

# High-speed dual-differential comparator/sense amp

NE522

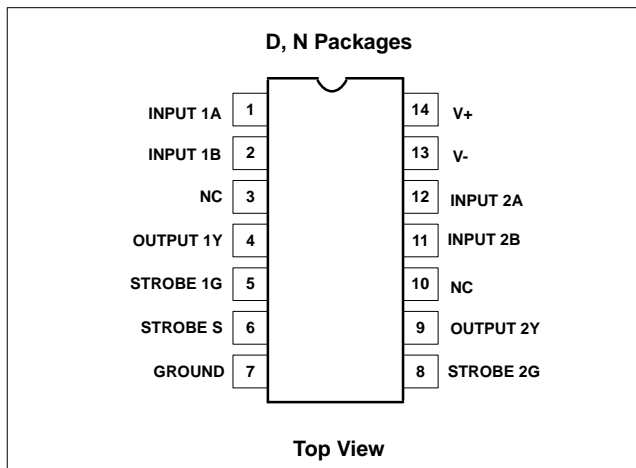
## FEATURES

- 15ns maximum guaranteed propagation delay
- 20µA maximum input bias current
- TTL-compatible strobes and outputs
- Large common-mode input voltage range
- Operates from standard supply voltages

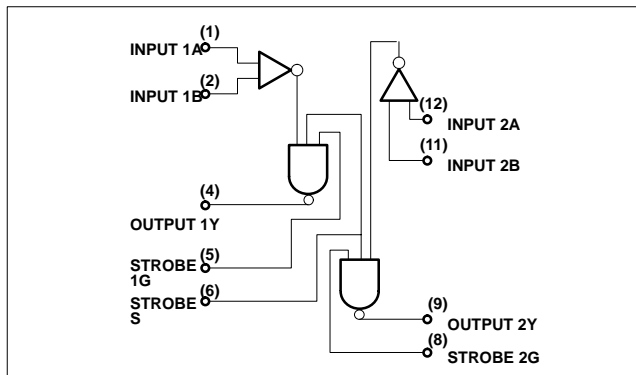
## APPLICATIONS

- MOS memory sense amp
- A-to-D conversion
- High-speed line receiver

## PIN CONFIGURATION



## BLOCK DIAGRAM



## ORDERING INFORMATION

DESCRIPTION	TEMPERATURE RANGE	ORDER CODE	DWG #
14-Pin Plastic DIP	0 to +70°C	NE522N	0405B
14-Pin Plastic SO	0 to +70°C	NE522D	0175D

