

T-66-21-55

42 • 43 • 44

54/7442A • 54LS/74LS42

54/7443A • 54/7444A

1-of-10 DECODER

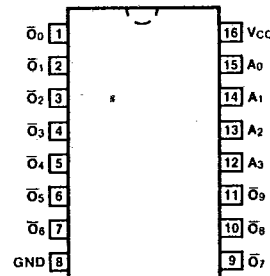
DESCRIPTION-The '42, '43 and '44 are multipurpose decoders. For any valid input combination, one and only one output is LOW. For all invalid input combinations all outputs are HIGH. The '42 accepts four BCD inputs and provides ten mutually exclusive outputs; the '43 accepts four lines of EXCESS-3 encoded data and provides ten mutually exclusive outputs; the '44 accepts four lines of EXCESS-3 Gray encoded data and provides ten mutually exclusive totem pole outputs.

- MULTIFUNCTION CAPABILITY
- MUTUALLY EXCLUSIVE OUTPUTS
- DEMULTIPLEXING CAPABILITY
- FULLY TTL AND CMOS COMPATIBLE

ORDERING CODE: See Section 9

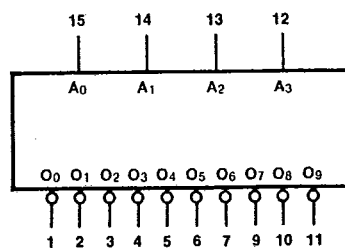
PKGS	PIN OUT	COMMERCIAL GRADE	MILITARY GRADE	PKG TYPE
		$V_{CC} = +5.0\text{ V} \pm 5\%$, $T_A = 0^\circ\text{C to } +70^\circ\text{C}$	$V_{CC} = +5.0\text{ V} \pm 10\%$, $T_A = -55^\circ\text{C to } +125^\circ\text{C}$	
Plastic DIP (P)	A	7442APC, 74LS42PC 7443APC, 7444APC		9B
Ceramic DIP (D)	A	7442ADC, 74LS42DC 7443ADC, 7444ADC	5442ADM, 54LS42DM 5443ADM, 5444ADM	6B
Flatpak (F)	A	7442AFC, 74LS42FC 7443AFC, 7444AFC	5442AFM, 54LS42FM 5443AFM, 5444AFM	4L

CONNECTION DIAGRAM PINOUT A



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LOGIC SYMBOL



$V_{CC} = \text{Pin } 16$
GND = Pin 8

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PIN NAMES	DESCRIPTION	54/74 (U.L.) HIGH/LOW	54/74LS (U.L.) HIGH/LOW
A ₀ — A ₃	BCD Inputs ('42)	1.0/1.0	0.5/0.25
A ₀ — A ₃	EXCESS-3 Inputs ('43)	1.0/1.0	
A ₀ — A ₃	EXCESS-3 GRAY Inputs ('44)	1.0/1.0	
$\overline{O}_0$ — $\overline{O}_0$	Decimal Outputs (Active LOW)	20/10	10/5.0 (2.5)

The '42 can be used as a conventional 1-of-8 decoder by treating the most significant input A_3 as an active LOW Enable. Similarly, it can be used as an 8-output demultiplexer by using A_3 as the data input.

[illegible]

H = HIGH Voltage Level
L = LOW Voltage Level

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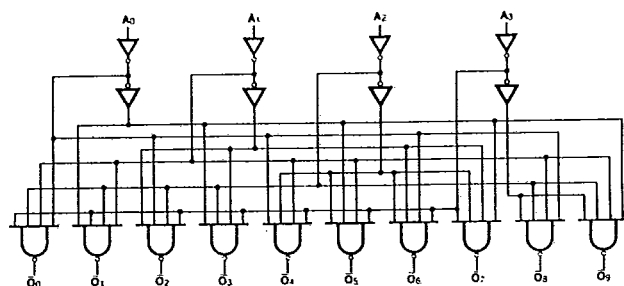
DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

SYMBOL	PARAMETER		54/74		54/74LS		UNITS	CONDITIONS
			Min	Max	Min	Max		
I _{OS}	Output Short	XM	-20	-55	-20	-100	mA	V _{CC} = Max
	Circuit Current	XC	-18	-55	-20	-100		
I _{CC}	Power Supply Current	XM	41		12		mA	V _{CC} = Max
		XC	56		12			

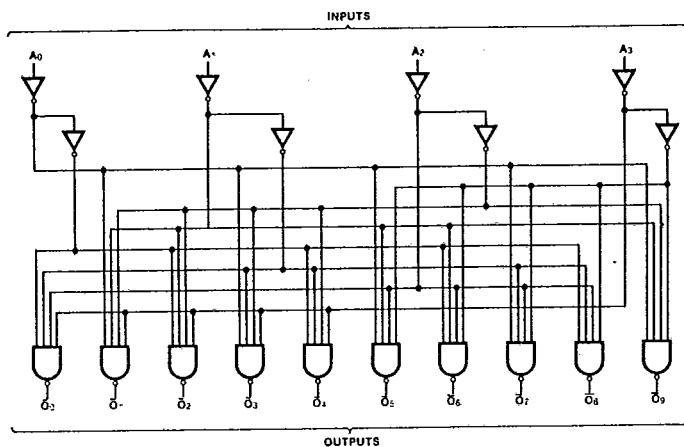
AC CHARACTERISTICS: V_{CC} = +5.0 V, T_A = +25° C (See Section 3 for waveforms and load configurations)

SYMBOL	PARAMETER	54/74		54/74LS		UNITS	CONDITIONS
		C _L = 15 pF R _L = 400 Ω		C _L = 15 pF			
		Min	Max	Min	Max		
t _{PLH} t _{PHL}	Propagation Delay A _n to $\bar{O}_n$, 2 Levels	25 25		18 25		ns	Figs. 3-1, 3-20
t _{PLH} t _{PHL}	Propagation Delay A _n to $\bar{O}_n$, 3 Levels	30 30		20 27		ns	Figs. 3-1, 3-20

LOGIC DIAGRAMS
'42A • 'LS42



'43A



'44A

