

# LM5524/LM7524 and LM5525/LM7525

## electrical characteristics

LM5524/LM5525: 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)					COMMENTS
					DIFF. INPUT	REF. INPUT	STROBE INPUT	LOGIC OUTPUT	SUPPLY VOLT.	
Differential Input Threshold Voltage ( $V_{TH}$ ) (Note 2)	10(8)	15		mV	$\pm V_{TH}$	15 mV	+5V	+16 mA	$\pm 5\text{V} \pm 5\%$	Logic Output <0.4V
		15	20(22)	mV	$\pm V_{TH}$	15 mV	+5V	-400 $\mu\text{A}$	$\pm 5\text{V} \pm 5\%$	Logic Output >2.4V
	35(33)	40		mV	$\pm V_{TH}$	40 mV	+5V	+16 mA	$\pm 5\text{V} \pm 5\%$	Logic Output <0.4V
		40	45(47)	mV	$\pm V_{TH}$	40 mV	+5V	-400 $\mu\text{A}$	$\pm 5\text{V} \pm 5\%$	Logic Output >2.4V
Differential & Reference Input Bias Current		30	100	$\mu\text{A}$	0V	0V	+5.25V		$\pm 5.25\text{V}$	

LM7524/LM7525: 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)	15		mV	$\pm V_{TH}$	15 mV	+5V	+16 mA	$\pm 5\text{V} \pm 5\%$	Logic Output <0.4V
		15	19(22)	mV	$\pm V_{TH}$	15 mV	+5V	-400 $\mu\text{A}$	$\pm 5\text{V} \pm 5\%$	Logic Output >2.4V
	36(33)	40		mV	$\pm V_{TH}$	40 mV	+5V	+16 mA	$\pm 5\text{V} \pm 5\%$	Logic Output <0.4V
		-40	44(47)	mV	$\pm V_{TH}$	40 mV	+5V	-400 $\mu\text{A}$	$\pm 5\text{V} \pm 5\%$	Logic Output >2.4V
Differential & Reference Input Bias Current		30	75	$\mu\text{A}$	0V	0V	+5.25V		$\pm 5.25\text{V}$	

LM5524/LM5525: The following apply for  $-55^{\circ}\text{C} \leq T_A \leq 125^{\circ}\text{C}$ ,  $V^+ = 5\text{V} \pm 5\%$ ,  $V^- = -5\text{V} \pm 5\%$

LM7524/LM7525: 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		$\mu\text{A}$	0V	0V	+5.25V		$\pm 5.25\text{V}$	
Logic "1" Input Voltage	2			V	40 mV	20 mV	+2V	-400 $\mu\text{A}$	$\pm 4.75\text{V}$	Logic Output >2.4V
Logic "0" Input Voltage			0.8	V	40 mV	20 mV	+0.8V	+16 mA	$\pm 4.75\text{V}$	Logic Output <0.4V
Logic "0" Input Current		-1	-1.6	mA	40 mV	20 mV	+0.4V		$\pm 5.25\text{V}$	
Logic "1" Input Current		5	40	$\mu\text{A}$	0V	20 mV	+2.4V		$\pm 5.25\text{V}$	
		0.02	1	mA	0V	20 mV	+5.25V		$\pm 5.25\text{V}$	
Logic "1" Output Voltage	2.4	3.9		V	40 mV	20 mV	+2.0V	-400 $\mu\text{A}$	$\pm 4.75\text{V}$	
Logic "0" Output Voltage		0.25	0.40	V	40 mV	20 mV	+0.8V	+16 mA	$\pm 4.75\text{V}$	
Output Short Circuit Current	-2.1	-2.8	-3.5	mA	40 mV	20 mV	+5.25V	0V	$\pm 5.25\text{V}$	
$V^+$ Supply Current		29	40	mA	0V	20 mV	0V		$\pm 5.25\text{V}$	
$V^-$ Supply Current		-13	-18	mA	0V	20 mV	0V		$\pm 5.25\text{V}$	

LM5524/LM5525 and LM7524/LM7525: The following apply for  $T_A = 25^{\circ}\text{C}$ ,  $V^+ = 5\text{V}$ ,  $V^- = -5\text{V}$

AC Common-Mode Input Firing Voltage		$\pm 2.5$		V	PULSE	20 mV	+5V	SCOPE		
Propagation Delays:										
Differential Input to Logical "1" Output		20	40	ns		20 mV				AC Test Circuit
Differential Input to Logical "0" Output		28		ns		20 mV				AC Test Circuit
Strobe Input to Logical "1" Output		10	30	ns		20 mV				AC Test Circuit
Strobe Input to Logical "0" Output		20		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 LM5524 and LM5525 are guaranteed the same as LM7524 and LM7525 respectively.

