

# 54/7449 54LS/74LS49

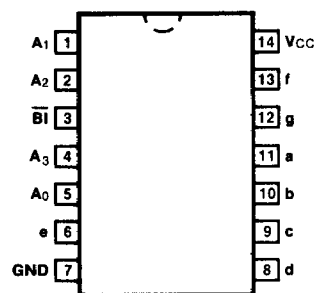
## BCD TO 7-SEGMENT DECODER

**DESCRIPTION** — The '49 translates four lines of BCD (8421) input data into the 7-segment numeral code as shown in the Truth Table. It has open-collector outputs and is logically the 14-pin version of the '48, without the lamp test and ripple blanking features. Also see the 'LS249 data sheet.

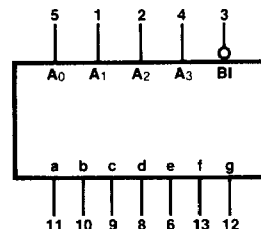
**ORDERING CODE:** See Section 9

PKGS	PIN OUT	COMMERCIAL GRADE	MILITARY GRADE	PKG TYPE
		V <sub>CC</sub> = +5.0 V ±5%, T <sub>A</sub> = 0°C to +70°C	V <sub>CC</sub> = +5.0 V ±10%, T <sub>A</sub> = -55°C to +125°C	
Plastic DIP (P)	A	74LS49PC		9A
Ceramic DIP (D)	A	74LS49DC	54LS49DM	6A
Flatpak (F)	A	7449FC, 74LS49FC	5449FM, 54LS49FM	3I

### CONNECTION DIAGRAM PINOUT A



### LOGIC SYMBOL



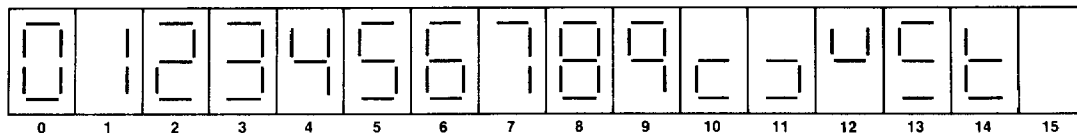
V<sub>CC</sub> = Pin 14  
GND = Pin 7

**INPUT LOADING/FAN-OUT:** See Section 3 for U.L. definitions

PIN NAMES	DESCRIPTION	54/74 (U.L.) HIGH/LOW	54/74LS (U.L.) HIGH/LOW
A <sub>0</sub> — A <sub>3</sub>	BCD Inputs	1.0/1.0	0.5/0.25
$\overline{\text{BI}}$	Blanking Input (Active LOW)	1.0/1.0	0.5/0.25
a — g	Segment Outputs (Active HIGH)	OC*/6.25	OC*/5.0 OC*/(2.5)

