

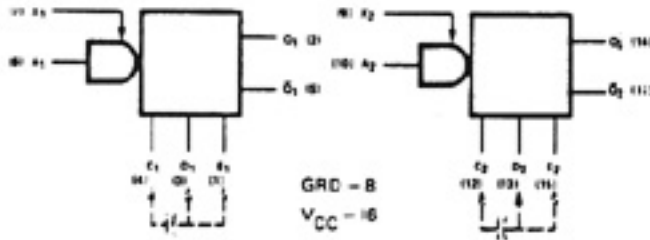
Features

- COMPLEMENTARY OUTPUT PULSES
- OUTPUT WIDTH INDEPENDENT OF TRIGGER PULSE WIDTH
- TIMING RANGE OF 100 NANoseconds TO SEVERAL SECONDS
- ON CHIP TIMING RESISTORS
- EXPANDER INPUTS
- ACTIVE PULLUP

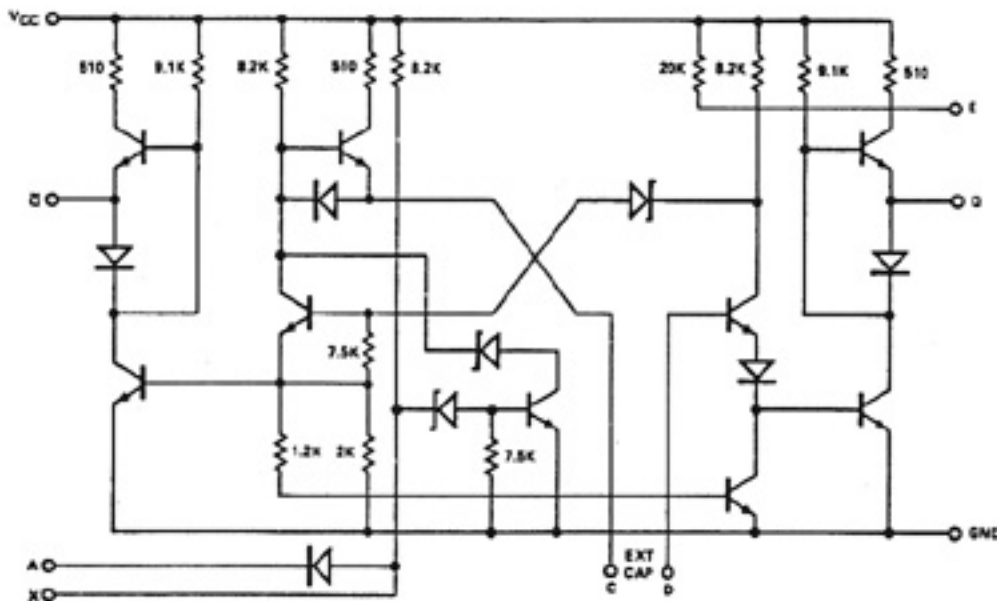
General Description

The 342 provides two one-shots that can be independently triggered and timed. Output pulse widths are timed by an external capacitor, making them independent of the input trigger pulse widths. Expander inputs and complementary, active pull-up outputs are provided. Applications include generation of stable control pulses as long as several seconds from short data pulses.

Logic Diagrams



Equivalent Circuit



Specifications

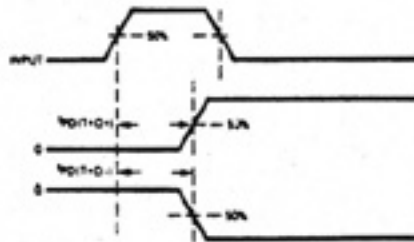
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I_{CC} (WORST-CASE)	17 mA @ 13V, 23 mA @ 16V	
t_{PD}	260 ns	160 ns
I/O FUNCTION FOR t_{PD}	$t+Q+$	$t+Q-$

NOTE:

I_{CC} is tested at $V_{CC} + 1$ Volt (+13V for C type and +16 for A type) and is guaranteed across the applicable temp range. t_{PD} is guaranteed at $V_{CC} = 1$ V and across the applicable temp range with the output loaded with 5 unit loads. See page 12 for electrical summary data.

Switching Time Waveforms



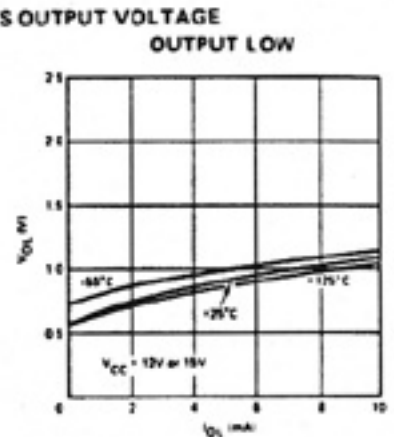
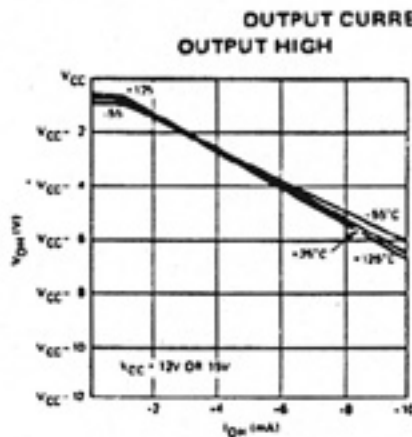
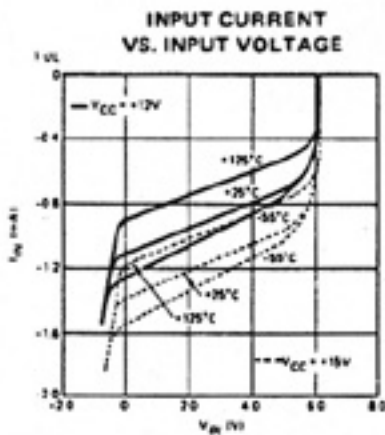
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Loading Table

