PRODUCT AVAILABLE IN 0°C TO +75°C TEMP. RANGE ONLY.

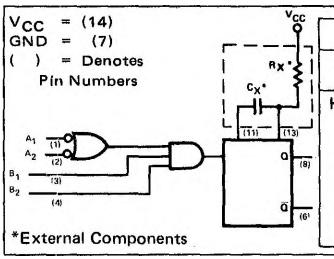
DIGITAL 8000 SERIES TTL/MSI

DESCRIPTION

The Signetics N8T22A is a direct pin-for-pin replacement for the 9601 retriggerable one-shot. Triggering can be performed on either the leading or falling edge of the input signal through selection of the proper input terminal.

The inputs are level-sensitive making triggering independent of signal transition times. Output pulse width is determined by external timing components (R_X and C_X) with each trigger pulse initiating a complete new timing cycle.

LOGIC DIAGRAM



Pin Number			
1	2	3	4
H→L	H	H	H
H	H→L	H	H
L	X	L→H	H
X	L	L→H	H
L	X	H	L→H
X	L	H	L→H

ELECTRICAL CHARACTERISTICS (Over Recommended Operating Temperature And Voltage)

CHARACTERISTICS	LIMITS				TEST CONDITIONS
	MIN.	TYP.	MAX.	UNITS	
"1" Output Voltage	2.4	3.4		V	I_{out} = -960μA
"0" Output Voltage		0.2	0.45	V	I_{out} = 12.8mA
Input HIGH Voltage	1.9			V	
Input LOW Voltage			0.9	V	
"0" Input Current			1.6	mA	V_{in} = 0.45V
"1" Input Current			60	μA	V_{in} = 4.5V
Timing Resistor	5.0		50	kΩ	
C_{Stray} - Maximum allowable wiring capacitance			50	pF	P13 to Ground

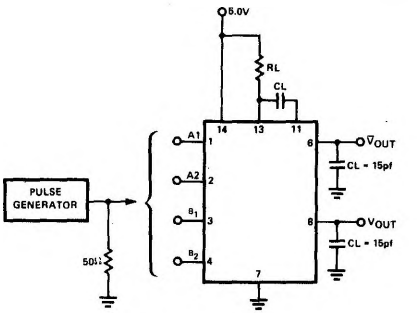
T_A = 25° C and V_{CC} = 5.0V

CHARACTERISTICS	LIMITS				TEST CONDITIONS
	MIN.	TYP.	MAX.	UNITS	
Propagation Delay					
Negative Trigger Input		25	40	ns	R_X = 5.0kΩ, C_X = 0
to True Output (t_{pd}+)					C_L = 15pf
Negative Trigger Input		25	40	ns	R_X = 5.0kΩ, C_X = 0
to False Output (t_{pd}-)					C_L = 15pF
Min. True Output Pulse Width		45	65	ns	R_X = 5.0kΩ, C_X = 0
					C_L = 15pF
Pulse Width Variation	3.08	3.42	3.76	μs	R_X = 10kΩ, C_X = 1000pF
Short Circuit Current	-10		-40	mA	V_{out} = 0V
Power Supply Current			25	mA	V_{CC} = 5.25V

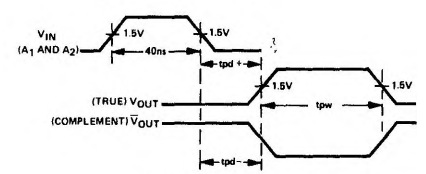
NOTES:
1. Positive current is defined as into the pin referenced.
2. Unless otherwise noted, 10kΩ resistor placed between Pin 13 and V_{CC} (R_X).

AC TEST FIGURE AND WAVEFORMS

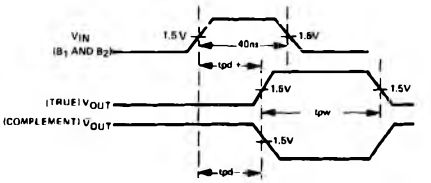
TRIGGER INPUT/OUTPUT AND PULSE WIDTH



NOTES:
1. Pulse Generator has the following characteristics: $t_r = t_f = 10ns$ (10% to 90%), AMP. = 3V.
2. C_L includes probe and jig capacitance.
3. For tpd+, tpd- and tpw (min.) RX = 5kΩ ± 1%, CX = OPEN, PRR = 1MHz.
4. For Δtpw: RX = 10kΩ ± 1%, C_X = 1000pF ± 1%, PRR = 200kHz.



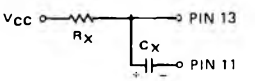
WAVEFORM A.



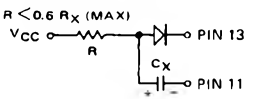
WAVEFORM B.

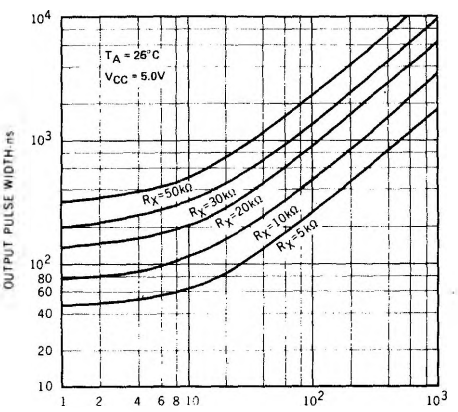
OPERATION RULES

1. An external resistor (R_X) and external capacitor (C_X) are required as shown in the Logic Diagram.
2. The value of R_X may vary from 5.0 to 50 kΩ (0 to 75°).
3. C_X may vary from 0 to any necessary value available. If however, the capacitor has leakages approaching 3.0 μA or if stray capacitance from either terminal to ground is more than 50 pF, the timing equations may not represent the pulse width obtained.
4. If electrolytic capacitors are to be used, the following configurations are recommended:
   A. For use with low leakage electrolytic capacitors.
      The normal RC configuration can be used predicably only if the forward capacitor leakage at 5.0 volts is less than 3 μA, and the inverse capacitor leakage at 1.0 volt is less than 5 μA over the operational temperature range, and Rule 3 above is satisfied.



   B. Use with high inverse leakage current electrolytic capacitors.
      The diode in this configuration prevents high inverse leakage currents through the capacitor by preventing an inverse voltage across the capacitor.





$t \approx 0.3\ RC_X$

The output pulse with (t) is defined as follows

$$t = 0.32\ R_X C_X \left[1 + \frac{0.7}{R_X}\right]$$

Where R_X is in kΩ, C_X is in pF, t is in ns; for $C_X < 10^3$ pF.

TYPICAL OUTPUT PULSE WIDTH VERSUS TIMING RESISTANCE AND CAPACITANCE FOR $C_X < 10^3$ pF IS SHOWN IN THE OPPOSITE GRAPH.