

LM5522/LM7522 and LM5523/LM7523
electrical characteristics

LM5522/LM5523: The following apply for $-55^{\circ}\text{C} \leq T_A \leq 125^{\circ}\text{C}$, $V^+ = 5\text{V} \pm 5\%$, $V^- = -5\text{V} \pm 5\%$ (Note 1)

PARAMETER		MIN	TYP	MAX	UNIT	TEST CONDITIONS (EACH AMPLIFIER)						
						DIFF. INPUT	REF. INPUT	STROBE INPUT	GATE INPUT	LOGIC OUTPUT	SUPPLY VOLT.	COMMENTS
Differential Input Threshold Voltage (V_{TH}) (Note 2)	10(8)	15	20(22) 45(47)	mV	$\pm V_{TH}$	15 mV	+5V	+5V	-400 μ A	$\pm 5V \pm 5\%$	Logic Output $> 2.4V$	
		15		mV	$\pm V_{TH}$	15 mV	+5V	+5V	+16 mA	$\pm 5V \pm 5\%$	Logic Output $< 0.4V$	
	35(33)	40		mV	$\pm V_{TH}$	40 mV	+5V	+5V	-400 μ A	$\pm 5V \pm 5\%$	Logic Output $> 2.4V$	
	40	mV		$\pm V_{TH}$	40 mV	+5V	+5V	+16 mA	$\pm 5V \pm 5\%$	Logic Output $< 0.4V$		
Differential & Reference Input Bias Current			30	100	μ A	0V	0V	+5.25V	+5.25V		$\pm 5.25V$	

LM7522/LM7523: The following apply for $0^{\circ}\text{C} \leq T_A \leq 70^{\circ}\text{C}$, $V^+ = 5\text{V} \pm 5\%$, $V^- = -5\text{V} \pm 5\%$

Differential Input Threshold Voltage (V_{TH}) (Note 3)	11(8) 36(33) 40	15	19(22) 44(47)	mV	$\pm V_{TH}$	15 mV	+5V	+5V	-400 μA	$\pm 5\text{V} \pm 5\%$	Logic Output $> 2.4\text{V}$
		15		mV	$\pm V_{TH}$	15 mV	+5V	+5V	+16 mA	$\pm 5\text{V} \pm 5\%$	Logic Output $< 0.4\text{V}$
		40		mV	$\pm V_{TH}$	40 mV	+5V	+5V	-400 μA	$\pm 5\text{V} \pm 5\%$	Logic Output $> 2.4\text{V}$
		40		mV	$\pm V_{TH}$	40 mV	+5V	+5V	+16 mA	$\pm 5\text{V} \pm 5\%$	Logic Output $< 0.4\text{V}$
Differential & Reference Input Bias Current		30	75	μA	0V	0V	+5.25V	+5.25V		$\pm 5.25\text{V}$	

LM5522/LM5523: The following apply for $-55^{\circ}\text{C} \leq T_A \leq 125^{\circ}\text{C}$, $V^+ = 5\text{V} \pm 5\%$, $V^- = -5\text{V} \pm 5\%$

LM7522/LM7523: The following apply for $0^{\circ}\text{C} \leq T_A \leq 70^{\circ}\text{C}$, $V^+ = 5\text{V} \pm 5\%$, $V^- = -5\text{V} \pm 5\%$