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PINS	FUNCTION	LOADING
A	Trigger inputs	1 UL
C-E	Timing network	N.A.
X	Expanders	Each diode tied to X1 or X2 is 1 unit load.
Q, Q̄	Outputs	5 UL

Typical Performance Characteristics



Typical Applications

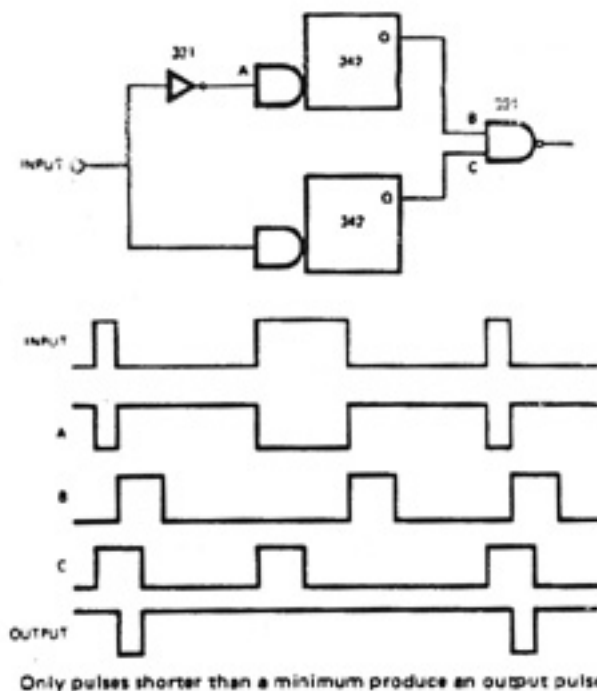
The 342 is triggered on the rising edge of a trigger pulse applied to an A or X input. It is not retriggerable until a cycle time of $P_W + T_R$ has elapsed, where P_W is output pulse width and T_R is the recovery time.

$P_W \cong 0.7 RC$. C is a capacitor externally connected between pins C and D. R may be the 20 kilohm resistor in the one-shot, used by shorting pins D and E together. This resistor is a diffused resistor with a tolerance of $\pm 30\%$ at 25°C . For critical timing applications, a precision resistor of 2 to 62 kilohms should be connected from V_{CC} to pin D. The external resistor size range allows a timing range from 200 nanoseconds to several seconds.

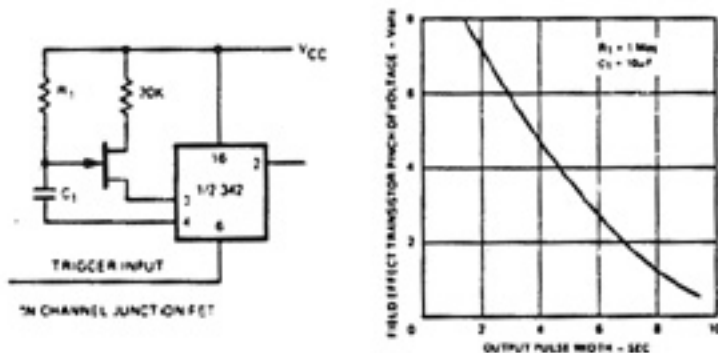
$T_R \cong 3C$ in nanoseconds, with C in picofarads. This is the recovery time required for the circuit to charge C to 99% of its final value. T_R must be considered when calculating the allowable duty cycle.

Any desired number of trigger inputs may be ANDed by adding 331 gate expanders or 1N914 diodes (or any 20-volt silicon diodes) to the expander inputs.

PULSE WIDTH DETECTOR

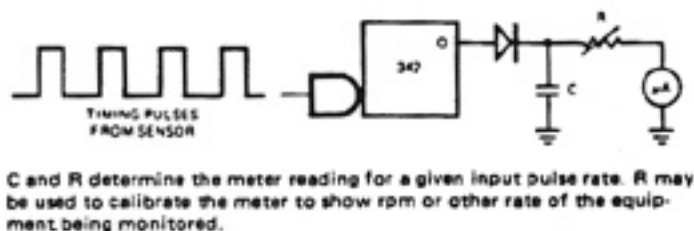


ONE-SHOT WITH LONG PULSE WIDTH

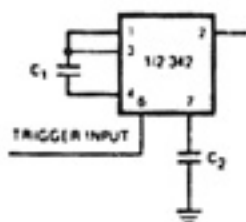


A field-effect transistor extends the time constant provided by a small capacitor, by allowing use of a high-value resistor. If a large capacitor is also used, very long delays can be obtained.

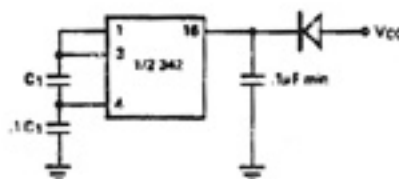
TACHOMETER



PULSE DELAY CIRCUIT



IMPROVED NOISE REDUCTION CIRCUIT



Recommended where excessive supply noise is present.