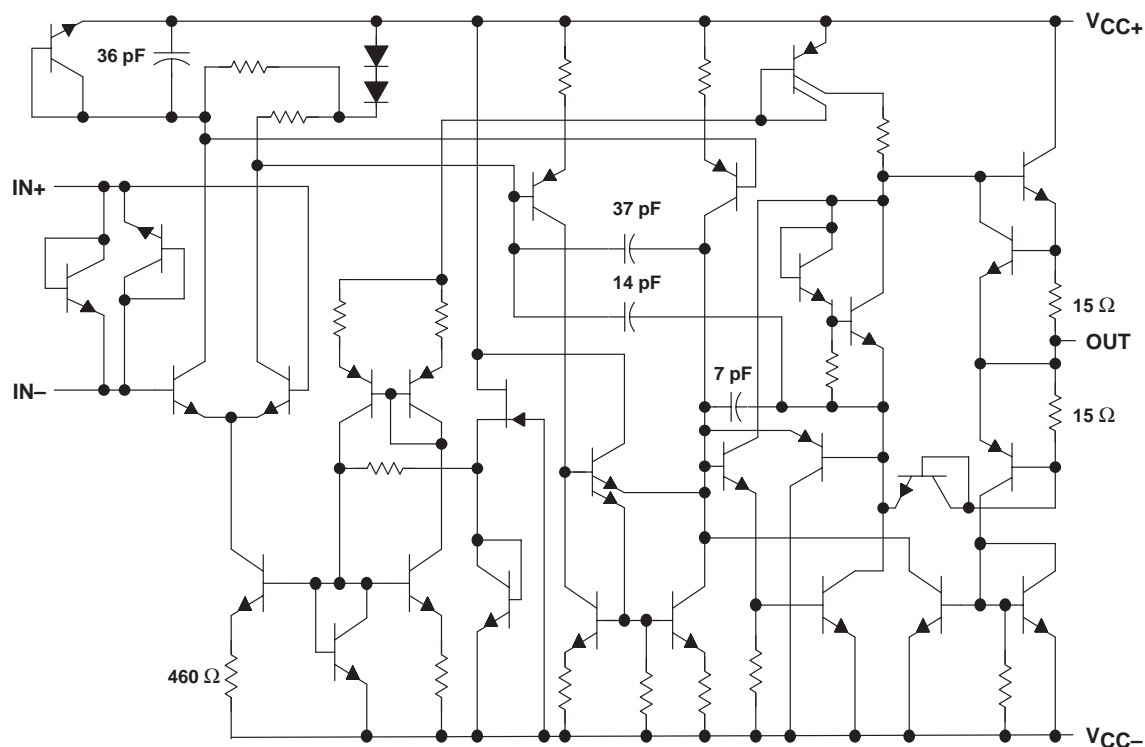
symbol (each amplifier)



NE5532, NE5532A DUAL LOW-NOISE OPERATIONAL AMPLIFIERS

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schematic (each amplifier)



Component values shown are nominal.

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)

Supply voltage, V_{CC+} (see Note 1)	22 V
Supply voltage, V_{CC-} (see Note 1)	-22 V
Input voltage, either input (see Notes 1 and 2)	$V_{CC\pm}$
Input current (see Note 3)	± 10 mA
Duration of output short circuit (see Note 4)	Unlimited
Package thermal impedance, θ_{JA} (see Note 5): P package	85°C/W
PS package	95°C/W
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds	260°C
Storage temperature range, T_{stg}	-65°C to 150°C

- NOTES:
1. All voltage values, except differential voltages, are with respect to the midpoint between V_{CC+} and V_{CC-} .
 2. The magnitude of the input voltage must never exceed the magnitude of the supply voltage.
 3. Excessive input current will flow if a differential input voltage in excess of approximately 0.6 V is applied between the inputs unless some limiting resistance is used.
 4. The output may be shorted to ground or either power supply. Temperature and/or supply voltages must be limited to ensure the maximum dissipation rating is not exceeded.
 5. The package thermal impedance is calculated in accordance with JESD 51.