Diff. Input Offset Current		0.5		μA	0V	0V	+5.25V	+5.25V		$\pm 5.25\text{V}$	
Logic "1" Input Voltage (Strobes) (Gate)	2 2			V	40 mV	20 mV	+2V	+4.75V	+16 mA	$\pm 4.75\text{V}$	Logic Output $< 0.4\text{V}$
				V	40 mV	20 mV	0V	+2V	-400 μA	$\pm 4.75\text{V}$	Logic Output $> 2.4\text{V}$
Logic "0" Input Voltage (Strobes) (Gate)			0.8	V	40 mV	20 mV	+0.8V	+4.75V	-400 μA	$\pm 4.75\text{V}$	Logic Output $> 2.4\text{V}$
			0.8	V	40 mV	20 mV	0V	+0.8V	+16 mA	$\pm 4.75\text{V}$	Logic Output $< 0.4\text{V}$
Logic "0" Input Current		-1	-1.6	mA	40 mV	20 mV	+0.4V	+0.4V		$\pm 5.25\text{V}$	Each Input
Logic "1" Input Current (Strobes) (Gate)				μA	0V	20 mV	+2.4V	+5.25V		$\pm 5.25\text{V}$	
				mA	0V	20 mV	+5.25V	+5.25V		$\pm 5.25\text{V}$	
				μA	40 mV	20 mV	+5.25V	+2.4V		$\pm 5.25\text{V}$	
				mA	40 mV	20 mV	+5.25V	+5.25V		$\pm 5.25\text{V}$	
Logic "1" Output Voltage	2.4	3.9		V	40 mV	20 mV	+0.8V	+2V	-400 μA	$\pm 4.75\text{V}$	
Logic "0" Output Voltage (Strobes) (Gate)			0.25	V	40 mV	20 mV	+2V	+4.75V	+16 mA	$\pm 4.75\text{V}$	Tie Pins 10 and 12
			0.25	V	40 mV	20 mV	0V	+0.8V	+16 mA	$\pm 4.75\text{V}$	Tie Pins 10 and 12
Output Short Circuit Current	-2.1	-2.8	-3.5	mA	40 mV	20 mV	0V	+5.25V	0V	$\pm 5.25\text{V}$	Tie Pins 10 and 12
Output Leakage Current		0.01	250	μA	0V	20 mV	0V	+2V	+5.25V	$\pm 4.75\text{V}$	
V^+ Supply Current		23	36	mA	0V	20 mV	0V	0V		$\pm 5.25\text{V}$	
V^- Supply Current		-13	-18	mA	0V	20 mV	0V	0V		$\pm 5.25\text{V}$	

LM5522/LM5523 and LM7522/LM7523: The following apply for $T_A = 25^{\circ}\text{C}$, $V^+ = 5\text{V}$, $V^- = -5\text{V}$

AC Common Mode Input Firing Voltage		± 2.5		V	PULSE	20 mV	+5V	+5V	SCOPE		
Propagation Delays: Differential Input to Logical "1" Output		26		ns		20 mV					AC Test Circuit
Differential Input to Logical "0" Output		21	45	ns		20 mV					AC Test Circuit
Strobe Input to Logical "1" Output		22		ns		20 mV					AC Test Circuit
Strobe Input to Logical "0" Output		12	40	ns		20 mV					AC Test Circuit
Gate Input to Logical "1" Output		4		ns		20 mV					AC Test Circuit
Gate Input to Logical "0" Output		15	25	ns		20 mV					AC Test Circuit
Differential Input Overload Recovery Time		10		ns							
Common Mode Input Overload Recovery Time		5		ns							
Min. Cycle Time		200		ns							

Note 1: For $0^{\circ}\text{C} \leq T_A \leq 70^{\circ}\text{C}$ operation, electrical characteristics for LM5522 and LM5523 are guaranteed the same as LM7522 and LM7523, respectively.

Note 2: Limits in parentheses pertain to LM5523, other limits pertain to LM5522.

