

BCD-TO-SEVEN SEGMENT LATCH/DECODER/DRIVER

4511
276-2447

GENERAL DESCRIPTION

The 4511 BCD-to-seven segment latch/decoder/driver is constructed with complementary MOS (CMOS) enhancement mode devices and NPN bipolar output drivers in a single monolithic structure. The circuit provides the functions of a 4-bit storage latch, an 8421 BCD-to-seven segment decoder, and an output drive capability. Lamp test (\overline{LT}), blanking (\overline{BI}), and latch enable (LE) inputs are used to test the display, and to store a BCD code, respectively. It can be used with seven-segment light emitting diodes (LED), incandescent, fluorescent, gas discharge, or liquid crystal readouts either directly or indirectly.

Applications include instrument (e.g., counter, DVM, etc.) display driver, computer/calculator display driver, cockpit display driver, and various clock, watch, and timer uses.

This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields; however, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit. A destructive high current mode may occur if V_{in} and V_{out} is not constrained to the range $V_{SS} \leq (V_{in} \text{ or } V_{out}) \leq V_{DD}$.

Due to the sourcing capability of this circuit, damage can occur to the device if V_{DD} is applied, and the outputs are shorted to V_{SS} and are at a logical 1 (See Maximum Ratings).

Unused inputs must always be tied to an appropriate logic voltage level (e.g., either V_{SS} or V_{DD}).

FEATURES

- Quiescent Current = 5.0 nA/package typical @ 5 Vdc
- Low Logic Circuit Power Dissipation
- High-Current Sourcing Outputs (Up to 25 mA)
- Latch Storage of Code
- Blanking Input
- Lamp Test Provision
- Readout Blanking on all Illegal Input Combinations
- Lamp Intensity Modulation Capability
- Time Share (Multiplexing) Facility
- Supply Voltage Range = 3.0 Vdc to 16 Vdc
- Capable of Driving Two Low-power TTL Loads, One Low-power Schottky TTL Load or Two HTL Loads Over the Rated Temperature Range

ABSOLUTE MAXIMUM RATINGS (Voltages referenced to V_{SS})

DC Supply Voltage	-0.5 to +16 Vdc
Input Voltage, All Inputs	-0.5 to V_{DD} +0.5 Vdc
DC Current Drain per Input Pin	10 mAdc
Operating Temperature Range	-40 to +85°C
Storage Temperature Range	-65 to +150
Maximum Continuous Output Drive Current (Source) per Output	25 mA
Maximum Continuous Output Power (Source) per Output †	50 mW

† $P_{OUMAX} = I_{OH} (V_{DD} - V_{OH})$.

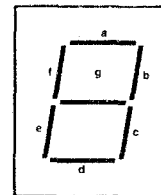
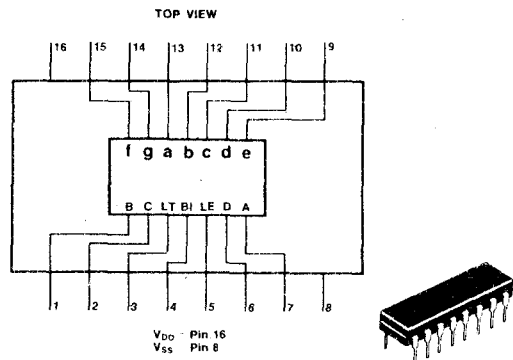
TRUTH TABLE

Inputs						Outputs								
LE	\overline{BI}	\overline{LT}	D	C	B	A	a	b	c	d	e	f	g	Display
x	x	0	x	x	x	x	1	1	1	1	1	1	1	8
x	0	1	x	x	x	x	0	0	0	0	0	0	0	Blank
0	1	1	0	0	0	0	1	1	1	1	1	1	0	0
0	1	1	0	0	0	1	0	1	1	0	0	0	0	1
0	1	1	0	0	1	0	1	1	0	1	1	0	1	2
0	1	1	0	0	1	1	1	1	1	0	0	0	1	3
0	1	1	0	1	0	0	0	1	1	0	0	0	1	4
0	1	1	0	1	0	1	1	0	1	1	0	1	1	5
0	1	1	0	1	1	0	0	1	1	1	1	1	1	6
0	1	1	0	1	1	1	1	1	1	0	0	0	0	7
0	1	1	1	0	0	0	1	1	1	1	1	1	1	8
0	1	1	1	0	0	1	1	1	1	0	0	1	1	9
0	1	1	1	0	1	0	0	0	0	0	0	0	0	Blank
0	1	1	1	0	1	1	0	0	0	0	0	0	0	Blank
0	1	1	1	1	0	0	0	0	0	0	0	0	0	Blank
0	1	1	1	1	0	1	0	0	0	0	0	0	0	Blank
0	1	1	1	1	1	1	0	0	0	0	0	0	0	Blank
1	1	1	x	x	x	x								Blank

x = Don't Care

*Depends upon the BCD code previously applied when LE = 0

PIN CONNECTION



DISPLAY