NE5532, NE5532A

DUAL LOW-NOISE OPERATIONAL AMPLIFIERS

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recommended operating conditions

	MIN	NOM	MAX	UNIT
Supply voltage, V_{CC+}	5		15	V
Supply voltage, V_{CC-}	-5		-15	V
Operating free-air temperature	0		70	°C

electrical characteristics, $V_{CC\pm} = +15\text{ V}$, $T_A = 25^\circ\text{C}$ (unless otherwise noted)

PARAMETER		TEST CONDITION [†]		MIN	TYP	MAX	UNIT
V_{IO}	Input offset voltage	$V_O = 0$	$T_A = 25^\circ\text{C}$		0.5	4	mV
			$T_A = 0^\circ\text{C to } 70^\circ\text{C}$			5	
I_{IO}	Input offset current	$T_A = 25^\circ\text{C}$			10	150	nA
		$T_A = 0^\circ\text{C to } 70^\circ\text{C}$				200	
I_{IB}	Input bias current	$T_A = 25^\circ\text{C}$			200	800	nA
		$T_A = 0^\circ\text{C to } 70^\circ\text{C}$				1000	
V_{ICR}	Common-mode input-voltage range			± 12	± 13		V
V_{OPP}	Maximum peak-to-peak output-voltage swing	$R_L \geq 600\ \Omega$	$V_{CC\pm} = \pm 15\text{ V}$	24	26		V
			$V_{CC\pm} = \pm 18\text{ V}$	30	32		
A_{VD}	Large-signal differential-voltage amplification	$R_L \geq 600\ \Omega$, $V_O = \pm 10\text{ V}$	$T_A = 25^\circ\text{C}$	15	50		V/mV
			$T_A = 0^\circ\text{C to } 70^\circ\text{C}$	10			
		$R_L \geq 2\text{ k}\Omega$, $V_O = \pm 10\text{ V}$	$T_A = 25^\circ\text{C}$	25	100		
			$T_A = 0^\circ\text{C to } 70^\circ\text{C}$	15			
A_{vd}	Small-signal differential-voltage amplification	$f = 10\text{ kHz}$			2.2		V/mV
B_{OM}	Maximum-output-swing bandwidth	$R_L = 600\ \Omega$, $V_O = \pm 10\text{ V}$			140		kHz
		$V_{CC\pm} = \pm 18\text{ V}$, $V_O = \pm 14\text{ V}$			100		
B_1	Unity-gain bandwidth	$R_L = 600\ \Omega$, $C_L = 100\text{ pF}$			10		MHz
r_i	Input resistance			30	300		k Ω
z_o	Output impedance	$A_{VD} = 30\text{ dB}$, $R_L = 600\ \Omega$, $f = 10\text{ kHz}$			0.3		Ω
CMRR	Common-mode rejection ratio	$V_{IC} = V_{ICR\text{ min}}$		70	100		dB
k_{SVR}	Supply voltage rejection ratio ($\Delta V_{CC\pm}/\Delta V_{IO}$)	$V_{CC\pm} = \pm 9\text{ V to } \pm 15\text{ V}$, $V_O = 0$		80	100		dB
I_{OS}	Output short-circuit current			10	38	60	mA
I_{CC}	Total supply current	$V_O = 0$, No load			8	16	mA
	Crosstalk attenuation (V_{O1}/V_{O2})	$V_{O1} = 10\text{ V peak}$, $f = 1\text{ kHz}$			110		dB

[†] All characteristics are measured under open-loop conditions with zero common-mode input voltage unless otherwise specified.



NE5532, NE5532A

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operating characteristics, $V_{CC\pm} = \pm 15\text{ V}$, $T_A = 25^\circ\text{C}$

PARAMETER		TEST CONDITIONS	NE5532			NE5532A			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
SR	Slew rate at unity gain			9			9		V/ μ s
	Overshoot factor	$V_I = 100\text{ mV}$, $R_L = 600\ \Omega$, $A_{VD} = 1$, $C_L = 100\text{ pF}$		10%			10%		
V_n	Equivalent input noise voltage	$f = 30\text{ Hz}$		8			8	10	nV/ $\sqrt{\text{Hz}}$
		$f = 1\text{ kHz}$		5			5	6	
I_n	Equivalent input noise current	$f = 30\text{ Hz}$		2.7			2.7		pA/ $\sqrt{\text{Hz}}$
		$f = 1\text{ kHz}$		0.7			0.7		



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