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NTE9602

Integrated Circuit

Dual Retriggerable Monostable Multivibrator

Description:

The NTE9602 is a dual resettable, retriggerable, monostable multivibrator in a 16-Lead DIP type package. This device has two inputs per function, one which is active HIGH, and one which is active LOW. This allows the designer to employ either leading-edge or trailing-edge triggering, which is independent of input transition times. When input conditions for triggering are met, a new cycle starts and the external capacitor is allowed to rapidly discharge and then charge again. The retriggerable feature permits output pulse widths to be extended. In fact, a continuous true output can be maintained by having an input cycle time which is shorter than the output cycle time. The output pulse may then be terminated at any time by applying a LOW logic level to the RESET pin. Retriggering may be inhibited by either connecting the Q output to an active HIGH input, or the \bar{Q} output to an active LOW input.

Features:

- 70ns to ∞ Output Width Range
- Resettable and Retriggerable – 0% to 100% Duty Cycle
- TTL Input Gating – Leading or Trailing Edge Triggering
- Complementary TTL Outputs
- Optional Retrigger Lock-Out Capability
- Pulse Width Compensated for V_{CC} and Temperature Variations

Absolute Maximum Ratings: (Note 1)

Supply Voltage, V_{CC}	7.V
Input Voltage, V_I	5.5V
Operating Free-Air Temperature Range, T_{opr}	0° to +70°C
Storage Temperature Range, T_{stg}	-65°C to +150°C

Note 1. The “Absolute Maximum Ratings” are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the “Electrical Characteristics” tables are not guaranteed at the absolute maximum ratings. The “Recommended Operating Conditions” table will define the conditions for actual device operation.

Recommended Operating Conditions:

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{CC}		4.75	5.00	5.25	V
HIGH Level Input Voltage	V_{IH}	$T_A = 0^{\circ}\text{C}$	1.9	–	–	V
		$T_A = +25^{\circ}\text{C}$	1.8	–	–	V
		$T_A = +75^{\circ}\text{C}$	1.65	–	–	V
LOW Level Input Voltage	V_{IL}	$T_A = 0^{\circ}\text{C}$	–	–	0.85	V
		$T_A = +25^{\circ}\text{C}$	–	–	0.85	V
		$T_A = +75^{\circ}\text{C}$	–	–	0.85	V
HIGH Level Output Current	I_{OH}		–	–	–0.8	mA
LOW Level Output Current	I_{OL}		–	–	16	mA
Free Air Operating Temperature	T_A		0	–	75	$^{\circ}\text{C}$

Electrical Characteristics: ($T_A = 0^{\circ}$ to $+70^{\circ}\text{C}$, $R_X = 10\text{k}$, Note 2 unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Clamp Voltage	V_I	$V_{CC} = \text{Min}$, $I_I = -12\text{mA}$	–	–	–1.5	V
HIGH Level Output Voltage	V_{OH}	$V_{CC} = \text{Min}$, $I_{OH} = \text{Max}$, $V_{IL} = \text{Max}$, $V_{IH} = \text{Min}$, Note 3	2.4	–	–	V
LOW Level Output Voltage	V_{OL}	$V_{CC} = \text{Min}$, $I_{OL} = \text{Max}$, $V_{IL} = \text{Max}$, $V_{IH} = \text{Min}$, Note 3	–	–	0.45	V
HIGH Level Input Current	I_{IH}	$V_{CC} = \text{Max}$, $V_I = 4.5\text{V}$	–	–	60	μA
LOW Level Input Current	I_{IL}	$V_{CC} = \text{Max}$, $V_I = 0.45\text{V}$	–	–	–1.6	mA
		$V_{CC} = \text{Min}$, $V_I = 0.45\text{V}$	–	–	–1.41	mA
Short Circuit Output Current	I_{OS}	$V_{CC} = \text{Max}$, $V_{OUT} = 1\text{V}$, Note 3, Note 4	–	–	–35	mA
Supply Current	I_{CC}	$V_{CC} = \text{Max}$	–	39	50	mA

Note 2. All typicals are at $V_{CC} = +5\text{V}$, $T_A = +25^{\circ}\text{C}$.

Note 3. Ground Pin1 (15) for V_{OL} on Pin7 (9) or V_{OH} and I_{OS} on Pin6 (10) and apply momentary ground to Pin4 (12). Open Pin1 (15) for V_{OL} on Pin6 (10) or V_{OH} and I_{OS} on Pin7 (9).

Note 4. Not more than one output should be shorted at a time.

Switching Characteristics: ($V_{CC} = 5\text{V}$, $T_A = +25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Propagation Delay Time, LOW-to-HIGH Level Output (Negative Trigger Input to True Output)	t _{PLH}	C _L = 15pF, C _X = 0, R _X = 5kΩ	–	–	40	ns
Propagation Delay Time, HIGH-to-LOW Level Output (Negative Trigger Input to Complement Output)	t _{PHL}		–	–	48	ns
Minimum True Output Pulse Width	t _{PW} (MIN)		–	–	100	ns
Minimum Complement Pulse Width			–	–	110	ns
Pulse Width	t _{PW}	R _X = 10kΩ, C _X = 100pF	3.08	–	3.76	μs
Maximum Allowable Wiring Capacitance	C _{STRAY}	Pin2, Pin4 to GND	–	–	50	pF
External Timing Resistor	R _X		5	–	50	kΩ

Function Table:

Pin Numbers			Operation
A	B	CLR	
H \rightarrow L	L	H	Trigger
H	H \rightarrow L	H	Trigger
X	X	L	Trigger

H = HIGH Voltage Level

L = LOW Voltage Level

X = Don't care

Pin Connection Diagram