HIGH SPEED DUAL DIFFERENTIAL COMPARATOR/SENSE AMP SE/NE522

FEATURES

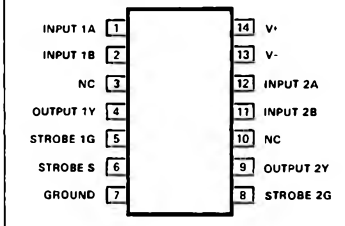
- 15ns maximum guaranteed propagation delay
- 20μA maximum input bias current
- TTL compatible strobes and outputs
- Open collector output for wire-OR'd applications
- Large common mode input voltage range
- Operates from standard supply voltages

APPLICATIONS

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

PIN CONFIGURATION

D,F,N PACKAGE



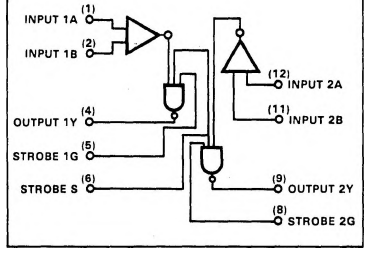
TOP VIEW

ORDER NUMBERS
NE522D,F,N SE522F

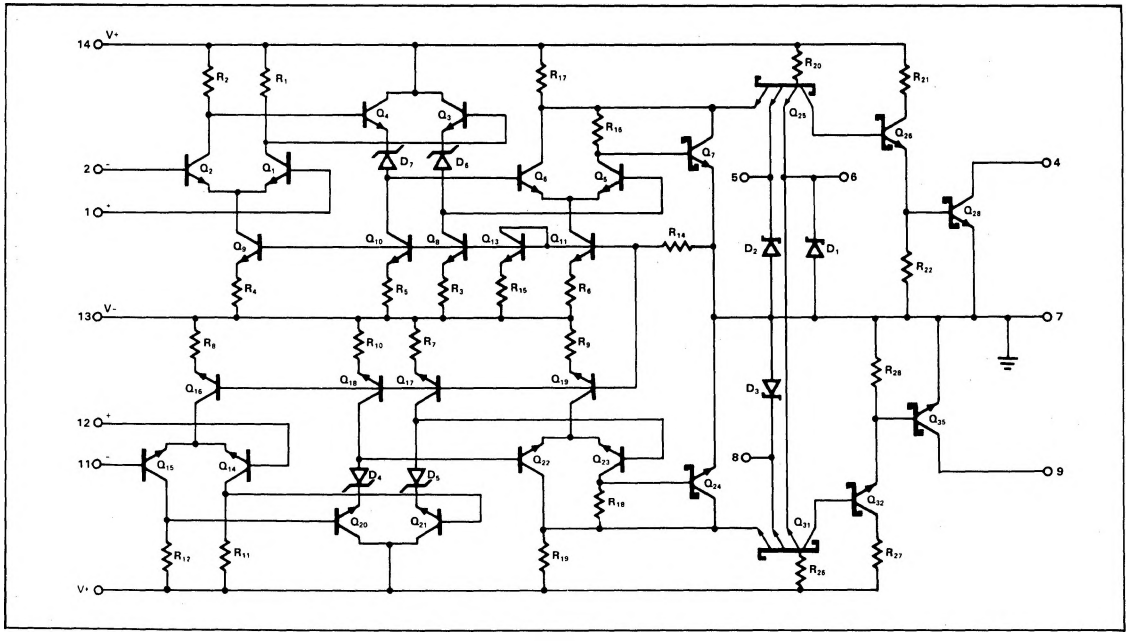
ABSOLUTE MAXIMUM RATINGS

PARAMETER		RATING	UNIT
	Supply voltage		V
V+	Positive	+7	
V-	Negative	-7	
VIDR	Differential input voltage	±6	V
VIN	Input voltage		V
	Common mode	±5	
	Strobe/gate	±5.25	
PD	Power dissipation	600	mW
TA	Operating temperature range NE	0 to 70	°C
	SE	-55 to +125	
Tstg	Storage temperature range	-65 to +150	°C
	Lead temperature (solder, 60 sec)	+300	°C

BLOCK DIAGRAM



EQUIVALENT SCHEMATIC



DC ELECTRICAL CHARACTERISTICS ±5V ±10%, T_A = -55 to 125°C unless otherwise specified

PARAMETER		TEST CONDITIONS	SE LIMITS			UNIT
			Min	Typ	Max	
V_{OS}	Input offset voltage At 25°C Over temperature range	V+ = +4.5V, V- = -4.5V		 6	 7.5 15.	mV
I_{BIAS}	Input bias current At 25°C Over temperature range	V+ = +5.5V, V- = -5.5V		 7.5	 20. 40.	μA
I_{OS}	Input offset current At 25°C Over temperature range	V+ = +5.5V, V- = -5.5V		 1.0	 5. 12.	μA
V_{CM}	Common mode voltage range	V+ = +4.5V, V- = -4.5V	±3			V
V_{IL}	Low level input Voltage at 25°C over temperature				 0.8 0.7	V
V_{IH}	High level temperature		2.0			V
I_{IH}	Input current High	V+ = +5.5V, V- = -5.5V V_{IH} = 2.7V 1G or 2G strobe Common strobe S			 50 100	 μA μA
I_{IL}	Low	V_{IL} = 0.5V 1G 2G strobe Common strobe S			 -2 -4	 mA mA
V_{OL}	Output voltage Low	V+ = +4.5V, V- = -4.5V I_{OL} = 20mA, T_A = 25°C I_{OL} = 10mA			 .5 .5	V
I_{OH}	Output current High	V_{CC+} = +4.5, V_{CC-} = -4.5V, V_{OH} = 5.5V			 250	μA
V+ V-	Supply voltage Positive Negative		 4.5 -4.5	 5.0 -5.0	 5.5 -5.5	V
I_{CC+} I_{CC-}	Supply current Positive Negative	V+ = 5.5V, V- = -5.5V		 27 -15	 35 – 28	mA