\* OC — Open Collector

### NUMERICAL DESIGNATIONS — RESULTANT DISPLAYS



TRUTH TABLE

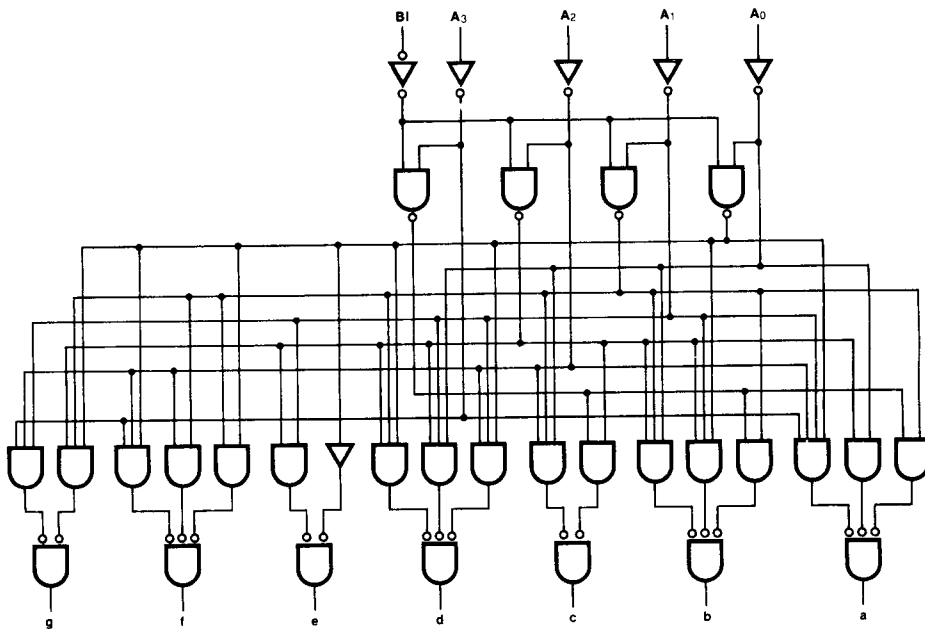
DECIMAL OR FUNCTION	INPUTS					OUTPUTS							NOTE	
	A <sub>3</sub>	A <sub>2</sub>	A <sub>1</sub>	A <sub>0</sub>	$\overline{\text{BI}}$	a	b	c	d	e	f	g		
0	L	L	L	L	H	H	H	H	H	H	L	L	L	1
1	L	L	L	H	H	L	H	H	L	L	L	L	L	
2	L	L	H	L	H	H	H	L	H	H	L	L	H	
3	L	L	H	H	H	H	H	H	H	L	L	L	H	
4	L	H	L	L	H	L	H	H	L	L	H	H		
5	L	H	L	H	H	H	L	H	H	L	H	H		
6	L	H	H	L	H	L	L	H	H	H	H	H		
7	L	H	H	H	H	H	H	H	L	L	L	L		
8	H	L	L	L	H	H	H	H	H	H	H	H		
9	H	L	L	H	H	H	H	H	L	L	H	H		
10	H	L	H	L	H	L	L	L	H	H	L	H		
11	H	L	H	H	H	L	L	H	H	L	L	H		
12	H	H	L	L	H	L	H	L	L	L	H	H		
13	H	H	L	H	H	H	L	L	H	L	H	H		
14	H	H	H	L	H	L	L	L	H	H	H	H		
15	H	H	H	H	H	L	L	L	L	L	L	L		
BI	X	X	X	X	L	L	L	L	L	L	L	L		2

NOTES:

- (1) The blanking input must be open or held at a HIGH level when output functions 0 through 15 are desired.
- (2) When a LOW level is applied to the blanking input all segment outputs go to a LOW level regardless of the state of any other input condition. X = input may be HIGH or LOW.

H = HIGH Voltage Level  
 L = LOW Voltage Level  
 X = Immaterial

LOGIC DIAGRAM



**DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE** (unless otherwise specified)

SYMBOL	PARAMETER		54/74		54/74LS		UNITS	CONDITIONS
			Min	Max	Min	Max		
V <sub>IL</sub>	Input LOW Voltage	XM	0.6		0.7		V	
		XC	0.8		0.8			
I <sub>OH</sub>	Output HIGH Current		250		250		μA	V <sub>CC</sub> = Min, V <sub>OH</sub> = 5.5 V
I <sub>CC</sub>	Power Supply Current	XM	47		15		mA	V <sub>CC</sub> = Max, Inputs = 4.5 V
		XC	56		15			

**AC CHARACTERISTICS:** V<sub>CC</sub> = +5.0 V, T<sub>A</sub> = +25° C (See Section 3 for waveforms and load configurations)

SYMBOL	PARAMETER		54/74		54/74LS		UNITS	CONDITIONS
			C <sub>L</sub> = 15 pF R <sub>L</sub> = 665 Ω		C <sub>L</sub> = 15 pF R <sub>L</sub> = 3 kΩ			
			Min	Max	Min	Max		
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay A <sub>n</sub> to a—g		100		100		ns	Figs. 3-2, 3-20
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay $\overline{\text{BI}}$ to a—g		100		100		ns	Figs. 3-2, 3-5 R <sub>L</sub> = 6 kΩ for 'LS49