



## DM5441A/DM7441A (SN5441A/SN7441A) BCD to decimal decoder/nixie\* driver

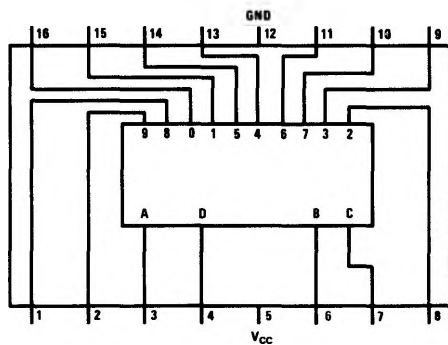
### general description

The DM5441A/DM7441A is monolithic binary-coded-decimal to decimal decoder. The BCD number to be decoded is applied to the four input lines; and the unique output corresponding to the decimal equivalent of the input number falls to a logical 0 level. Outputs are designed to drive gas-filled-readout (Nixie\*) tubes but are also able to

operate with other low current lamps and relays.

An over-range feature provides that if binary numbers between 10 and 15 are applied to the input the least significant bit of these numbers (0 through 5) will be decoded on the output.

### connection diagram

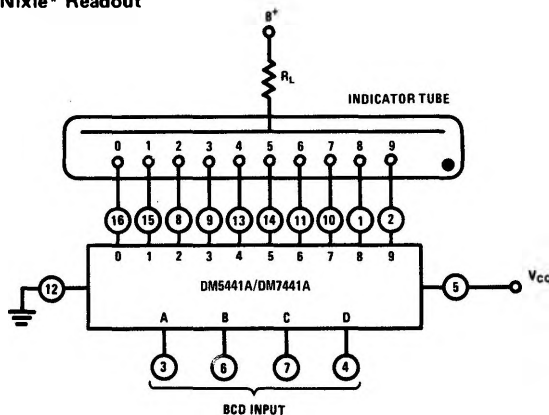


### logic table

INPUT				LOW OUTPUT
D	C	B	A	
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	0	0	0	8
1	0	0	1	9
(OVER-RANGE)				
1	0	1	0	0
1	0	1	1	1
1	1	0	0	2
1	1	0	1	3
1	1	1	0	4
1	1	1	1	5

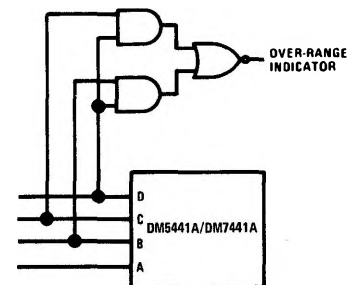
### typical applications

#### Nixie\* Readout



NOTE: Values for B+ and  $R_L$  are as specified by the tube manufacturer.

#### Over-Range Decoding



\*Trademark of Burroughs Corporation

**absolute maximum ratings**

Supply Voltage ( $V_{CC}$ )		7.0V
Output Voltage		70V
Input Voltage		5.5V
Operating Temperature Range	DM5441A	-55°C to +125°C
	DM7441A	0°C to +70°C
Storage Temperature Range		-65°C to +150°C
Lead Temperature (Soldering, 10 sec)		300°C

**electrical characteristics** (Note 1)

PARAMETER	CONDITIONS		MIN	TYP (Note 2)	MAX	UNITS
Logical 1 Input Voltage	DM5441A	$V_{CC} = 4.5V$	2.0			V
	DM7441A	$V_{CC} = 4.75V$				
Logical 0 Input Voltage	DM5441A	$V_{CC} = 4.5V$			0.8	V
	DM7441A	$V_{CC} = 4.75V$				
Logical 1 Input Current (all inputs)	DM5441A	$V_{CC} = 5.5V$		3	40	$\mu A$
	DM7441A	$V_{CC} = 5.25V$				
Logical 1 Input Current	DM5441A	$V_{CC} = 5.5V$			1	mA
	DM7441A	$V_{CC} = 5.25V$				
Logical 0 Input Current	DM5441A	$V_{CC} = 5.5V$		-1.0	-1.6	mA
	DM7441A	$V_{CC} = 5.25V$				
Supply Current	DM5441A	$V_{CC} = 5.5V$		21	36	mA
	DM7441A	$V_{CC} = 5.25V$				
Logical 1 Output Breakdown	DM5441A	$V_{CC} = 5.5V$	70	85		V
	DM7441A	$V_{CC} = 5.25V$				
Logical 1 Output Current	DM5441A	$V_{CC} = 5.5V$	$V_{OUT} = 50V$			125°
						70°
						25°
						0°
						-55°
						125°
Logical 0 Output Voltage	DM5441A	$V_{CC} = 4.5V$	$I_{OUT} = 7 mA$	1.4		60
						70°
						25°
						0°
						-55°
						125°
Logical 0 Output Voltage	DM7441A	$V_{CC} = 4.75V$	$I_{OUT} = 7 mA$			40
						70°
						25°
						0°
						-55°
						125°

Note 1: Unless otherwise specified min/max limits apply across the -55°C to +125°C temperature range for the DM5441A, and the 0°C to 70°C temperature range for the DM7441A.

Note 2: All typicals apply at 25°C for  $V_{CC} = 5.0V$ .