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DC ELECTRICAL CHARACTERISTICS (Cont'd) ±5V ±5%, T_A = 0 to 70°C unless otherwise specified

PARAMETER		TEST CONDITIONS	NE LIMITS			UNIT
			Min	Typ	Max	
V_{OS}	Input offset voltage At 25°C Over temperature range	V+ = +4.75V, V- = -4.75V		6	7.5 10	mV
I_{BIAS}	Input bias current At 25°C Over temperature range	V+ = +5.25V, V- = -5.25V		7.5	20 40	μA
I_{OS}	Input offset current At 25°C Over temperature range	V+ = +5.25V, V- = -5.25V		1.0	5 12	μA
V_{CM}	Common mode voltage range	V+ = +4.75V, V- = -4.75V	±3			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	μA μA
I_{IL}	Low	V_{IL} = 0.5V 1G 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_{CC+} = +4.75, V_{CC-} = -4.75V, V_{OH} = 5.25V			250	μA
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°C		27 -15	50 -28	mA

AC ELECTRICAL CHARACTERISTICS T_A = 25°C, R_L = 280Ω, C_L = 15pF

PARAMETER		FROM INPUT	TO OUTPUT	LIMITS			UNIT
				Min	Typ	Max	
	Input resistance				4		kΩ
	Input capacitance				3		pF
Large Signal Switching Speed							
	Propagation delay						ns
$t_{PLH(D)}$	Low to high[1]	Amp	Output		10	15	
$t_{PHL(D)}$	High to low[1]	Amp	Output		8	12	
$t_{PLH(S)}$	Low to high[2]	Strobe	Output		6	13	
$t_{PHL(S)}$	High to low[2]	Strobe	Output		5	9	
	Maximum operating frequency			25	35		MHz

NOTES

1. Response time measured from 0V point of ±100mV p-p 10MHz square wave to the 1.5V point of the output
2. Response time measured from 1.5V point of input to 1.5V point of the output

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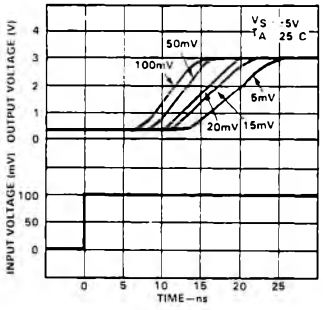
TYPICAL PERFORMANCE CHARACTERISTICS

RESPONSE TIME FOR VARIOUS INPUT OVERDRIVES



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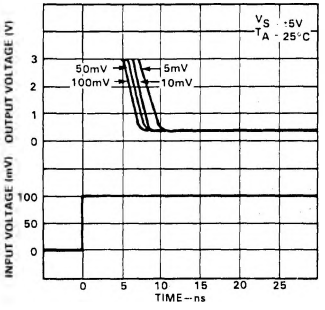
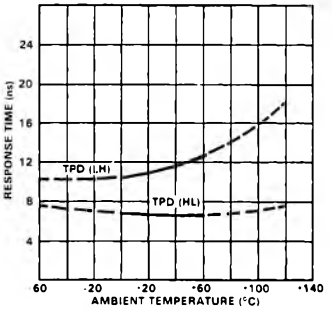
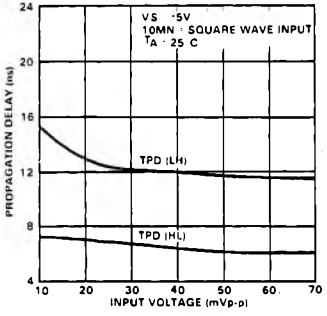


RESPONSE TIME vs TEMPERATURE



PROPAGATION DELAY FOR VARIOUS INPUT VOLTAGES



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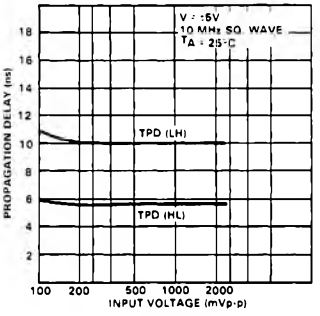
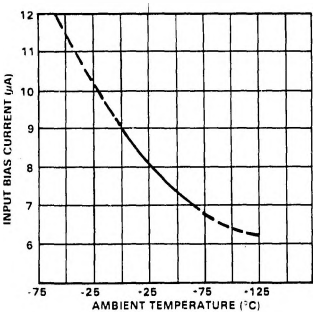


INPUT BIAS CURRENT vs AMBIENT TEMPERATURE



INPUT OFFSET CURRENT vs AMBIENT TEMPERATURE