

TYPES SN7522, SN7523

DUAL-CHANNEL SENSE AMPLIFIERS

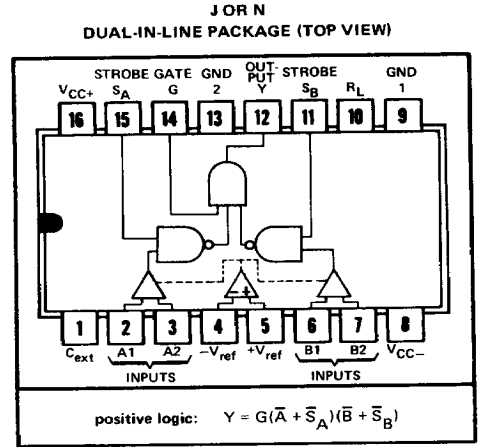
FUNCTION TABLE

INPUTS					OUTPUT
A	B	G	S _A	S _B	Y
L	L	H	X	X	H
L	X	H	X	L	H
X	L	H	L	X	H
X	X	H	L	L	H
X	X	L	X	X	L
H	X	X	H	X	L
X	H	X	X	H	L

definition of logic levels

INPUT	H	L	X
A or B†	$V_{ID} \geq V_T \text{ max}$	$V_{ID} \leq V_T \text{ min}$	Irrelevant
Any G or S	$V_I \geq V_{IH} \text{ min}$	$V_I \leq V_{IL} \text{ max}$	Irrelevant

†A and B are differential voltages (V_{ID}) between A1 and A2 or B1 and B2, respectively. For these circuits, V_{ID} is considered positive regardless of which terminal of each pair is positive with respect to the other.



electrical characteristics (unless otherwise noted $V_{CC+} = 5 \text{ V}$, $V_{CC-} = -5 \text{ V}$, $T_A = 0^\circ\text{C}$ to 70°C)

PARAMETER	TEST FIGURE	TEST CONDITIONS	MIN	TYP†	MAX	UNIT	
V_T Differential input threshold voltage (see Note 3)	7	$V_{ref} = 15 \text{ mV}$	SN7522	11	15	19	mV
			SN7523	8	15	22	
		$V_{ref} = 40 \text{ mV}$	SN7522	36	40	44	
			SN7523	33	40	47	
V_{ICF} Common-mode input firing voltage (see Note 4)	none	$V_{ref} = 40 \text{ mV}$, $V_I(S) = V_{IH}$ Common-mode input pulse: $t_r \leq 15 \text{ ns}$, $t_f \leq 15 \text{ ns}$, $t_w = 50 \text{ ns}$		± 2.5		V	
I_{IB} Differential-input bias current	2	$V_{CC+} = 5.25 \text{ V}$, $V_{CC-} = -5.25 \text{ V}$, $V_{ID} = 0$		30	75	μA	
I_{IO} Differential-input offset current	2	$V_{CC+} = 5.25 \text{ V}$, $V_{CC-} = -5.25 \text{ V}$, $V_{ID} = 0$		0.5		μA	
V_{IH} High-level input voltage (strobe and gate inputs)	8			2		V	
V_{IL} Low-level input voltage (strobe and gate inputs)	8				0.8	V	
V_{OH} High-level output voltage	8	$V_{CC+} = 4.75 \text{ V}$, $V_{CC-} = -4.75 \text{ V}$, $I_{OH} = -400 \mu\text{A}$	2.4	4		V	
V_{OL} Low-level output voltage	8	$V_{CC+} = 4.75 \text{ V}$, $V_{CC-} = -4.75 \text{ V}$, $I_{OL} = 16 \text{ mA}$		0.25	0.4	V	
I_{IH} High-level input current (strobe and gate inputs)	9	$V_{CC+} = 5.25 \text{ V}$, $V_{CC-} = -5.25 \text{ V}$, $V_{IH} = 2.4 \text{ V}$			40	μA	
		$V_{CC+} = 5.25 \text{ V}$, $V_{CC-} = -5.25 \text{ V}$, $V_{IH} = 5.25 \text{ V}$			1	mA	
I_{IL} Low-level input current (strobe and gate inputs)	9	$V_{CC+} = 5.25 \text{ V}$, $V_{CC-} = -5.25 \text{ V}$, $V_{IL} = 0.4 \text{ V}$		-1	-1.6	mA	
I_{OH} High-level output current	10	$V_{CC+} = 4.75 \text{ V}$, $V_{CC-} = -4.75 \text{ V}$, $V_O = 5.25 \text{ V}$			250	μA	
I_{OS} Short-circuit output current	11	$V_{CC+} = 5.25 \text{ V}$, $V_{CC-} = -5.25 \text{ V}$	-2.1		-3.5	mA	
I_{CC+} Supply current from V_{CC+}	6	$V_{CC+} = 5.25 \text{ V}$, $V_{CC-} = -5.25 \text{ V}$, $T_A = 25^\circ\text{C}$			27	mA	
I_{CC-} Supply current from V_{CC-}	6	$V_{CC+} = 5.25 \text{ V}$, $V_{CC-} = -5.25 \text{ V}$, $T_A = 25^\circ\text{C}$		-15	-20	mA	

