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NTE74141
Integrated Circuit
TTL – BCD–to–Decimal Decoder/Driver
16–Lead DIP Type Package

Description:

The NTE74141 is a second–generation BDC–to–decimal decoder in a 16–lead DIP type package designed specifically to drive cold–cathode indicator tubes. This decoder demonstrates an improved capability to minimize switching transients in order to maintain a stable display.

Full decoding is provided fo all possible input states. Fo binary inputs 10 through 15, all the outputs are off. Therefore the NTE74141, combined with a minimum of external circuitry, can use these invalid codes in blanking leading– and/or trailing–edge zeros in a display. The ten high–performance NPN output transistors have a maximum reverse current of 150 microamperes at 55 volts.

Low forward–impedance diodes are also provided for each input to clamp negative–voltage transitions in order to minimize transmission–line effects. Power dissipation is typically 80 milliwatts. The NTE74141 is characterized for operation over the temperature range of 0° to +70°C.

Features:

- Drives Gas–Filled Cold–Cathode Indicator Tubes Directly
- Fully Decoded Inputs Ensures all Outputs are Off for Invalid Codes
- Input Clamping Diodes Minimize Transmission–Line Effects

Absolute Maximum Ratings: (T_A = 0° to +70°C unless otherwise specified)

Supply Voltage (Note 1), V_{CC} 7V
Input Voltage 5.5V
Current Into Any Output (Off–State) 2mA
Operating Free–Air Temperature Range, T_A . . . . . 0° to +70°C
Storage Temperature Range, T_{stg} . . . . . –65° to +150°C

Note 1. Voltage values are with respect to network ground terminal.

Recommended Operating Characteristics:

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{CC}		4.75	5.0	5.25	V
Off–State Output Voltage			–	–	60	V
Operating Free–Air Temperature	T_A		0	–	70	°C

Electrical Characteristics: (T_A = 0° to +70°C, Note 2, Note 3 unless otherwise specified)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
High−Level Input Voltage	V_{IH}			2	–	–	V
Low−Level Input Voltage	V_{IL}			–	–	0.8	V
Input Clamp Voltage	V_{IK}	V_{CC} = MIN, I_I = −5mA		–	–	−1.5	V
On−State Output Voltage	$V_{O(on)}$	V_{CC} = MIN, I_O = 7mA		–	–	2.5	V
Off−State Output Voltage for Input Counts 0 Thru 9	$V_{O(off)}$	V_{CC} = MAX, I_O = 0.5mA		60	–	–	V
Off−State Reverse Current	$I_{O(off)}$	V_{CC} = MAX, V_O = 55V		–	–	50	μA
Off−State Reverse Current for Input Counts 10 Thru 15	$I_{O(off)}$	V_{CC} = MAX, V_O = 30V	T_A = +55°C	–	–	5	μA
			T_A = +70°C	–	–	15	μA
Input Current at Maximum Input Voltage	I_I	V_{CC} = MAX, V_I = 5.5V		–	–	1	mA
High−Level Input Current A Input	I_{IH}	V_{CC} = MAX, V_I = 2.4V		–	–	40	μA
B, C, or D Input				–	–	80	μA
Low−Level Input Current A Input	I_{IL}	V_{CC} = MAX, V_I = 0.4V		–	–	−1.6	mA
B, C, or D Input				–	–	−3.2	mA
Supply Current	I_{CC}	V_{CC} = MAX, Note 4		–	16	25	mA

Note 2. For conditions shown as MIN or MAX, use the appropriate value specified under “Recommended Operating Conditions”.

Note 3. Typical value is at V_{CC} = 5V, T_A = +25°C.

Note 4. I_{CC} is measured with all inputs grounded and outputs open.

Function Table:

Input				Output
A	B	C	D	ON †
L	L	L	L	0
L	L	L	H	1
L	L	H	L	2
L	L	H	H	3
L	H	L	L	4
L	H	L	H	5
L	H	H	L	6
L	H	H	H	7
H	L	L	L	8
H	L	L	H	9
H	L	H	L	NONE
H	L	H	H	NONE
H	H	L	L	NONE
H	H	L	H	NONE
H	H	H	L	NONE
H	H	H	H	NONE

H = HIGH Level, L = LOW Level

† All other outputs are OFF

Pin Connection Diagram