Note 2: Limits in parentheses pertain to LM5525, other limits pertain to LM5524.

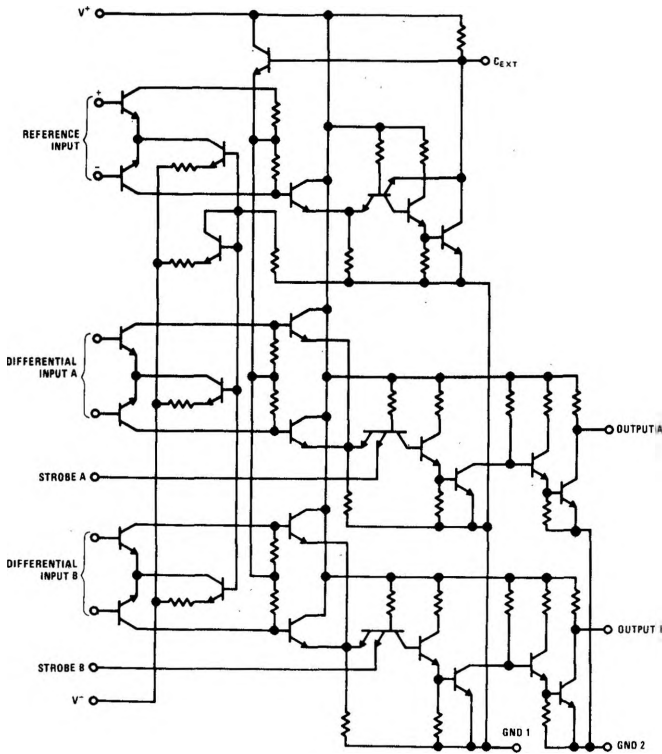
Note 3: Limits in parentheses pertain to LM7525, other limits pertain to LM7524.

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

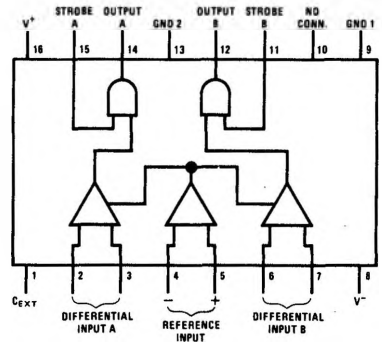
Note 5: Pin 1 to have  $\geq 100$  pF capacitor connected to ground.

# LM5524/LM7524 and LM5525/LM7525

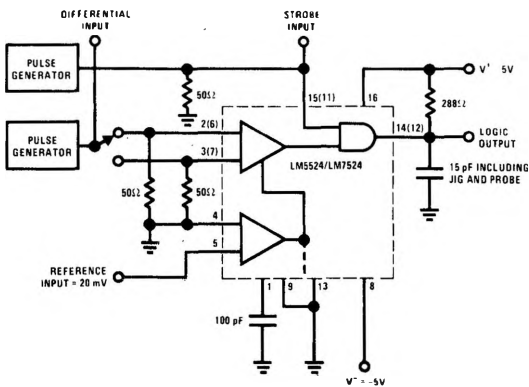
## schematic diagram



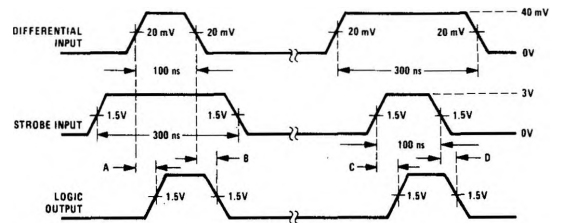
## connection diagram



## AC test circuit



## voltage waveforms



- Pulse generator characteristics:  
 $Z_{out} = 50\Omega$ ,  $t_r = 15-5$  ns, PRR = 1 MHz
- Propagation delay:  
 A = Differential input to logical "1" output  
 B = Differential input to logical "0" output  
 C = Strobe input to logical "1" output  
 D = Strobe input to logical "0" output