

N74141-B

DIGITAL 54/74 TTL SERIES

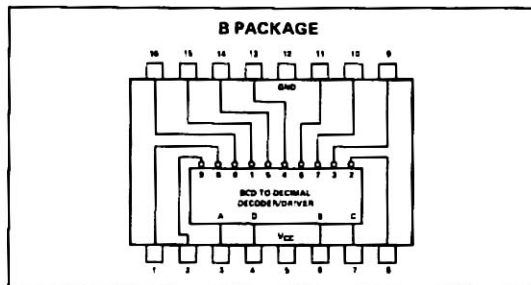
DESCRIPTION

The N74141 is a BCD-to-decimal decoder 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.

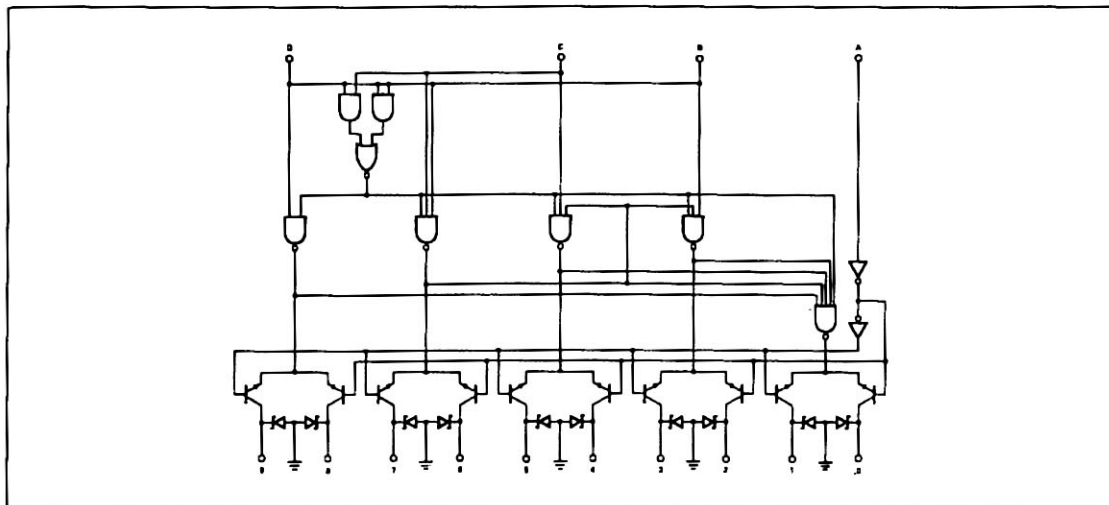
Full decoding is provided for all possible input states. For binary inputs 10 through 15, all the outputs are off. Therefore the N74141, combined with a minimum of external circuitry, can use these invalid codes in blanking leading- and/or trailing-edge zeros in a display as shown in the typical application data. The ten high-performance, n-p-n output transistors have a maximum reverse current of 50 microamperes at 55 volts.

Low-forward-impedance diodes are also provided for each input to clamp negative-voltage transients in order to minimize transmission-line effects. Power dissipation is typically 55 milliwatts, which is about one-half the power requirement of earlier designs. The N74141 is characterized for operation over the temperature range of 0°C to 70°C.

PIN CONFIGURATIONS



LOGIC DIAGRAM



TRUTH TABLE

INPUT				OUTPUT ON*
D	C	B	A	
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

RECOMMENDED OPERATING CONDITIONS

	MIN	NOM	MAX	UNIT
Supply Voltage V_{CC} (See Note 1)	4.75	5	5.25	V
Output Voltage (See Notes 1 and 2)			65	V
Operating Free-Air Temperature Range	0	25	70	°C

ELECTRICAL CHARACTERISTICS (over recommended operating free-air temperature range unless otherwise noted)

PARAMETER		TEST CONDITIONS *	MIN	TYP **	MAX	UNIT
V_{IH}	High-level input voltage		2			V
V_{IL}	Low-level input voltage				0.8	V
$V_{O(on)}$	On-state output voltage	$V_{CC} = \text{MIN}, I_O = 7\text{mA}$			2.5	V
$V_{O(off)}$	Off-state output voltage for input counts 0 thru 9	$V_{CC} = \text{MAX}, I_O = 0.5\text{mA}$	65			V
$I_{O(off)}$	Off-state reverse current	$V_{CC} = \text{MAX}, V_O = 55\text{V}$			50	μA
$I_{O(off)}$	Off-state reverse current for input counts 10 thru 15	$V_{CC} = \text{MAX}, V_O = 30\text{V}$			5	μA
I_{IH}	High-level input current	$V_{CC} = \text{MAX}, V_I = 2.4\text{V}$ $V_{CC} = \text{MAX}, V_I = 5.5\text{V}$			40 1	μA mA
I_{IL}	Low-level input current into A				-1.6	mA
I_{IL}	Low-level input current into B, C, or D	$V_{CC} = \text{MAX}, V_I = 0.4\text{V}$			-3.2	mA
I_{CC}	Supply current	$V_{CC} = \text{MAX}$		11	16	mA

- * For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions
 ** This typical value is at $V_{CC} = 5\text{V}$, $T_A = 25^\circ\text{C}$.