



ELECTRONICS, INC.

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NTE2030 Integrated Circuit High Voltage Segment Driver for Gas Discharge Tubes

Description:

The NTE2030 is capable of driving 8 segments of a high voltage display tube with a constant output sink current, which can be adjusted by external program resistor, R_p . The program current is half that of output "ON" current. In the "OFF" state the outputs can tolerate more than 80V. The ratio of "ON" output currents is within $\pm 10\%$. Inputs have negative clamp diodes. Active high input logic. The main application of the device is to interface MOS circuits to high-voltage displays.

Features:

- Versatile Circuits for a Wide Range of Display Applications
- High Breakdown Voltages
- Low Power Dissipation

Absolute Maximum Ratings:

Input Voltage (Note 2)	-20V
Output Voltage	85V
Operating Temperature Range	0° to +70°C
Storage Temperature Range	-65° to +150°C
Lead Temperature (During Soldering, 10sec)	+300°C

Note 1 "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. Except "Operating Temperature Range" they are note meant to imply that the devices should be operated at these limits. The table of "Electrical Characteristics" provides conditions for actual device operation.

Note 2 All voltage for NTE2030 with respect to $V_{CC} = 0V$.

DC Electrical Characteristics: (Note 2 & Note 3)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Current	I_I	$V_{IN} = 6.0V$	150	250	350	μA
Logical "0" Input Current	I_{IL}	$I_{OUT} = 5.0\mu A, V_{OUT} = 75V$	-	-	7.0	μA
Logical "1" Input Current	I_{IH}	$I_{OUT} = 1.4mA, I_{IP} = 850\mu A, V_{OUT} = 50V$	80	-	-	μA
Input Clamp Voltage	V_I	$I_{IN} = -1.0mA, T_A = +25^\circ C$	-	-0.68	-0.85	V

Note 2 All voltage for NTE2030 with respect to $V_{CC} = 0V$.

Note 3 Unless otherwise specified, Min/Max limits apply across the 0°C to +70°C. All typicals are given for $T_A = +25^\circ C$.

DC Electrical Characteristics (Cont'd): (Note 2 & Note 3)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Output Breakdown Voltage	V_{OH}	$I_{OUT} = 100\mu A, I_{IN} = 0\mu A$	80	-	-	V	
Output Leakage Current	I_{CEX}	$V_{OUT} = -75V, -0.1mA \leq I_{IN} \leq 7.0\mu A$	-	0.02	5.0	μA	
Prog Input Voltage	I_{PROG}	$I_{IP} = 150\mu A$	1.8	2.3	-	V	
			-	4.0	4.5		
Logical "0" Output Current	I_{OL}	$V_{OUT} = 50V, 80\mu A \leq I_{IN} \leq I_{IP}$	$I_{IP} = 150\mu A$	240	300	360	μA
			$I_{IP} = 400\mu A$	680	800	920	μA
			$I_{IP} = 850\mu A$	1.53	1.7	1.87	mA
Output Current Ratio	ΔI_O	$I_{OUT} \text{ b Ref} = 1.7mA, V_{OUT} = 50V$	0.9	1.0	1.1		

Note 2 All voltage for NTE2030 with respect to $V_{CC} = 0V$.

Note 3 Unless otherwise specified, Min/Max limits apply across the $0^\circ C$ to $+70^\circ C$. All typicals are given for $T_A = +25^\circ C$.

Note 4 Supply currents specified for any one input = $-1.0V$. All other inputs = $-5.5V$ and selected output having 16mA load.

AC Electrical Characteristics: ($T_A = +25^\circ C$, unless otherwise indicated)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Propagation Delay to a Logical "0" from Input to Output	t_{pd0}	$R_P = 6k \text{ to } 6V, R_{OUT} = 1k \text{ to } 6V$	-	37	100	ns
Propagation Delay to a Logical "1" from Input to Output	t_{pd1}	Input Ramp Rate $\leq 15ns$, Freq = 1MHz, DC = 50%, Amplitude = 6.0V	-	92	200	ns

Note 2 All voltage for NTE2030 with respect to $V_{CC} = 0V$.

Note 3 Unless otherwise specified, Min/Max limits apply across the $0^\circ C$ to $70^\circ C$. All typicals are given for $T_A = +25^\circ C$.

Note 4 Supply currents specified for any one input = $-1.0V$. All other inputs = $-5.5V$ and selected output having 16mA load.