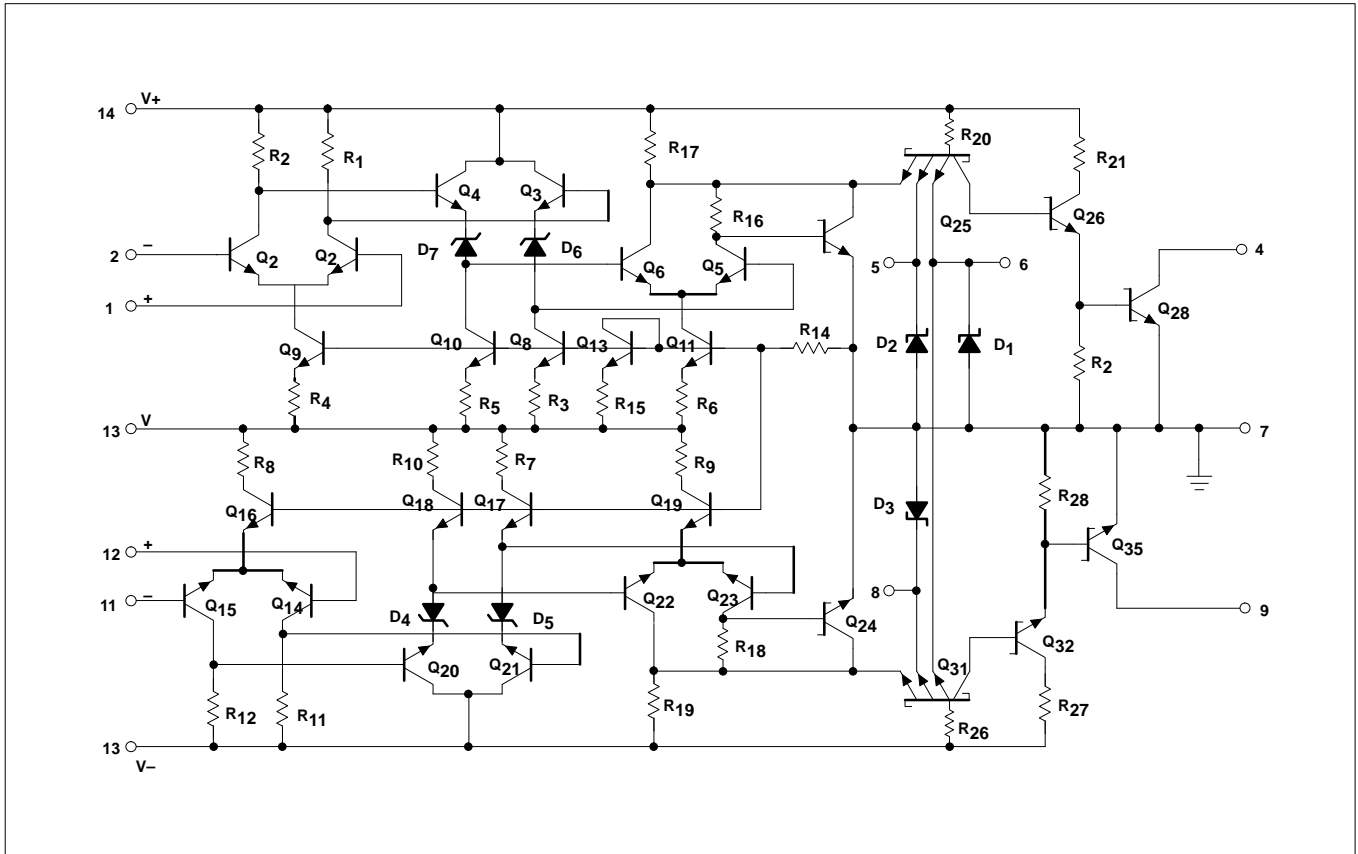
## ABSOLUTE MAXIMUM RATINGS

SYMBOL	PARAMETER	RATING	UNITS
V+	Single supply voltage	Positive	+7
V-		Negative	-7
V <sub>IDR</sub>	Differential input voltage	±6	V
V <sub>IN</sub>	Input voltage	Common-mode	± 5
		Strobe/gate	+5.25
P <sub>D</sub>	Power dissipation	600	mW
T <sub>A</sub>	Operating temperature range NE522	0 to 70	°C
T <sub>STG</sub>	Storage temperature range	-65 to +150	°C
T <sub>SOLD</sub>	Lead soldering temperature (10sec max)	+300	°C

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### EQUIVALENT SCHEMATIC



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**DC ELECTRICAL CHARACTERISTICS** $V_{\pm} = \pm 5V \pm 5\%$ ,  $T_A = 0$  to  $+70^{\circ}C$ , unless otherwise stated.

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
$V_{OS}$	Input offset voltage At $25^{\circ}C$ Over temperature range	$V_+ = +4.75V$ , $V_- = -4.75V$		6	7.5 10	mV
$I_{BIAS}$	Input bias current At $25^{\circ}C$ Over temperature range	$V_+ = +5.25V$ , $V_- = -5.25V$		7.5	20 40	$\mu A$
$I_{OS}$	Input offset current At $25^{\circ}C$ Over temperature range	$V_+ = +5.25V$ , $V_- = -5.25V$		1.0	5 12	$\mu A$
$V_{CM}$	Common-mode voltage range	$V_+ = +4.75V$ , $V_- = -4.75V$	-3		+3	V
$V_{IL}$	Low level input At $25^{\circ}C$ Over temperature range				0.8 0.7	V
$V_{IH}$	High level temperature		2.0			V
$I_{IH}$	Input current High	$V_+ = +5.25V$ , $V_- = -5.25V$ $V_{IH} = 2.7V$ 1G or 2G strobe Common strobe S			50 100	$\mu A$ $\mu A$
$I_{IL}$	Low input current	$V_{IL} = 0.5V$ 1G or 2G strobe Common strobe S			-2.0 -4.0	mA mA
$V_{OL}$	Output voltage Low	$V_+ = +5.25V$ , $V_- = -5.25V$ , $V_{I(S)} = 2.0V$ , $I_{LOAD} = 20mA$			0.5	V
$I_{OH}$	Output current High	$V_+ = +4.75V$ , $V_- = -4.75V$ , $V_{OH} = 5.25V$			250	$\mu A$
$V_+$ $V_-$	Supply voltage Positive Negative		4.75 -4.75	5.0 -5.0	5.25 -5.25	V
$I_{CC+}$ $I_{CC-}$	Supply current Positive Negative	$V_+ = +5.25V$ , $V_- = -5.25V$ , $T_A = 25^{\circ}C$		27 -15	35 -28	mA

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## AC ELECTRICAL CHARACTERISTICS

$T_A = 25^\circ\text{C}$ ,  $R_L = 280\Omega$ ,  $C_L = 15\text{pF}$ , unless otherwise stated.

SYMBOL	PARAMETER	FROM INPUT	TO OUTPUT	LIMITS			UNITS
				MIN	TYP	MAX	
$I_R$	Input resistance				4		$k\Omega$
$I_C$	Input capacitance				3		$\text{pF}$
<b>Large-signal switching speed</b>							
	Propagation delay						
$t_{PLH(D)}$	Low to high <sup>1</sup>	Amp	Output		10	15	ns
$t_{PHL(D)}$	High to low <sup>1</sup>	Amp	Output		8	12	
$t_{PLH(S)}$	Low to high <sup>2</sup>	Strobe	Output		6	13	
$t_{PHL(S)}$	High to low <sup>2</sup>	Strobe	Output		5	9	
$I_{MAX}$	Maximum operating frequency			25	35		MHz

**NOTES:**

- Response time measured from 0V point of +100mV<sub>p,p</sub> 10MHz square wave to the 1.5V point of the output.
- Response time measured from 1.5V point of the input to 1.5V point of the output.

## LOGIC FUNCTION TABLE

$V_{ID} (A^+, B^-)$	STRS	STRG	OUTPUT TRANSISTOR
$< -V_{OS}$	H	H	ON
$-V_{OS} < V_{ID} < V_{OS}$	H	H	Undefined
$> V_{OS}$	H	H	OFF
X	L	X	OFF
X	X	L	OFF

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