

NTE2021 & NTE2022 Integrated Circuit 8-Digit/Segment Fluorescent Display Driver

Description:

The NTE2021 and NTE2022 consist of eight NPN Darlington output stages and the associated common-emitter input stages in an 18-Lead DIP type package. These devices are designed to interface between low-level digital logic and vacuum fluorescent displays. They are capable of driving the digits and/or segments of these displays and are designed to permit all outputs to be activated simultaneously. Pulldown resistors are incorporated into each output and no external components are required for most fluorescent displays.

The NTE2020 is compatible with TTL, Schottky TTL, DTL and 5V CMOS. The NTE2021 device is intended for use with MOS (PMOS & CMOS) logic operating from supply voltages of 6V to 15V.

Features:

- Digit or Segment Drivers
- Low Input Current
- Integral Output Pull-Down Resistors
- Low Power
- Reliable Monolithic Construction
- High Output Breakdown Voltage

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$, Note 1)

Supply Voltage, V_{BB}	85V
Input Voltage, V_{IN}	20V
Output Current, I_{OUT}	-40mA
Allowable Power Dissipation, P_D	1W
Derate Above 25°C	8.0mW/ $^\circ\text{C}$
Operating Temperature Range, T_A	-20° to $+85^\circ\text{C}$
Storage Temperature Range, T_{stg}	-55° to $+150^\circ\text{C}$

Note 1. Voltages are with reference to GND unless otherwise specified

Recommended Operating Conditions:

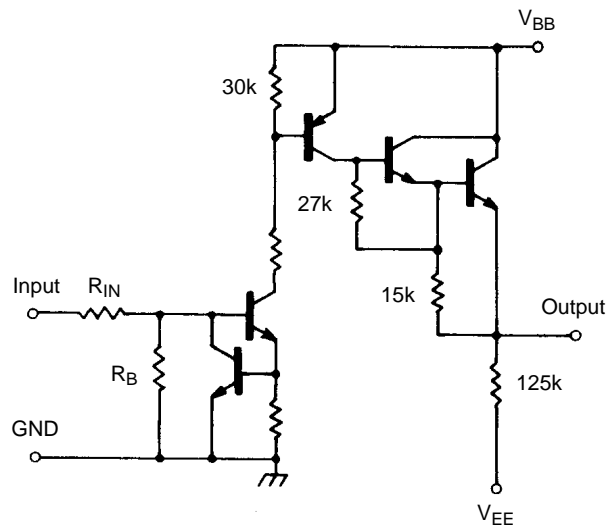
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{BB}		5	—	70	V
Input ON Voltage NTE2021	V_{IN}		2.4	—	15	V
NTE2022			4.0	—	15	V
Output ON Current	I_{OUT}		—	—	-25	mA

Note 2. Positive (negative) current is defined as going into (coming out of) the specified device pin.

Electrical Characteristics: ($T_A = -20^{\circ}$ to $+85^{\circ}\text{C}$, $V_{BB} = 80\text{V}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Leakage Current	I_{OUT}	$V_{IN} = 400\text{mV}$	–	–	15	μA
Output OFF Voltage	V_{OUT}	$V_{IN} = 400\text{mV}$	–	–	1.0	V
Output Pull-Down Current	I_{OUT}	$V_{OUT} = V_{BB}$, Input Open	450	650	1100	μA
Output ON Voltage NTE2021	V_{OUT}	$V_{IN} = 2.4\text{V}$, $I_{OUT} = -25\text{mA}$	77	78	–	V
NTE2022		$V_{IN} = 4.0\text{V}$, $I_{OUT} = -25\text{mA}$	77	78	–	V
Input ON Current NTE2021	I_{IN}	$V_{IN} = 2.4\text{V}$	–	120	225	μA
		$V_{IN} = 5.0\text{V}$	–	375	650	μA
NTE2022		$V_{IN} = 4.0\text{V}$	–	130	250	μA
		$V_{IN} = 15.0\text{V}$	–	675	1150	μA
Supply Current NTE2021 & NTE2022	I_{BB}	All Inputs Open	–	10	100	μA
NTE2021		All Inputs = 2.4V	–	6.0	9.0	mA
NTE2022		All Inputs = 4.0V	–	6.0	9.0	mA

**Partial Schematic
(One Driver)**



	R_{IN}	R_B
NTE2021	10k Ω	30k Ω
NTE2022	20k Ω	20k Ω

Pin Connection Diagram