†All typical values are at $V_{CC+} = 5 \text{ V}$, $V_{CC-} = -5 \text{ V}$, $T_A = 25^\circ\text{C}$.

NOTES: 3. The differential-input threshold voltage (V_T) is defined as the d-c differential input voltage (V_{ID}) required to force the output of the sense amplifier to the logic gate threshold voltage level.

4. Common-mode input firing voltage is the minimum common-mode voltage that will exceed the dynamic range of the input at the specified conditions and cause the logic output to switch. The specified common-mode input signal is applied with a strobe-enable pulse present.

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switching characteristics, $V_{CC+} = 5\text{ V}$, $V_{CC-} = -5\text{ V}$, $C_{ext} \geq 100\text{ pF}$, $T_A = 25^\circ\text{C}$

PROPAGATION DELAY TIMES			TEST FIGURE	TEST CONDITIONS	MIN	TYP	MAX	UNIT
SYMBOL	FROM INPUT	TO OUTPUT						
$t_{PLH(D)}$	A1-A2 OR B1-B2	Y	35	$C_L = 15\text{ pF}$, $R_L = 288\ \Omega$	20	30	45	ns
$t_{PHL(D)}$								
$t_{PLH(S)}$	STROBE A OR B	Y	35	$C_L = 15\text{ pF}$, $R_L = 288\ \Omega$	20	20	40	ns
$t_{PHL(S)}$								
$t_{PLH(G)}$	GATE	Y	36	$C_L = 15\text{ pF}$, $R_L = 288\ \Omega$	10	15	25	ns
$t_{PHL(G)}$								

typical recovery and cycle times, $V_{CC+} = 5\text{ V}$, $V_{CC-} = -5\text{ V}$, $C_{ext} \geq 100\text{ pF}$, $T_A = 25^\circ\text{C}$

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{orD}	Differential-input overload recovery time (see Note 5) <i>Differential Input Pulse:</i> $V_{ID} = 2\text{ V}$, $t_r = t_f = 20\text{ ns}$		20		ns
t_{orC}	Common-mode-input overload recovery time (see Note 6) <i>Common-Mode Input Pulse:</i> $V_{IC} = \pm 2\text{ V}$, $t_r = t_f = 20\text{ ns}$		20		ns
$t_{cyc(min)}$	Minimum cycle time		200		ns

- NOTES: 5. Differential-input overload recovery time is the time necessary for the device to recover from the specified differential input-overload signal prior to the strobe-enable signal.
6. Common-mode-input overload recovery time is the time necessary for the device to recover from the specified common-mode-input overload signal prior to the strobe-enable signal.

schematic

