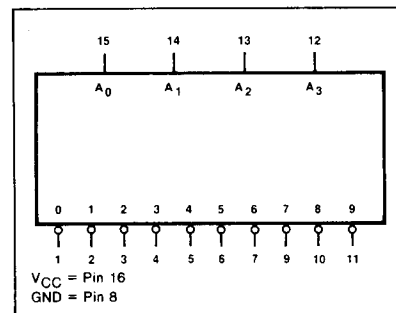


54/7444

DESCRIPTION

The "44" is a TTL MSI array utilized in decoding and logic conversion applications. The "44" decodes excess-three-gray code to 1-of-10 outputs.

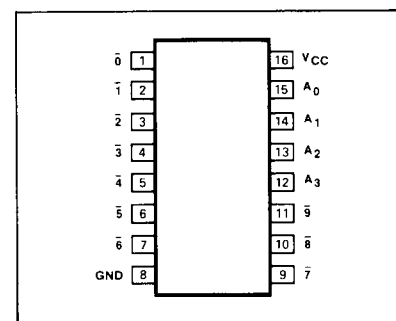
LOGIC SYMBOL



ORDERING CODE (See Section 9 for further Package and Ordering Information)

PACKAGES	COMMERCIAL RANGES $V_{CC}=5V \pm 5\%$; $T_A=0^\circ C$ to $+70^\circ C$	MILITARY RANGES $V_{CC}=5V \pm 10\%$; $T_A=-55^\circ C$ to $+125^\circ C$
Plastic DIP	N7444N	
Ceramic DIP	N7444F	S5444F
Flatpak		S5444W

PIN CONFIGURATION



INPUT AND OUTPUT LOADING AND FAN-OUT TABLE (a)

PINS	DESCRIPTION	54/74	54S/74S	54LS/74LS
A ₀ -A ₃	Address inputs I_{IH} (μA) I_{IL} (mA)	40 -1.6		
$\bar{0}$ - $\bar{9}$	Active LOW outputs I_{OH} (μA) I_{OL} (mA)	-800 16		

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (b)

PARAMETER	TEST CONDITIONS	54/74		54S/74S		54LS/74LS		UNIT
		Min	Max	Min	Max	Min	Max	
I_{CC} Supply current	$V_{CC} = \text{Max}$	Mil	41					mA
		Com	56					mA

NOTES

- a. The slashed numbers indicate different parametric values for Military/Commercial temperature ranges respectively.
- b. For family dc characteristics, see inside front cover for 54/74 and 54H/74H, and see inside back cover for 54S/74S and 54LS/74LS specifications.

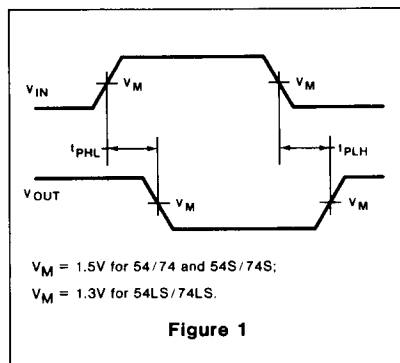


FUNCTIONAL DESCRIPTION

The "44" is an Excess-3-Gray code to 1-of-10 decoder that accepts excess-3 Gray coded inputs and generates ten mutually exclusive active LOW outputs.

The excess-3 Gray code is used in decimal position encoders, since it retains the characteristics of a Gray code (only one bit changes between adjacent states) even on the change between nine and zero.

AC WAVEFORM

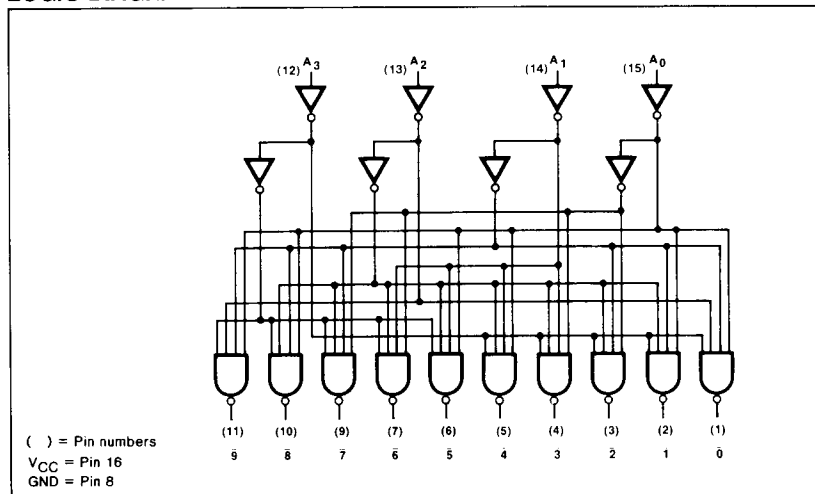


TRUTH TABLE

INPUTS				OUTPUTS									
A ₃	A ₂	A ₁	A ₀	0	1	2	3	4	5	6	7	8	9
L	L	H	L	L	H	H	H	H	H	H	H	H	H
L	H	H	L	H	L	H	H	H	H	H	H	H	H
L	H	H	H	H	H	L	H	H	H	H	H	H	H
L	H	L	H	H	H	H	L	H	H	H	H	H	H
L	H	L	L	H	H	H	H	L	H	H	H	H	H
H	H	L	L	H	H	H	H	H	L	H	H	H	H
H	H	L	H	H	H	H	H	H	H	L	H	H	H
H	H	H	H	H	H	H	H	H	H	H	L	H	H
H	H	H	L	H	H	H	H	H	H	H	H	L	H
H	L	H	L	H	H	H	H	H	H	H	H	H	L
H	L	H	H	H	H	H	H	H	H	H	H	H	H
H	L	L	H	H	H	H	H	H	H	H	H	H	H
H	L	L	L	H	H	H	H	H	H	H	H	H	H
L	L	L	L	H	H	H	H	H	H	H	H	H	H
L	L	L	H	H	H	H	H	H	H	H	H	H	H
L	L	H	H	H	H	H	H	H	H	H	H	H	H

H = HIGH voltage level.
L = LOW voltage level.

LOGIC DIAGRAM



AC CHARACTERISTICS: $T_A = 25^\circ C$ (See Section 4 for Test Circuits and Conditions)

PARAMETER	TEST CONDITIONS	54/74		54S/74S		54LS/74LS		UNIT
		$C_L = 15pF$ $R_L = 400\Omega$						
		Min	Max	Min	Max	Min	Max	
t_{PLH} Propagation delay	Figure 1		35					ns
t_{PHL} Address to output			35					ns