

# 54/74154

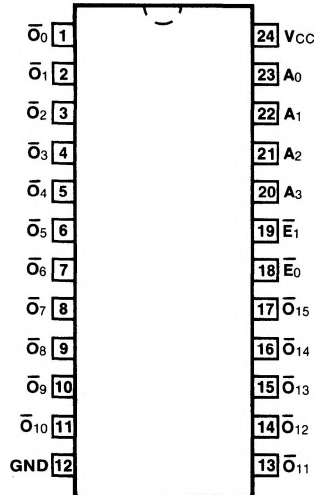
## 1-OF-16 DECODER/DEMULTIPLEXER

**DESCRIPTION** — The '154 is a multipurpose decoder designed to accept four inputs and provide 16 mutually exclusive outputs. By means of the Address ( $A_0 - A_3$ ) inputs, data applied to one of the Enable inputs can be routed to any one of the outputs in True (non-inverted) form.

**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	74154PC		9N
Ceramic DIP (D)	A	74154DC	54154DM	6N
Flatpak (F)	A	74154FC	54154FM	4M

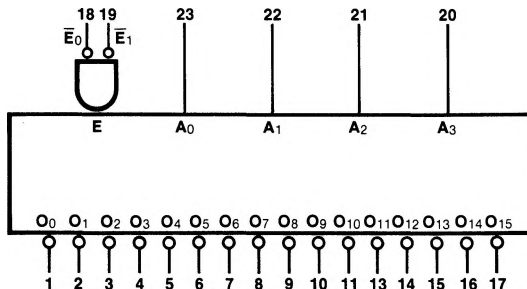
### CONNECTION DIAGRAM PINOUT A



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

PIN NAMES	DESCRIPTION	54/74 (U.L.) HIGH/LOW
$A_0 - A_3$	Address Inputs	1.0/1.0
$\bar{E}_0, \bar{E}_1$	Enable Inputs (Active LOW)	1.0/1.0
$\bar{O}_0 - \bar{O}_{15}$	Outputs (Active LOW)	20/10

### LOGIC SYMBOL



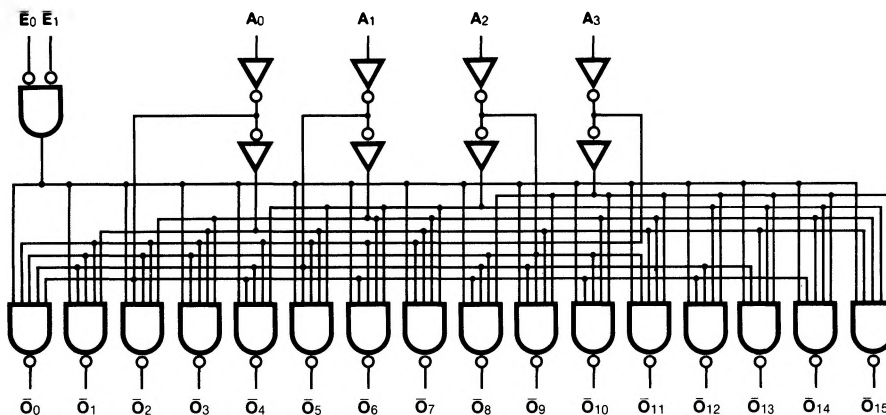
$V_{CC} = \text{Pin } 24$   
 $GND = \text{Pin } 12$

TRUTH TABLE

INPUTS					OUTPUTS																	
$\bar{E}_0$	$\bar{E}_1$	A <sub>0</sub>	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	$\bar{O}_0$	$\bar{O}_1$	$\bar{O}_2$	$\bar{O}_3$	$\bar{O}_4$	$\bar{O}_5$	$\bar{O}_6$	$\bar{O}_7$	$\bar{O}_8$	$\bar{O}_9$	$\bar{O}_{10}$	$\bar{O}_{11}$	$\bar{O}_{12}$	$\bar{O}_{13}$	$\bar{O}_{14}$	$\bar{O}_{15}$	
H	H	X	X	X	X	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
H	L	X	X	X	X	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
L	H	X	X	X	X	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
L	L	L	L	L	L	H	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
L	L	L	H	L	L	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H
L	L	L	H	L	L	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H	H
L	L	L	L	H	L	H	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H
L	L	L	L	L	H	H	H	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H
L	L	L	H	H	L	H	H	H	H	H	H	L	H	H	H	H	H	H	H	H	H	H
L	L	L	H	L	L	H	H	H	H	H	H	L	H	H	H	H	H	H	H	H	H	H
L	L	L	L	L	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H	H	H	H
L	L	L	L	L	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H	H	H
L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H	H
L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H
L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H
L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H
L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H
L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H
L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H
L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L

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

LOGIC DIAGRAM



**FUNCTIONAL DESCRIPTION** — The '154 decoder accepts four inputs and provides 16 mutually exclusive active LOW outputs, as shown by the logic symbol. The active LOW outputs facilitate addressing other MSI units with active LOW enable.

The '154 can demultiplex data by routing it from one input to one of 16 possible decoder outputs. The desired output is addressed and the data is applied to one of the enable inputs. Providing that the other enable is LOW, the addressed output will follow the state of the applied data.

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

SYMBOL	PARAMETER		54/74		UNITS	CONDITIONS
			Min	Max		
I <sub>OS</sub>	Output Short Circuit Current	XM	-20	-55	mA	V <sub>CC</sub> = Max
		XC	-18	-57		
I <sub>CC</sub>	Power Supply Current	XM		49	mA	V <sub>CC</sub> = Max
		XC		56		

**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		UNITS	CONDITIONS
			C <sub>L</sub> = 15 pF R <sub>L</sub> = 400 Ω			
			Min	Max		
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay A <sub>n</sub> to $\bar{O}_n$			31 28	ns	Figs. 3-1, 3-20
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay $\bar{E}_n$ to $\bar{O}_n$			23 24		