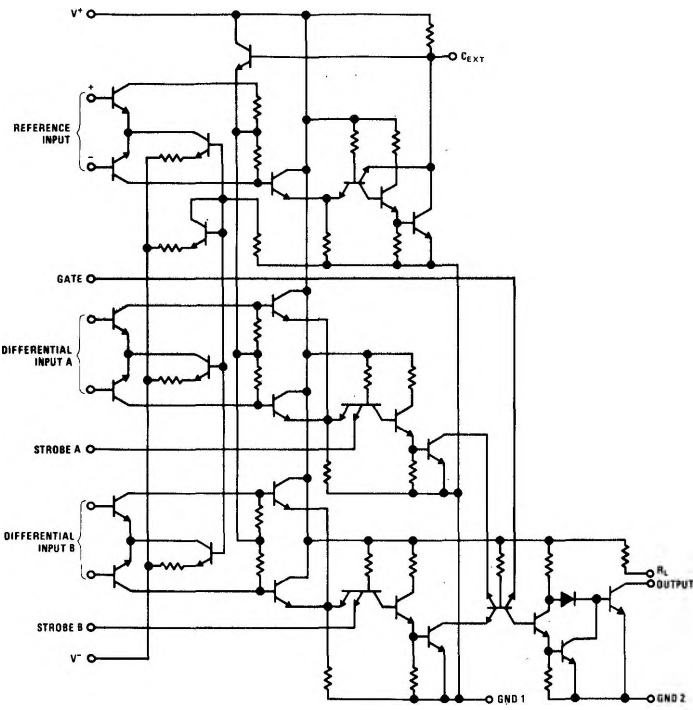
Note 3: Limits in parentheses pertain to LM7523, other limits pertain to LM7522.

Note 4: Positive current is defined as current into the referenced pin.

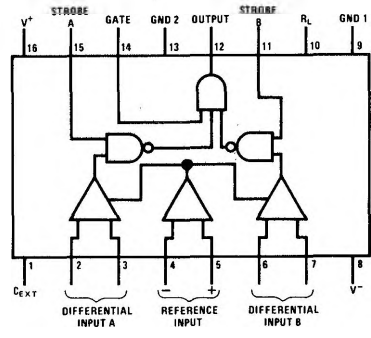
Note 5: Pin 1 to have $\geq 100\text{ pF}$ capacitor connected to ground.

LM5522/LM7522 and LM5523/LM7523

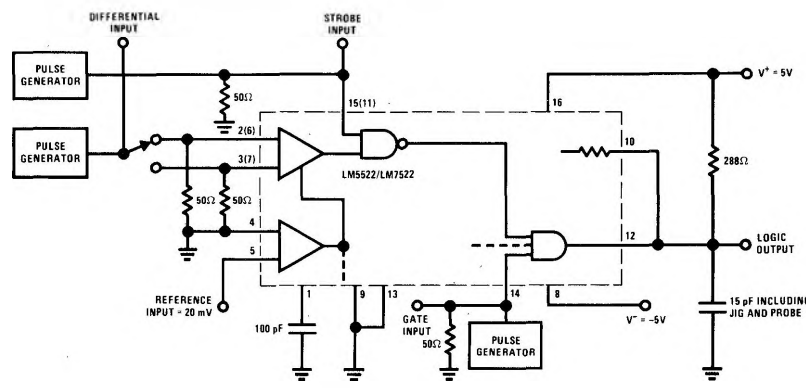
schematic diagram



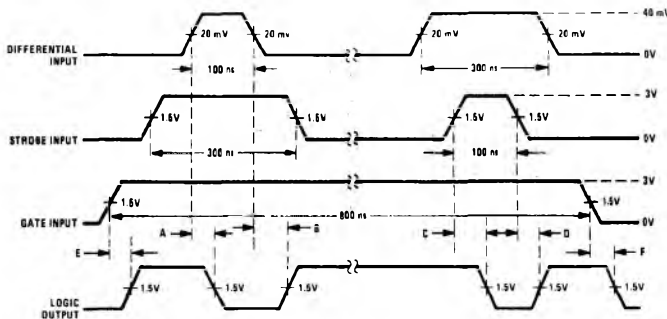
connection diagram



AC test circuit



voltage waveforms



- 1. One strobe is grounded when the other side is being tested
- 2. Pulse generator characteristics:
 $R_{OUT} = 50 \Omega$, $t_r = t_f = 10-20$ ns, PRR = 1 MHz
- 3. Propagation delay:
A - Differential input to logical "0" output
B - Differential input to logical "1" output
C - Strobe input to logical "0" output
D - Strobe input to logical "1" output
E - Gate input to logical "1" output
F - Gate input to logical "0" output